
# Corvus – Accessible Kit for Android

## A set of applications that make Android mobile phones accessible to blind and visually impaired users

## Corvus – How to Get Started

**Version of the manual "Corvus – How to Get Started" – December 2025**

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# 1. Introduction

At the non-profit organization Touch&Speech, we have been developing our own set of applications since 2013 to make Android mobile phones accessible to blind and visually impaired people. The name of our application set is Corvus.

By the way. Do you know what the name of our application set actually means? Corvus, translated from Latin, means raven. In nature, the raven is a symbol of intelligence, but it is also characterized by its distinctive voice. We believe that our Corvus, speaking to you with its voice, will also be a symbol of intelligence for you, conveyed to you from your smartphone.

The designation of Corvus as an "application set" suggests that it is not a single application, but a comprehensive software package consisting of two main parts, namely the Corvus environment and Corvus Screen reader.

The "Corvus - Getting Started" manual will walk you through these basic topics:

- Installation and initial setup of Corvus and your Android smartphone
- Getting started with Corvus environment
- Getting started with Corvus Screen reader

This document is intended as a reference guide. It does not contain detailed descriptions of how the individual parts of the application set work. We recommend that users also read the detailed user manual, which contains a complete description of the special environment and the Corvus screen reader. You can find it on the website listed at the end of this guide.

## 1.1 What is the difference between Corvus environment and Corvus Screen reader?

To make performing everyday tasks with your smartphone as simple and efficient as possible, we have developed a set of applications, including our own launcher, embedded in a unified user environment. This means that while in standard Android applications each screen looks different and contains a lot of unnecessary information in addition to the necessary information, in our environment the screens are very simple, functional, and provide you with exactly the information you need. They speak to blind people using a voice of your choice and offer visually impaired people clearly distinguishable icons and contrasting large fonts. We refer to this special user environment, developed specifically for blind and visually impaired users, as the Corvus environment, and the applications that use it as Corvus environment applications.

And even though navigating the Corvus Environment screens is reminiscent of old push-button phones in terms of its intuitiveness, Corvus takes full advantage of smartphone intelligence and is certainly not lagging behind in terms of functionality. In the Corvus environment, you can make phone calls, send text messages, send emails, work with documents, download and read books. Corvus environment has several features designed specifically for the blind, allowing you to recognize banknotes, sort laundry, find out if your husband forgot to turn off the light in the kitchen, and even helping you navigate or identify compote in the pantry.

And while Corvus environment comes with dozens of its own applications, Corvus Screen reader makes all other applications and the standard Android environment accessible to blind users. Of course, with similarly easy and intuitive controls, and even using the same keyboard as we use in

Corvus environment applications. Thanks to Corvus, you do not have to limit yourself to the features we have prepared for you, but you can also use other Android applications. Corvus users enjoy using not only applications primarily designed to make life easier for people with visual impairments (e.g., Be My Eyes – volunteer assistance via telephone, navigation applications for the blind, applications for recognizing objects or text, etc.), but thanks to Corvus, they also have access to the internet, social networks, and applications for buying tickets and other things that can be just as useful to them as to people without disabilities.

The important thing is that Corvus does not impose itself on you in any way. You only use what is convenient for you. The combination of Corvus environment and Corvus Screen reader is ideal for most users.  However, this is not a problem if you decide to use only Corvus Screen reader, for example, because you are completely at home in the standard Android environment. You use the standard Android launcher and choose our reader for its fast response and great control.

# 2. Installation and initial setup of Corvus and your Android smartphone

## 2.1 Getting started with installation

Corvus can be installed on smartphones running the Android operating system. Check the supported operating system version on the Corvus website, which can also be found at the end of this manual. The method of installing Corvus and configuring your smartphone, which must be done directly in the operating system, may vary depending on the version of the Android operating system, or whether you are using a phone with "pure" Android or an additional overlay (such as One UI from SAMSUNG), etc. Therefore, this manual cannot provide you with completely accurate instructions, but only more general points that are important to follow during installation. The names of items in the Android menu and any system messages displayed are therefore only indicative and may differ from this manual in individual cases.

Some settings in the Android environment may be more difficult to find. Therefore, immediately after entering Settings in Android (not in the Corvus environment), we recommend using the search field to enter the expected name, or better yet, just part of the name of the setting you want to find. Then select the setting you are looking for from the list of options provided.

Before installing Corvus, we recommend performing the following steps and checking these phone settings (this can greatly facilitate the first steps of a blind person with the phone):

- Internet connection (whether via WiFi or mobile data) should be set up and active,
- check that the correct language is selected (this also affects speech recognition, etc.),
- when replacing your phone, transfer data from your old device (for sighted assistants, it is more convenient to perform this transfer while no assistive technology is running on the phone, because installing Corvus significantly changes the way the phone is operated, which is a necessity for the blind but can be confusing for the sighted),
- perform operating system updates (try this repeatedly),
- update all other apps on your phone via Google Play or the App Store,
- we strongly recommend that beginners disable SIM card PIN code protection (once you have learned how to use Corvus, you can re-enable protection if you deem it necessary),
- launch the Chrome web browser for the first time and go through the initial setup.

The installation of Corvus itself consists of the following steps:

- setting up or installing suitable speech synthesis,
- installation of the Corvus application set,
- initial settings for Corvus and the phone.

## 2.2 Setting up or installing speech synthesis

In order for your smartphone to provide voice feedback (in simpler terms, to be able to "speak"), you need to have voice synthesis installed and correctly configured on your phone in addition to Corvus.

This is also built into the Corvus application set itself. This is a synthesis of eSpeak speech, which is characterized primarily by high reliability, which is extremely important for blind users. eSpeak has very good response and, if necessary, the option of setting extremely high speech speed. If you

decide to use the built-in eSpeak, you can configure its use after installing Corvus directly in its settings.

However, for many users, the disadvantage of eSpeak is its overly mechanical sound. That's why Corvus allows you to use any other synthesis installed on your smartphone. It is advisable to set this up on your phone before installing Corvus so that Corvus starts working immediately after launch.

The vast majority of smartphones today have synthesis pre-installed. However, sometimes it is necessary to download the relevant language packs. To do this, you need to have an active Internet connection when setting up synthesis. Google TTS synthesis is most commonly used, or in SAMSUNG phones, synthesis from this phone manufacturer is also pre-installed.

You can select the type of synthesis and its language in the Android environment, in Settings. Search for "Text-to-speech" or something similar. It can be found, for example, in "Accessibility Settings," "Ease of Access," or "Language and Input," etc. Here, you can usually play a voice sample to hear how the voice sounds.

If you are not satisfied with eSpeak or the pre-installed speech synthesis on your phone, you can install any standard speech synthesis that supports your language, e.g. from Google Play (or the Play Store). The most common ones are the free RH Voice speech synthesizer and the paid Vocalizer TTS and Acapela TTS synthesizers. However, you can also try other available syntheses.

You can install the selected synthesis just like any other regular application. However, it is usually still necessary to launch the synthesis application, select the desired language, and download the appropriate language pack. When installing and setting up the specific voice you want your Corvus phone to speak with, follow the instructions provided by the creators of your chosen synthesis. After installing the synthesizer on your device, you must also set it as the default according to the procedure described above.

## 2.3 Installing the Corvus application set

We do not currently distribute the Corvus program through Google Play or the Play Store. You can download the Corvus installation APK file from the official Corvus website listed at the end of this manual, or your dealer can provide it to you. If you did not download the Corvus.apk installation file from the Internet using your smartphone, copy it from your PC to your mobile phone memory or memory card in the standard way.

Start the installation by tapping on the downloaded or copied APK file. You can either activate it directly after downloading it from your web browser or from the notification bar after downloading, or search for it and activate it using any file manager.

Since the application is not installed from Google Play, you will be prompted to allow the installation of applications from other sources. This needs to be enabled. You may encounter a situation where Android offers you the option to allow installation only from the application from which you are currently installing Corvus, or it provides you with a list of all relevant applications and you will have to search for the application in this list. Either grant the application the appropriate permission, or check the application that Corvus will be able to install in the list of available applications. By default, this can be the Chrome browser (if you install Corvus directly from the internet) or the My Files application (if you install it from this application).

If you do not see a prompt to allow installation of applications from other sources and the installation of Corvus fails as a result, search for permissions to install applications from other sources yourself. In your Android settings (or using the search box), try searching for something like "Install unknown apps." In SAMSUNG devices running Android 16, for example, this setting is hidden in the "Applications" menu, where you need to activate the "More options" item (it may also be marked with three dots or a gear wheel). There, activate "Special access" and then "Install unknown apps." From the list provided, select the applications that Corvus will be able to install. By default, this can be the Chrome browser or the My Files application. Then restart the Corvus installation by tapping on the downloaded APK file.

If the installation still ends with an error and you are using a SAMSUNG device, open the "Security and privacy" section in your Android settings. Here, turn off the "Auto Blocker" feature (you probably won't find this feature on phones from manufacturers other than SAMSUNG). Next, activate the "Application Security" item and then the "Application Protection" item. There, find and activate "More options" (may be marked with three dots or a gear wheel) and then "App protection - settings," where you can then uncheck the App protection option (or set it to off).

In some cases, the installation of Corvus may also be rejected by the Play Protect feature. In this case, you will need to confirm the installation in the Play Protect warning window (the confirmation link is located in the information text), or, as in the previous case, you can temporarily disable the Play Protect feature in the Android settings by opening the "Security and privacy" section. There, under "Application Security," go to Google Play Protect, where you can activate "Settings" (also marked with three dots or a gear icon) and uncheck "Scan apps with Play Protect - Play Protect can scan this device...". Then click on the "Turn off" button. In this step, you may be asked to verify your identity with a password or fingerprint.

Since the structure of individual Android settings items changes very often, you can also help yourself by searching in the Android settings. Then try installing Corvus again as described at the beginning of this chapter; nothing should prevent you from doing so now.

From this step onwards, the installation will proceed in the same way as when installing any other application. After installation, you can start Corvus.

## 2.4 Initial setup of Corvus and your phone

To continue with the Corvus settings, you need to master at least the basic tasks when navigating the Corvus environment. Our goal was to make the controls as intuitive as possible. The Corvus environment items are organized in a tree structure, and you can move through the individual items in the lists by swiping down and back up. If we need to dive into an item or confirm it, we double-tap the screen with one finger. We will return by swinging to the left. If, despite its simplicity, you find Corvus difficult to use, or if this brief overview has not helped you, we recommend that you read at least the first few chapters of the next section of the manual – Getting Started with the Corvus environment.

The basic settings for Corvus and your phone are configured in the Corvus environment, which you can access after launching Corvus, but some settings will also need to be configured in the basic Android settings.

### 2.4.1 First start of Corvus

When you first start Corvus, a message may appear on the screen stating that our application set was created for an older version of Android and therefore may not work properly on your phone. This information is displayed because Corvus strives to provide not only the latest Android functionality, but also features that new applications are unable to control. The aforementioned system information, which may seem misleading, is therefore not true. It is the price we pay for being able to control smartphone functions from Corvus environment that we would otherwise only be able to control via a screen reader if Corvus were to avoid this message. Corvus is always tested with the latest version of Android and uses the latest available technologies. Therefore, you do not need to worry about ignoring this information.

On older versions of Android, after installing Corvus, pressing the home button may prompt you to select a default home screen. If you select Corvus in the window that appears, Corvus will be set as your home screen and will start immediately.

If you have correctly set up one of the pre-installed synthesizers provided by your phone manufacturer, or if you have installed and set up another synthesizer as described in the previous chapter, you should hear your phone speak what is displayed on its screen after Corvus has been properly launched. If this does not happen, check the following:

- Your phone should not be in Do Not Disturb mode.
- Try resetting speech synthesis with the 2-SHIFT gesture, swiping to the right. As 2-SHIFT, we use the volume down button in the Corvus application set. Press the mute button and you should hear two tones in quick succession. While holding down the button, swipe your finger to the right across the screen.
- If Corvus still does not speak, repeat the gesture twice in a row. This will force the use of eSpeak speech synthesis. Then check the speech synthesis settings described in the previous chapter.

We would like to inform blind users that Corvus environment, which you entered after starting Corvus, is a special user environment for blind and visually impaired users, which has its own voice response. Therefore, if you install Corvus yourself using a different screen reader, you must always deactivate that screen reader after entering the Corvus environment. Otherwise, Corvus will not work properly. However, when describing the initial settings, we will primarily focus on the more common scenario where a sighted assistant helps a blind user with the installation and configuration of Corvus. We assume that blind users who are able to install Corvus themselves using another screen reader will be able to deduce from this description the procedure they need to use until Corvus, including its own built-in Corvus Screen reader, is fully operational.

Now you need to take these three steps:

- Use so-called Verify Android settings function directly from the Corvus environment,
- activate the Corvus license,
- Verify Android settings again from the Corvus environment.

To assign the necessary initial permissions to Corvus, follow these steps:

- Double-tap on the Menu item and scroll down to find the Help item in the submenu, which you can also activate by double-tapping. Then find and activate the Verify Android settings item.

- A message will appear informing you that Corvus Screen reader is currently not activated and that system dialogs will not be voiced until you activate it.
    - If you are installing Corvus visually, this information is not relevant to you.
    - If you install Corvus without screen reader support, you will always have to activate your existing screen reader after the system dialog appears (i.e., after exiting the Corvus environment) in order to configure the relevant settings in the Android environment. Whenever you return to the Corvus environment after making settings, you will need to deactivate your previous counter. It is therefore a good idea to remember this and set up a suitable shortcut in advance to deactivate/reactivate the original counter.

  Double-click to close the message window after reading.
- You will then see a list of settings that need to be configured or permissions that should be assigned. Tap each item on this list in turn, read the explanation carefully, tap again, and if you want to activate the described function, select Confirm in the next step by tapping (or swiping and tapping). In the system dialog that appears, perform the necessary operation. For Corvus to function properly, we recommend that new users in particular activate all the required permissions from the list.
- If, after activating one of the permissions, you find yourself back on the Corvus main screen under Menu, return to Android Settings Check as described in the first point and continue assigning individual permissions.
- One of the items on the list is Active Screen Reader. The item is set to "Off". Tap the item, read the information displayed, and tap again. Subsequently:
    - If you are installing Corvus visually, select "Activate in silent mode (for the visually impaired)" with a downward swipe and activate it by tapping. This is because activating the screen reader significantly changes the way the smartphone is controlled, which would make further configuration significantly more complicated for a sighted person. Now we will only enable the relevant service in the system and activate the counter itself in the last step, if we are installing the phone for a blind user.
    - If you are performing the installation without sight, you can tap on "Activate in talking mode (for the blind)" to make Corvus Screen reader start talking as soon as it has obtained all the necessary permissions.
- In "Simplified Control" (in Android settings), find the "Services" or "Installed Applications" section, or a similar item, and locate the "Corvus" service. Enter this service and activate it by switching the corresponding switch to the On position.
- If, after tapping on Corvus in higher versions of Android, a warning appears stating that restricted settings for this service are not available for security reasons, or that the application has been denied access, confirm by pressing OK. ATTENTION! To the sighted, the Corvus item in the list of services may appear to be unavailable. Nevertheless, it is possible and necessary to tap on it and then confirm the warning. Otherwise, it will not be possible to continue with important settings.
- Then use the arrow at the top left or the "Navigate up" button (not the "Back" button) to return to "Android Settings," go to "Applications," and select "Corvus" from the list of installed applications. Activate the "More options" button (for sighted users, this is three dots in a row in the upper right corner of the screen) and confirm the option Enable restricted settings. In this step, you may be asked to enter your password or verify your identity using your fingerprint. If you do not see the three dots in the upper right corner (or the "More

options" button), you have probably skipped tapping on the Corvus service and the subsequent warning. Go back and follow the previous step.
- Then go back to "Android Settings." In "Simplified Control," go back to "Services" or "Installed Applications" or a similar item and find the "Corvus" service, which you should then activate by switching the corresponding switch to the On position.
- A security warning will appear, along with information about what Corvus Screen reader has access to. Confirm the information by clicking Enable.
- Continue assigning permissions and settings according to the list in the Corvus Help Android Settings Check until no further permissions can be assigned.

After performing the initial check of your Android settings, activate your Corvus license. You can also find license activation in the Corvus Help section under "License." There, select "Online Activation" and then select the type of license you want to activate from the list (depending on the licenses available at the time of Corvus installation and whether you have purchased a license or are interested in a free license). Then follow the instructions in the Activation Wizard. To activate the service, your phone must be connected to the internet and, depending on the type of activation, you may also need to have the appropriate SIM card installed.

After successfully activating your Corvus license, additional features will be unlocked, which may require the assignment of other permissions than those already assigned. Therefore, return to the Corvus Help Center and, in "Android Settings Control," follow the procedure described above to assign the newly displayed permissions until no further permissions can be assigned.

### 2.4.2 Other recommended Android settings

After installing Corvus and performing the initial settings (as described in the previous chapter), we recommend performing additional settings depending on the type of phone. First, consider the settings directly in the Android environment, i.e., outside the Corvus environment. However, we can also access them from the Corvus environment menu by navigating to MENU > SETTINGS > Usefull ANDROID SETTINGS and then tapping on "All settings."

Again, some of the settings listed below may not be available for your device, operating system version, manufacturer's add-ons, etc., or may be labeled differently.

Most phones allow you to enable a feature that lets you hangup a call by pressing the power button. We recommend activating this feature. It can usually be found in the Android settings, under "Accessibility," in the "System settings" section, or in the "Interaction and dexterity" section (on SAMSUNG devices).

On SAMSUNG devices, you can also set up call answering by pressing the volume up button in the same place.

In addition, consider the following settings:

- Display mode – for the visually impaired, it is often advisable to consider dark,
- Eye comfort shield, or blue filter – may be suitable for the visually impaired,
- Brightness – low for the blind, high for the visually impaired,
- Adaptive brightness – disabled,
- Side panels – disabled,
- Touch sensitivity – enabled,
- Screen saver – none,

- Screen lock type – none (suitable for complete beginners; advanced users can of course also use biometrics). When setting up a PIN or password, we recommend a password because, unlike a PIN, the user will be able to enter it using the Corvus keyboard.
- Always On Display and related features – disabled,
- Image rotation – disabled for blind users,
- Side button / Long press – Power off menu
- Keyboard button on navigation panel – enabled
- Simplified control button – disabled
- Side button and volume up button – TalkBack (only available on Samsung devices)
- Volume up and down buttons – Corvus (or nothing, at your discretion)

### 2.4.3 Additional settings in Corvus (for the blind)

In Corvus environment, specifically in MENU > SETTINGS, we recommend that blind users consider the following settings

- DISPLAY > Font size - Extra small
- KEYBOARD > Activate Back and Menu buttons – Enabled

!!! ATTENTION !!! In addition, we strongly advise that if you have been setting up your phone and Corvus in low vision mode (without Corvus Screen reader running), but now a blind user will also be using it, it is necessary to set the item "Automatically activate when leaving Corvus" to "On" in MENU > SETTINGS > SCREEN READER by tapping on it. This option significantly changes the way you control regular Android applications. However, it is essential for the blind!

### 2.4.4 Additional settings in Corvus (for the visually impaired)

In Corvus environment, more specifically in MENU > SETTINGS, we recommend that visually impaired users (those who are not yet solely dependent on voice response) consider the following settings

- ENVIRONMENT > Control by- buttons and gestures (so-called Touch mode, unsuitable for blind users),
- DISPLAY > Font size – Extra large
- KEYBOARD > Activate Back and Menu buttons – Enabled
- whether voice feedback should be enabled or disabled by default, and whether users will enable it themselves when using Corvus only when they really need it, or disable it when it bothers them:
    - SPEECH > Do not use voice output – disabled / enabled (determines the default state)
    - GESTURES > UNIVERSAL GESTURES >Use a gesture for resetting TTS also to disable speech– enabled (enables the option to activate a special menu)
- If necessary, it is also possible to activate Corvus Screen reader, which reads the screen content in third-party applications. However, Corvus Screen reader significantly changes the control of the phone outside the Corvus environment, so it is advisable to turn it on only if the visually impaired user really needs voice access. Otherwise, to make it easier to work with applications outside Corvus, you can also consider using the screen magnification feature, which is usually part of Android itself. If you need to activate the Corvus Screen reader, go to MENU > SETTINGS > SCREEN READER > Automatically activate when leaving Corvus and set it to "On".

### 2.4.5 Uninstalling Corvus

The Corvus application can be uninstalled via the application manager, just like any other application. However, on older versions of the Android operating system, the uninstall button may not be available. In this case, proceed as follows:

- In Corvus environment, activate the item MENU > SETTINGS > USEFULL ANDROID SETTINGS > All default applications.
- Change the default applications for individual activities (phone app, SMS app, home app, etc.) to something other than Corvus.
- You can now uninstall Corvus in the usual way.

# 3. Getting started with Corvus environment

## 3.1 Let's get moving

In this chapter, we will introduce you to the Corvus environment for the first time. You will discover how easy it is to navigate its menu, and thanks to the first two gestures, we will view information about the phone's status on the main screen.

We assume that you already know how to hold the phone correctly, where the touch screen is located, and where the other controls are. We also assume that your phone is already turned on and Corvus is properly installed and activated.

If you have no experience with touch screens, you will first need to practice making a light swipe with your finger across the screen. A swipe is a quick touch of the touch screen. Hold the phone in one hand and use your other hand to flick it downwards. Start the swipe in the upper third of the display, but not right at the top edge, and end in the lower third of the display. The gesture needs to have a certain speed; it should not be too slow. If you have done it correctly and your screen is unlocked, Corvus will ring and notify you of some information. Its content is not important yet; what is important is that you managed to get Corvus moving. Try the bottom-up swing in a similar way. Essentially, draw an arc with your fingertip. You start from the air, stroke the display, and lift your finger again. You can alternate swings and train them thoroughly. To be on the safe side, we would like to point out that the swing should be a smooth movement. You should not place your finger on the screen, move it after a moment, and then lift it again after another moment. In such cases, the smartphone may not always respond. Please note that when operating your phone, it does not matter where you touch the screen. The gestures you make on the screen are important.

The down swipe is essentially the same as pressing the down arrow on a classic physical keyboard. Swiping up is the same as pressing the up arrow. Each swipe moves you up one item in the list.

So let's take a look at the list on the Corvus main screen. The first item on the list is called Menu, or Corvus announces the entry into the menu. You can reliably access it by pressing the HOME button. Since this item is at the top of the list, you can view the other items by scrolling down. On the main screen, you will find the battery status, signal strength, and at the bottom of the list, today's date and time. You will find out at the end of the list that Corvus beeps when swinging, in addition to repeating the last item. You can return to the list by swiping up. Also note that Corvus does not only announce individual items, but always tells you at the end which item out of how many you are currently on. You can tell that you are at the top of the list, apart from the repetition of the item when swinging, by the characteristic beep. Visually impaired users can identify the beginning and end of the list thanks to a line-shaped indent that appears on the item in the direction in which it is no longer possible to continue.

So, we have learned the first two gestures we need to control Corvus. The down and up swipes are essentially the same as the down and up arrows on a classic keyboard. We activated Corvus and immediately checked the information about the status of our phone.

## 3.2 In and out

Here we will familiarize you more deeply with the Corvus environment. You will learn how to access the menu, how to view its items, and how to return. This will familiarize you with the list of applications that our Corvus integrates.

We assume that you are already familiar with your phone and know how to use the swipe up and swipe down gestures.

Before we begin, make sure you are on the first item of the main screen, which Corvus announces as the menu entry. Now we will show you how to activate this item. In other words, how to enter this item.  You are now on the menu item, which you can access by tapping on it. This refers to a gesture in which you tap the screen of your phone twice in quick succession with your fingertip. Again, it does not matter where on the screen. It is important that you do this quickly enough. If you tapped correctly, Corvus will respond again and announce the name of the menu window and the first item in the list of that window, which is the phone. This means that you have successfully entered the offer. Sometimes we refer to this as diving one level deeper. You can view items in the menu list in the same way as items in the list on the main screen by swiping down and back up. In this list, you will also find, for example, an application item where you can see everything Corvus has to offer. Tap to enter the item. This will make you dive deeper again.  When you successfully enter an item in Applications, Corvus will announce that you have entered the application window and are on the first item (for example, Notepad) in the list of items. Of course, by the time you read this text, there may be many more items, as Corvus is developing rapidly. You can view the items in the list by swiping down and back up. We also refer to these features as Corvus applications. When you want to go back up a level, you do so with the second gesture we want to teach you. Do not worry, it is very simple. To move up a level, make one swing to the left. Once again, lightly touch the display with your finger, slide it from right to left, and immediately lift it up. In Corvus, you will return to the menu window and stand on the application item. If you want to go up a level higher in the lists, swipe left again. Note that to go back up a level, you can stand on any item in the list, not just the top one. If you stand on the menu item on the main screen and try to swipe left again, you will not be able to advance to the next level, which Corvus will indicate with a sound.

So we learned how to enter individual items in lists, we reviewed how to view lists, and finally we learned how to return to the previous screen. We used the tap gesture, i.e., tapping twice with one finger anywhere on the screen to enter the menu. We can compare it to the Enter key on a keyboard. At the same time, we also learned how to go back one level with a simple left-hand gesture.

## 3.3 First call from contacts and call log

You can use your smartphone for many things, but you definitely use it for making calls. From the home screen, tap the first item, Corvus Menu, to access the list, which begins with the phone item. Corvus will say "Menu item phone 1 of 9." Swipe down to get to the contacts item, Corvus will say contacts 2 of 9. Tap to access the list of phone contacts stored on your smartphone. By swiping down or up, you can move through your contacts, just like on the home screen or any other list of items. Corvus will read out the individual names and their order in the list. Contacts are listed alphabetically. You will learn how to search by entering the name you are looking for in the next section. For now, you must search for the contact by scrolling through the list. Let's say you are looking for Barbara, for example. So you scroll down until you find it in the list. But what if you want to call Zuzana? The

contact list is long, and scrolling through it would make your hand hurt. For example, you could type the name Zuzana into the search box, if you knew it, of course, but Zuzana starts with a z and will therefore definitely be somewhere at the end of the list. You can find it even faster by learning an additional gesture that jumps to the last item in the list. The gesture is a downward swing with two fingers. What you used to do with one finger when moving down one item can now be done with two fingers simultaneously. Swing from top to bottom.  Well, you've probably already figured out that if you need to call Anka at the top of the list instead of Zuzana, you do the same gesture in reverse, i.e., swipe two fingers simultaneously from bottom to top. Such two-finger gestures, where you swing both fingers in a certain direction, are also referred to as a double swing. One good tip: if you can't get the gesture to work and you're not scrolling through the list, try moving your fingers further apart. Users often stick them together, but the phone then treats them as one very thick finger. Well, now you can finally make your call. One more thing to note: before you start making calls, remember that you have not learned how to hang up yet, so ask the person you are talking to to hang up for you.

So, you select Betka from your contact list, for example, and make the call by tapping on the Betka item again. The call will then start dialing immediately.

The Call Log works in a similar way, recording all incoming, outgoing, and missed calls. Tap the menu item on the home screen, then swipe down to find the Register item. There are 4 items in the Register list where you can find information about your calls. The first item contains information about dialed numbers, the second item contains missed calls, the third item contains received calls, and the fourth item contains other calls. Some types of phones store rejected calls, for example, under the "Other" item.  Let's go back to the item called calls. When you tap on it, you see the last call you made to Betka a moment ago. Corvus announced not only the name of the person called, but also the date and time when the call took place. By scrolling through this list, you can view the numbers you have called and make a call directly from this list by tapping on it. The lists of missed, received, and other calls work in the same way. Finally, we will show you what happens if someone calls you and you do not answer the call. This is a so-called missed or unanswered call. It would, of course, be impractical to always check the missed calls log to see if you have any new messages. Corvus remembers this and displays this information on the home screen before the menu item in the event of a missed call. This is so that you never overlook information about a missed call. Essentially, a new item called Missed Calls will be created above the Menu item, showing the number of missed calls that you have not yet viewed in the log. This information will be displayed on the home screen until there is an entry in the missed calls log that you have not yet seen. To see who called you, tap Missed Calls. You will find yourself in the missed calls register, where you can view who called you in the list or tap to dial them directly. One more thing to note. Sometimes, information about missed calls may appear on your home screen. You enter it, view your recent missed calls, and return to the main screen. Once you have viewed all new items, the missed call information will disappear from the home screen. But if it is still there, trust that you missed a missed call. And you need to scroll down the list.

We have just put what we have learned so far to good use. Thanks to gestures for navigating lists and gestures for entering and returning to items, we were able to find our way around not only our contacts but also our call log. We made the call by tapping on the contact's name. To quickly move to the end and beginning of the list, we learned to use additional two-finger gestures, namely double swipes, i.e., double swipe down and double swipe up.

## 3.4 Answering, calling, and ending a call

In this chapter, you will learn about the screen that displays an incoming call. You will then learn how to answer, end, or reject a call. We assume that you are already familiar with your phone and know how to use the basic gestures in Corvus.

In previous tutorials, we talked about dialing a phone number. But what should you do if someone calls you? When a call comes in, a short list appears on the smartphone screen containing two items: the caller's name and information about the caller's phone number. If the caller's name is not saved in your contacts, only the caller's phone number will be displayed. You navigate this list in the same way as other lists, i.e., by swiping down and back up again.

There are several ways to accept, cancel, and reject a call. The most efficient way to answer calls is to use the volume buttons. If you press any volume button on the phone twice in quick succession while the phone is ringing, you will answer the call. If you press either volume button once, the call will not be answered, only the ringtone will be muted and you can still answer it or let it ring. This method requires Corvus to be the default calling application and works on Android 6 and above.

Some phones (such as those from SAMSUNG) allow you to answer a call by pressing and holding the volume up button. However, this feature must first be enabled in the Android settings (usually found in the "Accessibility" settings, under "Interaction and Dexterity").

We can end the call by pressing the Power button, but this must be enabled in the settings. On SAMSUNG phones, for example, this can be found in the "Easy access" section, under "Interaction and dexterity." For other manufacturers, it may be found in the "System control" section or other parts of the Android settings. You may need to look around a bit when setting up your phone, or use the search function in Android settings.

Another way to handle calls is to accept or reject them with gestures. This method of handling calls must be enabled in Corvus Settings. You can reject an incoming call with a two-finger gesture, namely a double swipe to the left. This gesture is performed in the same way as a left swipe, except that you swipe with two fingers at the same time on the screen. This is how you reject a call. To accept an incoming call, use a two-finger gesture, known as a double swipe to the right. This gesture is performed in the same way as a right swipe, except that you swipe with two fingers at the same time.

Two-finger gestures must be performed with sufficient spacing between the two fingers so that the phone does not consider them to be one large finger. When you receive an incoming call, you will see a multi-item list on the screen, which you can view just like any other list, i.e. by swiping down and back up. You can see that the first item on the list is information about who is calling you and how long the call has been going on. The second item on the list controls the speaker. Tap this item to activate speakerphone during a call. Tap the same item again to deactivate the speakerphone.

The next item on the list is used to deactivate the microphone, and the next one to activate Bluetooth.

Then there is the disconnect item, which ends the call in the same way as pressing the POWER button. To activate this item and thus cancel the call, double-tap the item with one finger.

The ongoing call screen also features a tone dialing option, which you can use to control automatic switchboards, for example when calling your operator.

Another important note: smartphones often track their position relative to the caller's ear. In order for them to respond to your gestures, it is necessary to move the phone away from your ear and ideally place it in a horizontal position with the screen facing upwards or towards you.

One more practical tip at the end. When the phone rings, Corvus informs you of the phone number and name of the caller. To focus on Corvus' voice, you can mute the phone's ringtone by briefly pressing the POWER button as described above.

So, we have just learned how to answer and reject an incoming call and how to end a call that is currently in progress. All this can be done either using the volume buttons or the HOME and POWER buttons, or by swiping left twice to reject a call and swiping right twice to accept a call. We also showed you how to mute the ringtone so that you can hear the caller's name and number in peace.

## 3.5 Calling by dialing a number from the keypad

Now, for the first time, you will become familiar with the editable field, which you will write in using the unique Corvus keypad. For now, this will be a numeric editing field and numeric keypad in the Phone module. We believe that after completing this part of the tutorial, you will be able to enter numbers in any numeric edit field, but more importantly, you will be able to make your first phone call when you do not have the number saved in your contacts and need to enter it manually.

You are on the Corvus home screen, where you tap Menu and dive into the list with the first item being Phone. Then tap Phone again. The Dial editing field will open, containing a line for entering numbers and a keypad with buttons below it. To work in this editing field, you need to learn to distinguish between gestures that you use on the keypad and gestures that you can only use in the recording field above the keypad. When the keypad is displayed on the screen, it occupies approximately 2/3 of the bottom of the screen. This means that the space for finding numbers on the keypad is large enough for easy handling.

The keypad consists of twelve fields arranged in four rows, with three fields in each row. It therefore has a number pad like a standard push-button phone, i.e. a 3x4 keypad. The numbers are arranged as follows: 1, 2, 3 in the first row, 4, 5, 6 in the second row, 7, 8, 9 in the third row, and * or +, 0, and a grid in the last row.

The part of the screen where the keypad is located can be viewed by touch. You slide your finger across the display and Corvus reads the digits under your finger. When you find the number you need to enter, lift your finger and the number will be entered into the editing field. Corvus will announce this with an audible signal and read out the number that has been recorded again. By swiping and lifting your finger, you can write down the entire phone number you need to dial from the digits. You do not have to worry about your finger slipping off the keypad, it will not be a problem. If you happen to succeed, Corvus will inform you that you are outside the keypad. You are then in the writable field area.

If you accidentally make a mistake and enter a different number than you need, do not worry. Deleting is very simple. Just tap the keypad area once with two fingers at the same time. This gesture deletes the digit to the left of the cursor. If you repeat the gesture, you can gradually delete the entire number you have entered. Corvus always reads the number it deletes, along with the information that it has been deleted. This gives you complete control over deleting.

If you need to check what you have written, move your finger to the area above the keypad, where Corvus will notify you that you are outside the keypad. You can then move the cursor gradually to the left towards the first digit entered, and to the right to return to the end of the number being entered. However, there is another way to easily read the contents of the entire window.

You will learn a new gesture to activate this feature. This gesture involves a combination of pressing the volume button and swiping. The volume buttons are usually pressed with the finger of the hand holding the smartphone, while the swipe is performed with the finger of the other hand. So press the volume down button, i.e. 2-SHIFT, hold it down, tap the screen with one finger, and then release the volume button. Corvus announces the dial pad, number buttons, and the number entered. Tap the screen with one finger in the editing field area, i.e., outside the keypad, to activate the number and start calling.

We learned how to enter a phone number into an edit field and became familiar with the numeric keypad. With a simple two-finger tap, we deleted the incorrect digit, and with a gesture of pressing the volume down button and tapping at the same time, we had the contents of the current window with the entered number read aloud. Finally, by tapping outside the keypad area, we dialed the phone number.

## 3.6 Using the alphanumeric keypad of the "Standard buttons" type and searching for a contact

Now you have the opportunity to familiarize yourself with the basic functioning of one of the many alphanumeric keypads that Corvus offers its users. This is a keypad called "Standard Keys," which is based on the concept of 3x4 keypads. You can use the keypad to search for contacts, which will save you a lot of time when making calls.

Tap to enter the first item, Menu. In the following list, swipe down to find contacts and tap on them to enter. As soon as you enter your contacts, Corvus will notify you that it is the first item in the total number of contacts. You want to search for Martin and the letter M is somewhere in the middle of the alphabet, it is clear that you will not succeed with classic skipping. So you need to start searching.  However, this is very simple. All you need to do is activate the keypad by pressing and holding the volume up button, which we refer to as 1-SHIFT, while simultaneously swiping down with your other hand. Then release the 1-SHIFT button. The volume buttons are usually pressed with the finger of the hand holding the smartphone, and the swipe is performed with the finger of the other hand.

Corvus will tell you: "search, edit field, one capital letter, buttons." This means that you have switched to the search edit window and at the same time the alphanumeric keypad has been activated, which will enter text with the first letter capitalized. The word buttons defines the type of keypad, because in Corvus we know several types of typing. However, buttons are among the most widely used and therefore we will demonstrate typing on them.

Enter the text you want to search for in the search field. You are searching for your friend Martin, so you need to write the word Martin. As with the numeric keypad, the screen is now divided into two parts. The keypad itself is located in the lower two-thirds of the device, with space for typing above it. The keypad is divided into 12 keys in three columns and four rows. As we mentioned in the introduction, this is a so-called 3x4 keypad, and those of you who still remember the old push-button Nokias will certainly be very pleased, because you are already familiar with it.

Several characters are assigned to each button, and it is advisable to learn them well. The layout of characters and letters on the keypad is described in detail in the complete user manual. Each field contains three or more characters. For the introductory work, we will only explain the characters in the first three to four positions on each button; you can find the rest in the user manual.

The first row on button 1, i.e. the first from the left, contains the characters for a period, comma, question mark, and exclamation mark. The second button contains the letters of the basic alphabet in the order a, b, c. The third button has the letters d, e, and f on it. In the second row, we have three more buttons, which we label 4, 5, and 6. The fourth button has the letters g, h, and i on it. On the fifth button j, k, l and on the sixth button m, n, o. The third row on the seventh button contains the letters p, q, r, s. The eighth button contains the letters t, u, v. On the ninth button w, x, y, z. In the fourth row, on the tenth key, there is an asterisk, plus, minus, and slash. The eleventh button is space, zero, and line feed. The twelfth button contains the symbols for cross, quotation marks, dollar sign, and percent sign.

Typing letters in the first positions is similar to typing on a numeric keypad. You swipe your finger over the keys on the keypad and Corvus reads you the first letter of each key. When you lift your finger from the keypad, the letter is entered into the editing field, Corvus beeps and repeats the letter being typed.

So you are going to write the word Martin. You know that the letter M is located on the 6th key, so you place your finger on the keypad where you expect this key to be. By scanning the display with Corvus, which reads what you have under your finger, you will definitely find the key, even if you do not hit it right away when you place your finger on it. Corvus only records characters when you lift your finger from the keypad. So do not be afraid to take a look at the keypad. When Corvus reads the letter M, lift your finger from the screen. Corvus will confirm that the letter has been recorded by reading it back and beeping. Then you search for the letter A, which you know is the first letter on the second key. If you happen to step outside the keypad, Corvus will notify you and you can easily return to the keypad field.

After typing the letter A, you want to type the letter R, which you know is on the seventh key, but third in order. At the same time, we know that the first letter on the 7th button is p, which you can find in the same way as the letters M and A. However, once you find it, do not lift your finger, but instead tap anywhere on the display with another finger until Corvus informs you that it is ready to write the desired R. Since R is the third letter on the 7th key, you only need to tap twice with your other finger. When Corvus announces the letter R, lift both fingers from the keypad to type the letter. T is easy because it is again the first on the 8th button. You can find the 8 button with one finger, and when you release your finger, the letter T will be entered. For the letter I, which is third in order on the fourth key, and likewise for the letter N, which is second on the sixth key, you will again use the accents. First, find the relevant buttons, leave one finger on the button you have found, and tap with the other finger until you hear the desired letter.

If you happen to make a mistake here, just like with the numeric keypad, you can delete the incorrect character by tapping anywhere on the keypad with both fingers at the same time. To read the entire text you have recorded, use the same gesture as for the numeric keypad: press and hold the volume down button 2-SHIFT, tap with one finger, and release the button. To confirm the text you have entered, you must double-click in the edit field, i.e. outside the keypad.

A list of contacts will then be displayed, filtered to show all contacts named Martin. If you have multiple Martins saved in your contacts, swipe to find the one you want to call. Of course, you didn't have to enter the whole name, it was enough to enter, for example, just the letter M, or part of the

name Mart, but in that case, your smartphone would search for all names in which the letter M or part of the word Mart occurs. So it would also find Marta. But let's get back to Martin. To make a call, just tap on Martin. And you call.

One more tip to conclude: most users are familiar with the layout of characters on individual keys from old push-button phones. Therefore, Corvus reads only the first character on the key in its default state. However, if you have trouble remembering the symbols on the buttons, do not worry. Simply enable extended response when mistyping on the keypad in the Corvus settings section dedicated to keypad settings. Corvus will then read out all the characters on each button.

We learned how to type on an alphanumeric keypad, we learned the new 1-SHIFT swipe down gesture to bring up the keypad, and we reviewed the gestures for deleting text and reading screen content. Thanks to this, we were able to find our friend Martin in our contacts and call him.

If this keypad does not suit you, it can be replaced with another one by selecting from the options offered in MENU > SETTINGS > KEYPAD, under "Keypad for alphanumeric input".

## 3.7 Using the alphanumeric QWERTY keypad and searching for a contact

As an alternative to 3x4 keypads, Corvus also offers its own QWERTY keypad. You can set it up according to the description at the end of the previous chapter. Unlike a 3x4 keypad, a QWERTY keypad requires more precise finger positioning when searching for a specific character, but for many users who no longer remember typing on old push-button cell phones, this keypad may be more acceptable.

We will demonstrate the use of the QWERTY keypad using exactly the same example as the use of the 3x4 keypad in the previous chapter, only we will change the name of the contact we are searching for.

So, if you have set up a QWERTY keypad for alphanumeric input, we will start in the same way as in the previous case. Tap to enter the first item, Menu. In the following list, swipe down to find Contacts and tap on it to enter. As soon as you enter your contacts, Corvus will notify you that it is the first item in the total number of contacts. Since you want to search for Máša and the letter M is somewhere in the middle of the alphabet, you activate the keypad so that you can search for the contact by typing it. To activate the keypad, press and hold the volume up button, which we refer to as 1-SHIFT, while simultaneously swiping down with your other hand. Then release the 1-SHIFT button.

Corvus will tell you: "search, edit field, one capital letter, QWERTY keypad." This means that you have switched to the search edit window and at the same time the alphanumeric keypad has been activated, which will enter text with the first letter capitalized. The words "QWERTY keypad" define the type of keypad, because in Corvus we know several types of typing.

Enter the text you want to search for in the search field. You are searching for your friend Máša, so you need to write the word Máša. As with previous keypads, the screen is now divided into two parts. However, the bottom part is now slightly smaller. It takes up less than half the height (but this height is adjustable) and houses the keypad itself. There is space for writing above it. The keypad has a basic layout of 44 keys in five rows, with the layout of the keys on the screen resembling that of a computer keypad.

The top row has ten buttons and is numeric (containing the digits 1 to 9 from left to right and the digit 0 on the right). The next line contains 10 characters (we deliberately do not specify the letters or

characters, as they depend on the language). The third row has 9 keys and is slightly offset from the first two (as on a physical keypad). The fourth row (also with nine keys) begins with the SHIFT key, continues with seven characters (depending on the language), and ends with the BACK SPACE key. There are six buttons in the fifth row, but they are spread across the entire keypad. The first SYMBOL button allows you to switch the keypad to special character (symbol) mode, followed by two buttons with frequently used characters or symbols, an extended space bar, another button with a character, and finally, at the bottom right, a formatting button. Buttons containing letters that have variants with diacritics (e.g., the letter A can have a variant with a long mark, the letter S can have a variant with a soft mark, etc.) are assigned several characters (i.e., not only the basic letter in the first position, but also all its variants with diacritics in the other positions).

Typing letters in the first positions is similar to typing on a numeric keypad. You run your finger over the keys on the keypad, and Corvus starts reading the first letter of each key as your finger passes over it. When you lift your finger from the keypad, the letter is entered into the editing field, Corvus beeps and repeats the letter being typed. However, it is necessary to maintain a certain viewing speed so that Corvus does not start reading the next letters on the button you are passing over.

So you are going to write the word Máša. From using a physical keypad, you probably know that the letter M is located on the 4th row of the keypad, on the right-hand side. Place your finger on the keypad where you expect this key to be located. By scanning the display with Corvus, which reads what you have under your finger, you will definitely find the key, even if you do not hit it right away when you place your finger on it. Corvus only records characters when you lift your finger from the keypad. So do not be afraid to take a look at the keypad. When Corvus reads the letter M, lift your finger from the screen. Corvus will confirm that the letter has been recorded by reading it back and beeping. If you happen to step outside the keypad, Corvus will notify you and you can easily return to the keypad field.

Then look for the letter á (i.e., a with acute accent). You assume that it will be on the button along with the lowercase letter a. So, in the third row on the far left. Place your finger on the presumed location and use small movements to find the exact position of the button with the letter a. However, since you do not want to type a short a, but a long one, leave your finger on the button without moving it and wait until Corvus reads the desired character – i.e., a long á. Then lift your finger and Corvus will write down and repeat the letter. If you do not manage to lift your finger and Corvus starts reading the next characters in sequence, just leave your finger where it is. Corvus will repeat all characters assigned to the button cyclically until you lift your finger. So it will return to the long á.

You write the letter "š" in a similar way. Place your finger on the keypad, find the letter s, then wait a moment with your finger resting above the letter "s" key until Corvus reads the letter "sš, then lift your finger. Finally, just like the letter M, write the letter "a".

If you happen to make a mistake, just like with a numeric keypad, you can delete the incorrect character by briefly tapping anywhere on the keypad with both fingers at the same time. You can also use the BACKSPACE key on your keypad, which is used in the same way as when you want to enter a character. It is read when you place your finger on it and activated when you lift your finger from the screen. Use the SHIFT key to switch between typing letters in uppercase or, by pressing it repeatedly, in all uppercase. The SYMBOL button is used to switch the keypad to special character (symbol) input mode. In this mode, SHIFT is used to switch between multiple keypad layers (each layer contains its own set of special characters/symbols). To read the entire text you have recorded, use the same gesture as for the numeric keypad: press and hold the volume down button 2-SHIFT + TAP with one

finger and release the button. To confirm the text you have entered, you must double-click in the edit field, i.e. outside the keypad.

Then continue as in the previous chapter. You will see a list of Contacts with all contacts named Máša filtered out. If you have multiple contacts with the name Máša saved, you can swipe to find the one you want to call. To make a call, simply tap on the specific contact and you're ready to go.

Two more types to conclude. If you move your finger too slowly across the QWERTY keypad, Corvus may start reading the next character on one of the keys. However, in the default settings of this keypad, it is not possible to change characters by switching to another key when reading the next character assigned to the key. Until you lift your finger, only the characters assigned to the button where you paused will rotate. However, this can be changed in the QWERTY keypad settings, allowing you to configure the keypad so that the character changes when you switch to another key, even if the assignment of characters to keys has already started. You can also enable a mode in which the QWERTY keypad will behave similarly to the keypad described in the previous chapter when selecting additional characters assigned to a key. This means that you do not select additional characters assigned to the keys by waiting, but by tapping with a second finger.

In this chapter, we tried typing on an alphanumeric QWERTY keypad, reviewed the 1-SHIFT + SWIPE DOWN gesture to bring up the keypad, and reviewed the gestures for deleting text and reading the screen content. Thanks to this, we managed to find our friend Máša in our contacts and call her.

For more information on how other keypads work, including highly efficient typing and smartphone control using a Braille keypad, as well as other useful Corvus features that can make typing and editing text much easier, please refer to the complete user manual.

## 3.8 Creating a new contact using the context menu

Now we will explain how you can save a contact and also explain the use of the context menu, especially in contacts.

First, we will show you how to create a contact in the contact list. On the home screen, tap Menu, then swipe to Contacts and tap to enter.  Corvus reads you the first name from the contact list. We use a so-called context menu to create a new contact. Those of you who work with computers commonly use context menus, for example when working with files. You activate them with a key that is usually located to the right of the space bar, or if you can see your computer, you probably also use the right mouse button. The items in the context menu adapt depending on the situation and relate either to working with the list item you are currently on or to the entire list you are in. It includes functions for deleting, editing, marking, copying, searching, and creating new items in the list. Therefore, even now, when you want to create a new item in the list, i.e., when you want to add a new contact to the contact list, you first activate the context menu. You can do this by tapping with two fingers at the same time on any item in the list, i.e., on any name. However, if you want to edit a saved contact, for example, you must open the context menu directly on the contact you want to edit. After performing a gesture that we usually refer to as a double tap for simplicity, i.e., tapping with two fingers simultaneously, you will access the context menu list. You can see that after double-tapping, you have accessed the context menu for the contact. You can scroll through the items in it by swiping, just like in other lists. So let's see what the context menu for contacts has to offer. As we said, these are all operations that you perform either on the contact you were on when you invoked the context menu, or operations that affect the entire list. You are currently interested in the New

item because you want to create a new contact. After tapping, the keypad and edit field for entering the first name of the new contact will open automatically. Type in the first name and tap outside the keypad to open the edit field for entering the last name. Type your last name, tap outside the keypad, and a numeric keypad and edit field for entering numbers will open. After entering the number and tapping outside the keypad, the contact is automatically saved to your contacts list. You have successfully created a contact. After saving a new contact, Corvus set itself to the first name in the contact list. And when you need it, you can easily find your friend's contact details in your contact list. Thanks to the context menu, you can edit contacts, tag them, assign ringtones or speed dial numbers, and more.

We have shown how to save a contact by creating a new contact in the contact list. We have learned how to bring up a context menu that allows us to work with contacts.

## 3.9 Creating a new contact from the register and from the dial pad

We will explain how to save a contact from the call log and from the dial pad. We will also show you a few interesting features of the context menu. We assume that you already have a good command of the basic gestures. Be sure to check out the chapters on the numeric and alphanumeric keypads before this section, and especially the section on creating and saving a new contact in the contacts module.

Let's imagine a situation where we just finished a call with a friend who called us from a new cell phone with a new phone number that we do not have saved yet. We would like to save this phone number. From the Corvus home screen, I tap Menu and scroll to Register, where I tap. In the registry list, Corvus informs me that the Registry window has four items, which we can scroll through. These are Dialed Numbers, Missed Calls, Received Calls, and Other Calls. I tap on the Received Calls item, where Corvus reads me who last called me, when, and what the order of the item is in the list. When a friend whose number we do not have saved called me last time, Corvus read out his phone number. Corvus reads the names of saved contacts. I save the number to my contact list by calling up the context menu for this number with a two-finger tap gesture – i.e., a double tap.

I swipe to the item – Add to contacts. After tapping, the keypad and edit field for entering the first name of the new contact will open automatically. I type in the first name and tap outside the keypad to open the edit field for entering the last name. I type in the last name, tap outside the keypad, and a numeric keypad opens with the phone number already filled in, so all I have to do is confirm it by tapping outside the keypad. After saving the phone number in my contacts, Corvus in the Registry will read me the contact's name instead of the phone number. Similarly, we can of course work with all phone numbers in other registers of called, missed, and other calls.

We can also save a phone number by dialing it into the editing field for dialing. I navigate to the Phone item, enter the phone number, and then double-tap outside the keypad to bring up the context menu. A context menu will open, from which I select Add to Contacts and then proceed as described above.

We have just shown how to save a contact from the registry or from the dial pad.

## 3.10 Let's write our first text message

Let's take a closer look at the message module, especially the new message section. We will show you how to write a message, specify the recipients of the message, and send the message.

You are on the Corvus home screen. Tap on the Menu item to open the list and scroll to the Messages item. Tapping on the message item opens a list of four items that we use to manage text messages on our mobile phones. You are switching between items. First item – new message, allows you to write a new message. The "Received" item takes you to a list of messages that have been sent to you. The third item, Sent, contains messages that you have sent from your mobile phone. The last item, undeliverable, contains messages that could not be delivered, e.g., due to a signal failure.

Tapping on New Message opens a menu with four options, which we will look at first. We will explain the meaning of each item on this list step by step. It is important to note that in order to send a message, you need to enter information in several items on this list. Only at the end will you use the last item, Send, to actually send the message. Let's start with the first item on the list, which is Edit Text. After tapping, an editing field opens with the message title, a text entry line, and an alphanumeric keypad. Write the text of the message in the editing field. Typing on an alphanumeric keypad is explained in the section dedicated to this topic. You have already written the text of the message, and by tapping at the top of the screen, i.e. outside the keypad, you will insert it into the message and return to the list of four items that make up the new message. Swipe down to move to the next item, Edit recipients.

Tapping this item opens an edit field with a numeric keypad where you can enter the recipient's number. You can use the Edit Recipients option if you want to send a message to a number that is not saved in your contacts. In this edit field, as well as in the edit field with a recorded message, you can press the 2-SHIFT volume down button and simultaneously tap to have the contents of the displayed window read aloud, including the recorded text or number. Enter the recipient's number in the message by tapping outside the keypad, then return to the list of four items in the new message and send the message. Since you have successfully entered the text and recipient number in the message, we will skip the third item in the list for now and go straight to the send item. Tap this item to send the message.

You can create a new message again by tapping New Message. Enter the text of the new message into the first item in the list, as we showed you a moment ago. After entering the text, you will now try to insert the recipient's number, which you have saved in your contacts, into the message. Therefore, we will skip the second item in the new message list for now and double-click to enter the third item in the Add Recipients (list) list. By tapping on this item, you will be taken to your contact list, where you can scroll through the list and confirm the name you want to send the message to by tapping on it. Alternatively, you can search for a contact by opening the keypad and typing in the name. This functionality is described in more detail in another part of the tutorial. Find the contact you are looking for, for example Janko Mrkvička, and add it to the message by tapping on it. You are back in the list of four items in the new report. Resend the message by clicking on the last item in the list, Send.

After sending the message, you will be on the New Message screen. To check whether the message was sent successfully, you can swipe down to the Sent item, where messages sent from your phone are stored. Tapping this item opens a list of sent messages, with the most recent sent message appearing first in the list. If you cannot find your recently sent message there, you can check whether

it has been moved to the Undeliverable folder, where all messages that could not be sent, for example due to signal loss, are stored.

In this tutorial, we have successfully written and sent our first message. We actually wrote two messages, sending one to a manually entered phone number and the other to a recipient already saved in our contacts. To this end, we showed ourselves a four-item list of the new message and learned how to fill in its items step by step so that we could finally send the message by tapping on the last item in the list.

## 3.11 Let's read our first text message

Now we will focus on reading the messages. Reading messages is relatively simple, and we will also show you a few tricks you can use when reading messages or other texts. We assume that you already have a good command of the basic gestures.

Corvus will notify you of new messages with an audio signal, which you can customize in the settings. Information about the delivery of a new SMS message will be displayed on the Corvus main screen above the menu item. This is so that you never overlook a new message. Essentially, a new item called New Messages will be created above the Messages item, showing the number of received, unread messages. This information will be displayed on the home screen until you have unread messages in your inbox. If you want to read the message you just received, tap this item to open it. This will take you directly to your inbox. Of course, you can also get here at any time by tapping on the menu item, then swiping and tapping on the messages item, and finally swiping and tapping on the received item. If you have the sender of the message saved in your contacts, Corvus will tell you their name; if not, it will tell you their phone number and the position of the received SMS message in the list. In addition, if you have not yet read the message, Corvus will also notify you that it is unread. By tapping on an unread message, or even a read message, the SMS will open in a new window and Corvus will read it to you in its entirety. We call this window a non-editable field because it is not possible to edit the text in it. The keypad is not displayed in this editing field, whose purpose is only to display the text and enable comfortable reading. Even though Corvus read the entire text message to you after entering the message, sometimes we need to examine the text of the message more thoroughly, for example by reading it word by word or character by character. First, however, it is important to know that when working with text, the place where you are currently writing or reading is marked by a vertical flashing line – the cursor. The letter is entered to the left of the cursor. When reading text, the cursor can move across characters, words, lines, and so on, depending on the type of gesture you use.

Gestures when writing and reading are therefore linked to the position of the cursor in the text. Now we will go over some gestures you will need when reading a text message or other text.

You are in Messages and have opened one of your received messages. The cursor is at the beginning. This means that all text is placed to the right of the cursor. After all, we all read from left to right. Therefore, if you want to move one character further, you make a swipe gesture to the right, which moves the cursor one character to the right. Corvus reads the next character, which is now the first character to the right of the cursor. It is similar to using a counter on a classic computer. Let's go through a few characters of the received message. By swinging to the right, you gradually work your way to the end of the course. A left swing moves the cursor one character to the left, i.e., backward in the text. This time, Corvus will read the character you just skipped.  This is also the same as on a computer. If you are at the beginning of the text, Corvus will announce the beginning. Similarly, when

you reach the end of the text, Corvus will announce its end. By simply swiping right and left, you can move around the characters. Moving around using landmarks is too time-consuming and is only suitable in specific situations. You will definitely use line movement much more often. Swiping down moves the cursor one line down. Corvus will read the entire text written in the line where you have just placed the cursor. Swiping up moves the cursor one line up. The double-tap-right gesture works on a similar principle, i.e., tapping with two fingers at once to the right moves the cursor one word to the right. And you probably already suspect that a double stroke to the left will cause you to read the text backwards, word by word, towards the beginning. Remember the additional gestures of double-swing down and double-swing up. Thanks to them, you moved very quickly to the end of the lists and back to the beginning. It works the same way here. Double-clicking down moves the cursor to the end of the text, and double-clicking up returns you to the beginning. With the help of these gestures, you can read an SMS message by characters, words, or lines, and quickly jump to the beginning or end of the message. If you hold down the volume up button, i.e. 1-SHIFT, and simultaneously swipe right with one finger, you will start continuous reading, which will continue until the entire message is read or until you touch the display again. Smooth reading naturally starts from the position of the cursor and moves towards the end of the text. It is also good to know that the display does not automatically turn off during continuous reading, but you can do so by pressing the power button. Smooth reading will continue even after the screen is locked, saving battery life. Close the message by double-clicking.

Finally, note that as you scroll down the message list, Corvus will read the messages to you without you having to open them. So be careful when reading love messages. However, it is practical because it saves your fingers. If you need to quickly silence Corvus, press and release the volume down button, i.e. 2-SHIFT, and Corvus will fall silent. When reading messages in this way, however, you can no longer move around between characters or words.

Finally, here is one more good tip. Keep in mind that the larger the font, the less will fit on a single line. While visually impaired users will probably try to set the font size to the largest possible, blind users may consider using the smallest font size to make moving between lines as efficient as possible. You can adjust the font size in the Corvus settings.

We must admit that we consider the way Corvus works with text to be one of its greatest strengths compared to other programs.

We showed you how to read messages and tried out the smooth reading feature. To view the text of the message in detail, we learned simple gestures for moving through the text by characters, words, and lines. Among other things, we have added a new gesture: 1-SHIFT swipe right to start smooth reading and a short press of 2-SHIFT to silence Corvus.

## 3.12 Voice dictation

Now we will focus on voice dictation. We will show you how to write a message and enter the recipient of the message by dictating it with your voice. You will also send your first dictated message.

Voice control is becoming a standard feature on phones, and this simplified control is used not only by visually impaired users. Voice dictation works in all editable fields – for example, where you write your text messages, in the field where you dial a number, in the search field, and even in the calculator. It is particularly useful when composing emails, as these usually contain more text, and when you send emails, it means that you are probably connected to the internet, which is a basic

requirement for using this great feature. In addition to the condition of an internet connection, there is another limitation, namely noise from the surrounding environment. For the most accurate speech recognition, it is necessary to keep a few principles in mind – voice dictation works best in a quiet environment – so if you have the radio or TV on, or are on a noisy street, there may be problems with the accuracy of the transcription. When dictating, you must speak clearly, avoid slang, and use correct grammar.

We will explain how you can use the voice dictation feature to write an SMS message and search for the recipient's contact details. This is how you send your first dictated message. But first things first. On the main screen, tap Menu, then scroll to Messages and tap to confirm. You can also confirm a new message by tapping on it and editing the text. You are now in the editable field for entering the text of your new message. The screen also displays a keypad that you can use at any time, but don't pay any attention to it for now. You can activate speech recognition by pressing and holding the volume up button – i.e. 1-SHIFT. When you hear a short beep, which is approximately 3 seconds in the default setting, you can start dictating. Hold down the volume up button throughout the entire dictation. Hold the phone in a natural position in front of you. When you have finished dictating, release the volume up button. Dictation will end automatically if you pause for a long time during dictation. After dictation is complete, the recognized text will be inserted at the cursor position and will also be spoken aloud via voice output. If you want to continue dictating, just press the button again, wait for the beep, and start speaking. To end dictation, release the volume button again. Corvus recognizes frequently used punctuation marks and other symbols, such as periods, commas, question marks, new lines, parentheses, etc. However, if you want to end a sentence with a full stop, you must say it at the end of your dictation. So, for example, if you say "I'll be right there a full stop I'll ring a full stop," Corvus will write down two sentences, both ending with a full stop. The dictated text can be viewed and edited in exactly the same way as text typed on the keypad. So if there is a mistake or typo in your dictation, you can use gestures to move around the text and correct it using the on-screen keypad. Or delete the incorrect word and dictate it again. If you are writing a text message and not, for example, an email or a note, we have one recommendation for you. Corvus tries to write text grammatically correctly, including diacritics. However, it is better to send SMS messages without diacritical marks, as this allows many more characters to fit into a single message. If you pay for each SMS separately, it is better to use the diacritic removal function. By opening the context menu for the message, you can use the item to remove diacritics from the current text and delete all long and soft characters. This feature is also available in other editing fields, but it is most useful in SMS messages.

When you have dictated the text of the message, tap outside the keypad to return to the list of new message items. Swipe to move to Add recipients (list) and tap it. A list of all saved contacts will be displayed. To use voice dictation in this list, you must first bring up the edit field with the keypad to search your contacts. You can do this with the 1-SHIFT down gesture. After displaying the search edit field, start the dictation function by holding down the volume up button, i.e., 1-SHIFT. Hold again and, after the beep, dictate the name of the person you are looking for. Then release 1-SHIFT and confirm the name you entered by tapping outside the keypad. Select the message recipient from the list and tap to insert them into the text message. Then all you have to do is send the message. Go to the last item in the list and confirm by double-clicking. Done. The first dictated message is out.

We can also mention that dictation works similarly in the editing field of the phone module. Tap the menu item on the home screen and then tap the phone item to access the edit field for entering the phone number you want to call. Again, just hold down 1-SHIFT, dictate the phone number after the beep, and release 1-SHIFT. All you need to do is tap outside the keypad and you're on the phone.

Further details on punctuation marks and mathematical symbols used in the calculator can be found in the user manual. Finally, two good tips. First. If you need to dictate a longer text to Corvus, it is best to do so in sections rather than in one long recording. And secondly. The interval during which you wait with the Shift 1 key pressed for the beep signaling the start of voice recognition can be set. You can easily shorten it to just 1 second in the Corvus settings.

We have demonstrated how voice dictation works, which can be used in Corvus's rewritable editing fields. The function is activated by holding down the 1-SHIFT button. Start dictating after the signal sounds and keep the button pressed while dictating. After releasing, dictation ends and the recognized text is written down. Using this function, we wrote the text of the message and searched for the recipient of the SMS. And then all that was left to do was send it. We even spoke on the phone so easily.

## 3.13 Braille keypad (Part 1): Getting started

The principle of writing in Braille is simple. Place your fingers on the smartphone screen as if you were typing on a real typewriter. Corvus recognizes the position of your fingers and writes the letter or symbol. Corvus knows many Braille tables, so even writing email addresses or more advanced symbols is no problem. In addition, using Braille, you can read, delete, and edit text in the editing field.

Corvus allows you to use two keypads simultaneously. For writing shorter texts, you can use, for example, 3x4 keypads (standard keys) or QWERTY keypads. If you decide to write in Braille, simply turn the phone to the correct position. The Braille keypads has two modes. Handwriting mode and desktop mode.

### Handwriting mode

To start using the Braille keypad, you need to activate the hand-held or desktop mode in the settings and specify whether you want to use the Braille keypad as your primary keypad for typing all text or as a secondary keypad for typing only when the phone is turned to the appropriate position:

- From the Corvus environment, open the menu, then Settings, Keypad, and finally Configure Braille Typing.
- Here we enable the Hand-held mode option.
- We will also enable the option Use as secondary keypad when the phone is tilted appropriately.

With this setting, we have ensured that Corvus allows us to use a Braille keypad in the editing fields. All you need to do is hold the phone correctly.

To start writing in Braille, hold the phone as follows: We rotate the screen away from us and wide. The USB port (charging input) will be on the right side. Hold the phone between your thumbs and little fingers on both sides. The bottom edge should rest on your little fingers, and the top edge on your thumbs. Place the remaining 6 fingers on the screen. We recommend testing the layout with the display turned off.

If you want to write in the editing field now, just open the editing field for a new text message, note, or chat message. After picking up the phone in the manner described above, the Braille keypad will start.

### Calibration

When you first start up the Corvus Braille keypad, it needs to find out exactly how your fingers are positioned. Calibration is performed in four steps:

- Place and lift three fingers of your left hand for points 1, 2, and 3: To respond to this call, touch the screen with your index, middle, and ring fingers of your left hand. Place your fingers on the screen simultaneously, as if you were going to write the letter l.
- Place and lift your left finger for point one: Now touch the screen with the finger you will use to write point 1. Usually it is the index finger of the left hand, but you can also use the ring finger.
- Place and lift three fingers of your right hand for points 4, 5, and 6: Touch this prompt with your index, middle, and ring fingers of your right hand on the screen. Place your fingers on the screen simultaneously.
- Place and lift your right finger for point 4: Now touch the screen with the finger you will use to write point 4. Usually it is the index finger of the right hand, but you can also use the ring finger.

Now we can start writing. Under the fingers of the left hand, we have points 1, 2, and 3. Under the fingers of the right hand, points 4, 5, 6. Imagine that your phone screen is Picht's machine.

In addition to touching, you can also swipe at individual points while writing. We swing towards or away from the palm. When swinging to the palm, bend your fingers toward your palm. Perform gestures from the palm by pulling your fingers away from the palm. To begin with, we will need three basic gestures:

- Point 4 towards the palm: space
- Point 4 off the palm: backspace
- Point 5 towards the palm: New line

You do not need to calibrate the keypad every time. Corvus remembers the last setting. Note that Corvus vibrates during calibration. This allows you to adjust the keypad even in noisy environments. Corvus respects the keypad response settings you have configured. When you type numbers and other special symbols, Corvus alerts you to prefixes with special sounds.

## 3.14 Braille keypad (Part 2): Writing on the table and settings

You can use the tabletop writing mode in situations where you have a flat pad on which to place your smartphone. You can also use your knees as a flat surface. If you want to try out desktop mode, you need to enable it in the settings:

- In the Corvus environment, open the menu, settings, keypad
- Open the Configure Braille Writing section.
- Activate the writing mode on the table

Please note that the keypad will only be activated if you have enabled the use of a Braille keypad as a secondary keypad, or if you have set the Braille keypad as your primary keypad.

If we want to use the writing function on a table, we place the phone horizontally on a flat surface. The USB port should be located on the right side. Here, too, the mode is activated automatically in the editing field when the phone is tilted appropriately, if we have set the option to use it as a

secondary keypad. Or automatically, if we use a Braille keypad as the main keypad. Calibration will start when you use it for the first time.

## 3.15 Braille keypad (Part 3): Working with text

When typing on a Braille keypad, both in desktop mode and in hand mode, you can use special gestures. For example, if you flick at the fourth point toward your palm, you will write a space. In the opposite direction, you delete the last character typed. This way, you can swing not only on a single point, but even on entire characters. We perform the swing in two possible directions. When swinging toward the palm, bend your fingers toward the palm. For gestures away from the palm, we pull our fingers away from the palm.

### Moving around in the text

- By Swinging at the first point toward the palm, we move to the previous character
- Conversely, by swinging the first point of the palm, we move to the next character
- By swiping on the second point toward the palm, we move the cursor to the previous word
- By swinging on the second point away from the palm, we move the cursor to the next word
- By swinging on the third point toward the palm, we move the cursor to the previous line
- By swinging on the third point away from the palm, we move the cursor to the next line
- By swinging points 2 and 3 toward the palm, we move the cursor to the previous paragraph
- By swinging points 2 and 3 away from the palm, we move the cursor to the next paragraph
- By swinging points 1 and 3 (letter k) toward the palm, we move the cursor to the beginning of the text
- By swinging points 1 and 3 (letter k) from the palm, we move the cursor to the end of the text

### Deleting

- First, move the cursor to the place from which you want to delete
- By swinging the sixth point toward the palm, we memorize the position and insert a mark
- Then move the cursor to the end of the text to be deleted
- Finally, we swing the sixth point away from the palm, causing the mark to be erased from the cursor

### Copy and paste

- First, move the cursor to the location from which you want to copy
- By swinging the sixth point toward the palm, we memorize the position and insert a mark
- Then move the cursor to the end of the text
- By swinging points 1 and 4 (letters c) into the palm of your hand, you copy the text to the box
- Paste the text from the box by swinging points 1, 2, 3, 6 (letters v) or points 3-6 toward your palm
- The gestures are easy to remember, similar to the shortcuts Ctrl+C, Ctrl+V.

### Other useful gestures

- points 1,5 (letter e) into the palm: Temporarily switches character response; setting remains in effect until you close the keypad

- points 2,6 towards the palm: Temporarily switches the response after words; the setting is valid only until you close the keypad
- points 2,3,4,5 (letter t) towards the palm: Switches between primary and secondary Braille tables, both of which can be selected in the Braille writing configuration

### Reading mode

You can also use a special reading mode to read and edit text. The advantage is that you do not have to swing the points, just touch the screen. Activate reading mode by swiping the letter R toward your palm. The following gestures work in reading mode:

- point 1: previous character
- point 4: next character
- point 2: previous word
- point 5: next word
- point 3: previous line
- point 6: next line
- points 2,3: previous paragraph
- points 5,6: next paragraph
- points 1,3: beginning of text
- points 4,6: end of text

You cannot write in read mode. However, you can use gestures toward and away from the palm, so copying, deleting, space, and backspace all work.

We exit reading mode with the same gesture we used to activate it, i.e., by swinging the letter R toward the palm of our hand.

### Advanced gestures

You can also use other special gestures on the Braille keypad to work with text. They combine some of the most frequently used tasks into a single combination of points. Specifically, gestures are available that allow for quick deletion of text. We perform them by holding the sixth point and simultaneously moving the other points toward or away from the palm. Then we release both points:

- Holding point 6 and swinging point 1 into the palm: Deletes the previous character
- Holding point 6 and swinging point 1 from the palm: Deletes the following character
- Holding point 6 and swinging point 2 into the palm: Deletes the previous word
- Holding point 6 and swinging point 2 from the palm: Delete the following word
- Holding point 6 and swinging point 3 into the palm: Deletes the previous line
- Holding point 6 and swinging point 3 from the palm: Deletes the following line
- Holding point 6 and swinging points 2,3 toward the palm: deletes the previous paragraph
- Holding point 6 and swinging points 2,3 from the palm: deletes the following paragraph
- Holding point 6 and swinging points 1 and 3 (letter k) toward the palm: Deletes text from the cursor to the beginning of the text
- Holding point 6 and swinging points 1 and 3 (letter k) from the palm: Deletes text from the cursor to the end of the text

### Confirming the entered text and leaving the editing field

To confirm the text you have written, you do not need to rotate the phone and confirm by tapping. Confirm the text by swinging points 4 and 6 towards the palm. If you swing points 4 and 6 in the opposite direction, the editing field will close and the text will not be saved.

### Auxiliary gestures

If you find that you need to recalibrate while writing, flick the letter x toward your palm. If this does not work, you can reset the layout of the keys in the keypad settings.

If you want to try out the gestures on the Braille keypad or refresh your memory, you can turn on Help. In the help section, Corvus will only report what gesture he is making, but nothing will happen. You can activate the help function by swinging the letter h toward your palm. You can also run the help in read mode.

# 4. Getting started with Corvus Screen reader

## 4.1 Basic operation of the Screen reader screen

Calendar, notes, alarms, and weather. You can conveniently operate all of this from the Corvus environment. But have you ever wanted to use other applications that your friends and colleagues commonly use? The Corvus application set does not limit you. You can leave the Corvus environment at any time. But Corvus will not leave you. With the screen reader, it will also read the environment of other applications and the Android operating system.

Let's take a look at your smartphone settings. You can change many settings directly in Corvus. Others are offered by the Android operating system itself. There are several ways to get there. Directly in the Corvus environment, we can go to MENU>SETTINGS, where we activate the last item, Android settings. And here again, the last item, All settings.

The window we are about to show you will differ from the one on your smartphone. System settings vary for different devices. However, the screen reader works in the same way. When we leave the Corvus environment, a rising tone sounds, alerting us to the start of the screen reader, and Corvus provides us with basic information about the window we have entered.

Navigation through items is the same as in the Corvus environment. We move between items by swinging up and down. Corvus reads to us which item we have targeted with the so-called focus, which represents our movement through the individual components of the window displayed on the screen.

When we opened the settings window, Corvus notified us that there were 32 items on the screen, but only 14 were displayed. This is because the entire window does not fit on the smartphone screen. That's why we use the scroll function to access parts that are currently hidden. Scrolling can also help us with long lists, so we don't have to go through all the items. To scroll, swipe up or down with two fingers. When we swing up, we move the display forward, and Corvus notifies us with rising tones. Conversely, if we want to move backward, we swing down with two fingers. Corvus tells us to scroll down with descending tones. By default, we do not need to worry about scrolling. Corvus automatically advances the display for us. However, in long lists, you will eventually want to quickly skip through a number of items, and this is where scrolling comes in handy.

Let's imagine a situation where we want to set up unlocking the phone using a fingerprint. First, by scrolling through the items, we find the Biometric Data and Security category. As in Corvus environment, we confirm the item by double-clicking. We are back in the window, this time with specific settings. To set up fingerprints, tap on the fingerprint item. If we want to go back one step, we also use the gesture known from the Corvus environment: 1-SHIFT swing to the left. Just a reminder that SHIFT 1 refers to the volume up button.

To return to the home screen, you can use the 1-SHIFT +left and right gesture. Press the volume up button, place your finger on the screen, swing left, hold your finger on the screen, and swing right. Then release the button.

Try experimenting with your phone settings. Keep in mind that the gestures used by the screen reader are often the same as those used in the Corvus environment, which you are already familiar with.

## 4.2 Quick settings and notification bar

Received messages, connection settings, screen brightness. These items are included in the Quick Settings menu and the Notification Panel, i.e. the notification bar. We will show you how to get there.

In Android, there is a place where applications continuously display news and important information. For example, new messages received from Facebook or WhatsApp. This way, you have all the latest events in one place. You can also quickly turn mobile data on or off or activate airplane mode from here.

To access Quick Settings and the Notification Panel, we will learn a new gesture. 2-SHIFT double swing from top to bottom. This gesture works from the Corvus environment. To access the quick settings menu and notification panel from the standard Android environment, i.e. from any standard application that is not part of Corvus, simply swipe down the bar with two fingers from the top edge of the screen.

After performing the gesture described above, the quick settings menu will always open first. We move between items by swinging up and down. You can customize this offer in various ways. You will find, for example, mobile data, Wi-Fi, Bluetooth, flight mode... We turn a specific function on or off, or change its settings by double-clicking.

We can access notifications from applications using the gesture we use for scrolling. Swing with two fingers from the bottom. On some devices, you can access the Quick Settings menu on the Notification Panel by swinging left with the 1-SHIFT gesture. The switching method depends on the specific manufacturer. By swinging, we can view the displayed items again. In addition to quick settings, we will now also work on notifications from applications. When you tap on an item, it usually opens a specific application in a specific location. For example, this is how we open the Messenger application conversation window.

Over time, you may end up with too many items on your Notification panels. Therefore, we will use scrolling to work our way back to older events. All notifications can be deleted by activating the corresponding button. This is usually near the end. From other tutorials, you may remember the gesture down and to the right. Now we will use it. Place your finger on the screen. Swipe down, keep your finger on the screen, and swipe right. The cursor has now jumped to the last item, which is the name of the network on this device. But right above it is what we are looking for. So, swing with one finger and tap to confirm the Delete notifications option.

Over time, you will probably want to decide which applications can show notifications on the notification panels and how the quick settings window should look. You can adjust this directly in your smartphone settings.

## 4.3 Smart Focus

When viewing an application window using Corvus Screen reader screen, you may find that elements are unnecessarily divided into multiple items, requiring you to scroll frequently. On the one hand, this has a major advantage, because with this interpretation of the screen, Corvus does not waste time on unnecessary content analysis, allowing it to maintain a very fast response even on older phones. Even where other counters behave lazily and slowly. On the other hand, there are already very powerful smartphones on the market today, so some users may appreciate fewer overshoots to reach their goal, as they will not feel it in terms of response. This problem is solved by a feature called Smart

Focus, which is optional in Corvus, allowing users to choose the solution that suits them best, unlike other readers. Now we will show you how Smart Focus works and how to activate it.

First, let's take a look at what the accessibility settings window looks like on a smartphone without the Smart Focus feature enabled. Note that each element has text information attached to it, which we must work through step by step, even though the elements are essentially related. For each element, as well as its associated text description, we must separately swipe down with our finger. However, Corvus is able to combine related elements in many cases. All you need to do is activate Smart Focus. The function can be found in the screen reader settings.

Enter MENU>SETTINGS>SCREEN READER, where you can activate the Smart Focus option. Tap to change its status to On.

If we now return to the window with the simplified control settings, we will see that Corvus has now linked the descriptions to the elements, so we can listen to the description directly at the element or skip straight to the next one. Smart Focus connects labels to edit fields or buttons, reducing the need to swing excessively across the screen.

## 4.4 Scrollbar

In the Android environment, you may encounter scrollbars. It is a control that you use to adjust the volume of your phone or the brightness of the screen, for example.

If we want to adjust the value of the scrollbar, we must first focus on it. That is, move the reader's focus to it. Let's try it out, for example, on the Screen Brightness scrollbar, which is located in the Quick Settings menu. From the Corvus environment, we activate the quick settings menu with a 2-SHIFT double-tap downwards gesture. A quick settings menu will appear on the screen, and because it belongs to the Android environment, the screen reader will also be activated at the same time. Then find the desired Screen Brightness scrollbar either by scrolling down the screen content or by exploring with your finger.

If we want to adjust the value of the scrollbar, we first tell Corvus that we want to work with the scrollbar. Now, just press and release the 1-SHIFT button. Now we adjust the scrollbar value by swinging right or left.

The second option is located in the context menu. We activate it with a gesture up and to the right. Place your finger on the screen, swing up, and then immediately swing right. Then release the finger. In the context menu, swing down to move to the Set scrollbar value option. After tapping, an edit field will appear where you can enter the exact number. Corvus always tells us the range that can be entered.

In addition to brightness, scrollbars can also be found in Android music players, volume settings, and font size settings.

## 4.5 Recent, Home, Back

There are buttons that appear in almost all applications. You are surely familiar with the Home button. This may be a physical button, but increasingly it is a touch button in the center of the bottom of the screen. Next to it there are the Back and Recent buttons, sometimes referred to as the running applications button. Let's see how these buttons work.

The Recent, Home, and Back buttons are displayed at the bottom of the screen. We can also find them, for example, in the quick settings window, which we open with a 2-SHIFT double-swipe down gesture.

Now we will use touch exploration. Place your finger on the bottom of the screen and slide your finger from left to right. It is useful to at least roughly remember the position of the individual buttons where we located them with our finger. If you want to activate a specific button, just tap anywhere on the screen after focusing on it.

The Back button always takes us one step back. The Corvus screen reader also provides us with the shortcut 1-SHIFT left swing for this purpose, which does practically the same thing.

The second button is the Home button. You do not even need to look for this button, as we have assigned the shortcut 1-SHIFT left and right swing to it in the Corvus reader. Press the volume up button (i.e., 1-SHIFT), place your finger on the screen, swing left, hold your finger on the screen, and swing right. Then release the volume button and Corvus will take you to the main, or home, screen. However, remembering the position of the separate Home button on the screen can be useful if, for some reason, the reader turns off and we need to return to the Corvus main screen and its audio environment.

The third button, usually located on the far left (but on some phones on the right), is the Recent button (or, in other words, the running applications button). After tapping on it, we will be taken to a window displaying all the Android applications that we have recently opened and are still running in the background.

This window looks different on different devices. Explore it by touching it, as the standard swinging from top to bottom may not always work here. Try it out and see how it works for you.

At the bottom of this window, there is usually a button that allows us to close all applications. The button can be found by swinging down and to the right. Tap to confirm, and all running applications will close. Of course, you do not have to be afraid to use this feature. Corvus and its reader will continue to run, and after activating the button to close running applications, you will find yourself back on the main Corvus home screen.

In newer versions of the Android operating system, you may find that these buttons are not displayed at the bottom of the screen at all, or only some of them are displayed. In this case, however, you can still use the aforementioned Corvus gestures as an alternative. We have already mentioned that the Home button can be activated with a 1-SHIFT swing left and right gesture, and the Back button with a 1-SHIFT swing left gesture. However, if you sometimes operate your phone with one hand, you may find the buttons at the bottom of the screen useful.

## 4.6 Down and to the right

You definitely know it. You scroll through conversations just to find the button to write a new message. In Messenger, WhatsApp, everywhere, this button is at the very end. Today we will show you how to save precious minutes. And we will do a little drawing.

We are in the WhatsApp application window and want to write a new message to someone who is not in our list of recently used contacts. We are searching for the New Chat button. The first option is to scroll through the list until we get to it. However, it seems that this will take us a long time. In such situations, a downward and rightward swing will help us. Place your finger on the screen, swipe

down, keep your finger on the screen, and swipe right. This will cause Corvus to jump to the last element on the screen. In our case, to the new chat item.

The gesture also works in reverse. If we want to return to the beginning of the list of messages, we draw a line up and to the left. Place your finger on the screen, swipe up, keep your finger on the screen, and swipe left.

These gestures are also useful when browsing websites. If you have a web page open in Google Chrome, you can quickly access the Chrome application menu and address bar by swinging down and to the right. We can try it out. Launch the Chrome browser. The home page will open. However, we want to enter a new address. We swipe down and to the right, which moves us to the end of the web element and takes us to the Chrome application menu. There, we can now enter the address of the website we want to open.

## 4.7 Using a Braille keypad with the Corvus Screen reader

If you use a computer at work, you have probably picked up some keypad shortcuts over time. Perhaps you have sometimes wished that your smartphone had a keypad that would allow you to quickly navigate Android applications. The good news is that you can actually have such a keypad without having to carry it around with you.

If you have not yet used a Braille keypad to write in edit fields, we recommend that you first familiarize yourself with how it works in the Corvus environment. The instructions for the Braille keypad provided in the previous chapters of this manual can also help you with this. In this manual, we assume that you are using a Braille keypad for typing and that you are familiar with the gestures on the Braille keypad.

Important note: Braille keypad features can only be used in a screen reader environment on Android 13 or higher.

To use a Braille keypad in a screen reader environment, you need to enable advanced gestures and also enable Braille control:

- Activate the main menu > settings > gestures > gestures in the screen reader. Turn on the advanced gestures option.
- From the main menu in Settings > Screen Reader, enable the option Enable Braille Control.

From now on, the Braille keypad will also be activated in the screen reader if you set your phone to the appropriate position. The settings are controlled by the Braille keypad settings. So, if you are using hand-held mode, the keypad will activate when you tilt the phone on one of its edges. When using desktop mode, the keypad is activated when you place the phone in a horizontal position.

- Launch any Android application.
- Rotate the phone to the desired position. If you are using a Braille keypad in hand-held mode, turn the phone on its edge. If you are using desktop mode, place your phone horizontally as if you were typing on a Braille keypad in the edit field.

The following shortcuts can now be used for control:

- Point 1 from the palm: The following object (same as the downward swing gesture).
- Point 1 to the palm: Previous object (same as the upward swing gesture).

- Point 3 to the palm: Scroll upwards (same as double-swing upward).
- Point 3 from the palm: Scroll downwards (same as double-swing downward).
- Points 1 and 3 to the palm: Jump in front of a large object (same as the up and left gesture).
- Points 1 and 3 from the palm: Jump behind a large object (same as the down and right gesture).
- Points 4 and 6 to the palm: Clicking on an object (the same as tapping).
- Points 4 and 6 from the palm: Back button (same as 1-SHIFT left swing, or the back button at the bottom of the screen).
- Points 4 and 5 to the palm: Home (same as holding 2-SHIFT, or swiping left and right, or pressing the home button at the bottom of the screen).
- Points 5 and 6 to the palm: Overview (same as the Recent button at the bottom of the screen).
- Points 4, 5, 6 to the palm: Notification panel.
- Points 4, 5, 6 from the palm: Quick settings panel.
- m to the palm: context menu.
- m from the palm: accessibility actions.
- s to the palm: smooth reading.

To navigate through the elements, use:

- b: Next button.
- C: The following check box.
- e: The following edit field.
- s: Next scrollbar.

The above abbreviations refer to the following type of element. You can move in the opposite direction by pressing the sixth point before the letter. For example, you can go to the previous editing field by pressing point 6 and then typing the letter e.

If you want to refresh your memory about the abbreviations, you can run the help function. Swing the letter h into the palm. After performing the shortcut or gesture, Corvus will announce its function. You can turn off the help by swiping the letter h into your palm again.

If neither the hand-held mode nor the tabletop mode suits you when typing on a Braille keypad, you can create your own position that suits you. In the Braille keypad settings, turn off the option to automatically adjust based on the device's position. Then, if you want to type on the Braille keypad, use the 1-SHIFT gesture by swinging up with three fingers. This gesture works in the screen reader and in the Corvus environment.

## 4.8 Working with websites

### 4.8.1 Getting started with the web

Have you ever thought about browsing websites on your smartphone? In this tutorial, we will show you how to use gestures to navigate elements on web pages in your web browser.

If you are used to browsing websites on your computer, you probably use keypad shortcuts to navigate between elements. For example, the letter H allows you to jump between headings. It works similarly on a smartphone, with the only difference being that we will use gestures. Newer

smartphones also allow you to use a Braille keypad, which lets you navigate through elements using letters. We will gradually show you how to navigate websites, how to move between individual elements, how to define gestures for the most frequently used types of elements, and how to edit the list of objects that you do not use. We will also show you how to browse websites using a Braille keypad. The manual is divided into several sections. In the first section, we will show you how to load a web page and switch between objects that we want to move between.

Websites can be simple, but also very extensive. We have prepared the instructions so that even users who only view websites on their smartphones and have no experience with viewing websites on a computer can quickly find their way around.

In this manual, we will be using the Google Chrome browser. However, we also have good experiences with other browsers, such as Microsoft Edge. Browser controls may vary, but navigating the elements on the web pages themselves is the same.

When you launch Google Chrome, you will be taken to the home page or the page you last visited. Swipe down and to the right to access the edit field for entering a new web address. This means that you swing down with your finger, hold your finger on the screen, and swing to the right. This will take you behind a large object, in this case skipping the entire loaded web page. You will be taken to additional browser options. By gradually swiping down, you will come across an edit field for entering the address. Tap and enter the address.

Tip: In Chrome, you can also enter what you are looking for in this edit field, such as "soup recipe" or "real estate in the city."

After loading the page, you can view the entire content by swiping down to move forward and swiping up to move backward. You can activate the selected element (link, button, edit field) by tapping.

Note that the volume of the voice output will change within the website. This is how Corvus distinguishes between the application interface and the website. You can adjust the pitch of the voice in the speech settings.

The website browsing outlined above is simple but very time-consuming. We usually look for something specific on websites. For example, if we want to read an article, we look for the headline. When filling out a form, we are interested in form elements. We can specify which objects we want to navigate on the page. Corvus will then only jump between specific objects.

Headings are typically used on websites to mark the titles of articles, and headings are also used to mark search results. If we want to go through the headings, we first need to set the type of object we want to go through. We do this with a 1-SHIFT down swing or a 1-SHIFT up swing. After selecting the type of objects, we move left and right by swinging.

Keep in mind that swinging down still works. So, if we stop at a heading, we continue reading the content by swinging down and do not skip anything.

On the website, you can start continuous reading with the 1-SHIFT gesture to the right. You can stop it by pressing the 2-SHIFT button.

Using the 1-SHIFT up and down swing gesture, you can focus on various types of objects, such as form elements, buttons, tables, words, characters, and so on.

### 4.8.2 Web browsing settings

Browsing websites on your smartphone can seem tedious. Here, we will show you how to narrow down the list of available objects that are accessible when switching with the 1-SHIFT gesture of swiping up and down. We will also show you how to define gestures for the most frequently used elements.

You have probably noticed that there are quite a few options available when browsing through the available objects on the website. You do not use many of them and would like to narrow down the list. Or you might want to keep the ones you don't use in the list and define your own gestures for the ones you use often.

The list of objects available via the 1-SHIFT up and down swipe gestures can be narrowed down. This allows you to exclude objects that you do not use frequently.

- From the main menu, activate settings, screen reader, hidden preferred objects on the web.
- Swing up and down to scroll through available objects.
- Mark the ones you want to omit from the list by swinging right.
- Close the settings by tapping.

You can also specify the type of object that will be preset. So, after loading the website, this type will be set automatically, and you can find it automatically by swiping right and left. You can do this in Settings > Screen Reader > Default Preferred Object. Here, select one of the available objects.

You can also define your own shortcuts for moving around objects. Proceed as follows:

- From the menu, open Settings > Gestures > Screen reader gestures > Web gestures.
- From the context menu, activate the item Define shortcut.
- The window that opens offers several options: The Shift option determines whether your gesture will use shift.
- The gesture item specifies the specific gesture you will use. For example, a triple swing upwards.
- The function item specifies a specific function. For example, transition to the previous form element.
- Save the settings by activating the Save item.

Note that Corvus distinguishes between the website area and the application area, so it is possible to use different combinations of shortcuts and gestures for the web and for applications.

Over time, you will probably find that you want to have some types of objects in the list of available objects and set specific gestures for others. It is up to you how you proceed; Corvus allows for a great deal of creativity in this regard. If you use a Braille keypad, we recommend that you also read the instructions describing how to navigate the website using a Braille keypad.

### 4.8.3 Using a Braille keypad on the web

Do you use your smartphone to browse the web? Do you use gestures to navigate different types of objects? Similar to moving around in standard Android applications, navigating web documents can be even faster with a Braille keypad. However, we recommend that you first familiarize yourself with how it works in the previous chapters of this manual.

In order to use a Braille keypad in a screen reader environment, you need to enable advanced gestures and also enable Braille control, as described in the chapter on using a Braille keypad with Corvus Reader. When you launch Google Chrome, it loads your home page or the page you were last on. From this point on, you can only use the Braille keypad. Tilt your phone on its edge if you use hand-held mode, or lay it flat if you are used to using tabletop mode. Corvus will announce when the keypad is activated. If you use quick navigation on websites on your computer, you will quickly get used to the shortcuts used:

- By swinging point 1 from the palm, you move forward on the page.
- By swinging point 1 into the palm, you move backward on the page.
- To load a new web address, move behind the large object and swipe points 1 and 3 away from the palm.
- Press the letter e to jump to the edit field for entering the address.
- To confirm the edit field for entering the address, swing points 4 and 6 into the palm. After entering the address, swing points 4 and 6 into the palm.
- Use the letter h to move forward through the headings.
- Use the letter K to move forward through the links.
- Use the letter B to move forward through the buttons.
- With the letter C to move through the check boxes.
- With the letter F to move through the form elements.
- With the letter l through the lists.
- With the letter t through the tables.

These shortcuts move us forward. If we want to go in the opposite direction, we use capital letters, for example, in the Slovak standard, we insert a period before the letter 6. For example, to move to the previous form element, first press point 6 and then letter f.

If we want to navigate through third-level headings, for example, we first press a number key (points 3, 4, 5, 6) followed by the letter c (points 1, 4).

You can also scroll through the headings of a specific level in the opposite direction. In this case, first write points 4, 5 (prefix for Greek letters) and then the heading number, for example points 1, 4 for a third-level heading.

### Other useful gestures on the Braille keypad

- From the Braille keypad, we can also go back a page by pressing the back button, similar to performing a 1-SHIFT left swipe gesture. We will do this by swiping points 4 and 6 from the palm.
- Return to the home screen by swiping points 4 and 5 toward the palm.

## 4.9 Smartphone with Corvus Screen reader temporarily in the hands of a sighted person

We already know that we can use various Corvus gestures in the Android environment. However, you may find yourself in a situation where someone who is unfamiliar with Corvus or, more generally, with the specifics of operating smartphones for the blind, wants to help you with your smartphone. A sighted person may find Corvus distracting at best, but often irritating. Sighted people rarely understand that the way blind people operate smartphones must, in principle, be different from how they themselves are accustomed to doing so. Finally, a similar situation exists with personal

computers and their control not by means of a computer mouse, but exclusively by means of a keypad.

Let's imagine a situation where a sighted person wants to look at something on your smartphone or help you set something up. In that case, you will probably want to make a few adjustments so that he can use it.

There are basically two ways to turn off the screen reader function.

The first method is more suitable for permanently disabling the reader. It is used mainly by visually impaired users who can still partially see on their phone and do not want to automatically launch the screen reader after leaving the Corvus environment. In this case, in the screen reader settings, which can be found in MENU>SETTINGS>SCREEN READER, deactivate the item Automatically activate when leaving Corvus. If this item is set to Off, the screen Reader will not start when a regular Android application is launched or when the quick settings menu and notification panel are activated, and the phone will behave exactly as sighted users would expect. If you set this option because you want to entrust your phone to a sighted person for a while, remember that when they return your phone, the return gesture to the Corvus home screen will not work. Therefore, you will need to ask them to activate it, or learn how to activate the HOME button yourself, which is usually located in the center of the bottom of the screen or below it. In the Corvus environment, you can then easily reactivate the screen reader function after leaving Corvus.

If you need to temporarily disable the screen reader in any Android application, in the Android settings, as well as in the Notification Panel and Quick Settings menu, the second option is more suitable. Simply press both volume buttons (to lower and raise the volume) by first pressing the volume up button, holding it down, pressing the volume down button, and then releasing them.

A distinctive sound will be heard, indicating that Corvus is alerting you that the screen reader functions are turned off. Now, swiping across elements and tapping to activate elements no longer work. The phone behaves almost as if Corvus were not installed. You can deactivate the mode using the same shortcut.

However, this shortcut is disabled by default. If you want to enable it so you can use it, you can find it in the Corvus settings, but this time in the Gestures section. Here, we will confirm the Gestures item in the screen reader. Then set the Allow shortcut for switching viewing by touch option to On.

This way, we can turn touch exploration on and off in Android applications or settings by pressing the volume buttons together. Note that pressing the volume button simultaneously activates or deactivates the reader provided by the system (see the description of settings above) and is operated by Android. Pressing both buttons simultaneously, as described above, activates and deactivates the special Corvus reader mode.

Remember that when you give your phone to a sighted person, you should turn off screen dimming, increase the brightness if necessary, and possibly change the default keypad.

## 5. And then what – conclusion

If you would like further information, please feel free to explore our website. In addition to Corvus, you will also find a complete user manual and other useful information available for download.

We also recommend that you check out the Corvus Help section directly in the Corvus application set, where you will find, for example, lists of gestures used in Corvus.

You can bring up contextual help in Corvus environmentwith the gesture 2-SHIFT + DOUBLE TAP (i.e., pressing the volume down button and simultaneously tapping the screen with two fingers).

In conclusion, we would like to wish you not only lots of fun with Corvus, but above all that our application set becomes your indispensable helper in your everyday life. We also look forward to your feedback on whether and how this guide and, above all, Corvus have helped you, and what further improvements you would appreciate.

**More at [www.corvuskit.com](http://www.corvuskit.com)**