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Tablet computers and the Android operating system are an ideal match for anyone who wants their computing as mobile and as flexible as possible. This chapter introduces the basics of Android tablets and shows how to get started with them.
About Tablets

Tablet computers are the result of the desire for our computing devices to become smaller and more portable (from desktops, to laptops, to tablets) and the evolution of mobile operating systems, initially introduced for smartphones. The combination of the two has resulted in the birth and relentless march of the tablet; they are small, portable for almost any situation, customizable and powerful enough to perform most everyday computing functions, such as email, using the Web, word processing and communicating with social networking sites.

Tablets are essentially small computers that run on a mobile operating system, rather than those used on desktop and laptop computers, such as Windows and Mac OS X. They can be used as an addition to your suite of computing products or they could even be considered as a replacement for items such as desktop computers or laptops, depending on your computing needs. But for most types of mobile computing tasks, tablets are definitely the new kid on the digital block.
Android operating system
All computers need an operating system to make them work and perform all of the required tasks for the user. For tablets, the two main operating systems are iOS for Apple tablets (the iPad and iPad Mini) and Android. The latter has been developed through its use on smartphones and is now a significant player in the tablet market. The fact that it is used on both types of device means that if you have an Android smartphone then an Android tablet is a perfect match.

Android is an open source operating system which means that developers and manufacturers can work with the source code to tailor it to their own needs and devices (as long as they meet certain requirements and standards). Android tablets are made by a number of different manufacturers and, although the hardware differs between devices, the Android operating system is common between them (although the versions of Android differ between devices; see page 13). Android tablets generally come in 7-inch to 10-inch models.

It is now apps instead of programs
The functionality of tablets can be expanded almost endlessly through the inclusion of apps: computer programs that either come pre-installed or can be downloaded from a linked service. For Android tablets, this service is provided by the Google Play Store which is accessed from the tablet (or the Google Play website, which is available with a Google Account; see pages 24-25 for details about creating an account). Some models of tablet also have their own proprietary online store for buying apps, but they will also have the Play Store which, generally, will have a larger range of apps available.

Apps are denoted by the thumbnail icons that appear on the tablet’s Home screen (and also in the All Apps area).
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**Touchscreen**
Tablets are touchscreen devices, which means that their functionality and controls are accessed by tapping, swiping or pressing on the screen. This includes the keyboard, which appears on the screen if data input is required, e.g. for writing an email, entering a website address or filling in an online form. For people who have always used a physical keyboard, the virtual one can take a bit of getting used to, particularly if you are doing a lot of typing, but the more you use it, the more familiar it will become.

![Image of a touchscreen keyboard]

**Getting connected to the Internet**
One of the essential functions of tablets is online connectivity, for accessing the Web and also the range of Android services that are connected to Google apps and online services.

The standard form of online connectivity for tablets is provided by Wi-Fi. This will connect to the Internet via your own Wi-Fi router and service provider in your home, or through a Wi-Fi hotspot if you are traveling with your tablet. Some models of tablets also have 3G/4G connectivity. This is wireless, mobile access to the Internet, provided by telecoms companies through either a monthly plan or pay-as-you-go options. This provides access to the Internet without the need for using Wi-Fi.
Hybrid tablets
In computing terms, the current tablet market is a relatively new one and manufacturers are developing ideas in terms of the evolution of the tablet, particularly in relation to the more traditional laptop. Nothing stays the same forever and this is exaggerated in the computing world where change can be particularly fast. Just as the laptop has taken over from the desktop as the main computing device for the majority of people, so the tablet is beginning to make people think about the next stage in the evolution of personal computing and how we interact with the digital world.

Some manufacturers have developed hybrid tablets that are designed to bridge the gap between tablets and laptops. These devices can be used as self-contained tablets, using the virtual, touchscreen, keyboard, or they can be docked to a physical keyboard and be used more like a laptop.

As the tablet market develops and evolves further it is likely that there will be more hybrid models and, in time, tablets could begin to replace laptops for a lot of our mobile computing needs.
About Android

Android is essentially a mobile computing operating system, i.e. one for mobile devices such as smartphones and tablets.

Android is an open source operating system, which means that the source code is made available to hardware manufacturers and developers so that they can design their devices and apps in conjunction with Android. This has created a large community of Android developers and also means that Android is not tied to one specific device; individual manufacturers can use it (as long as they meet certain specific criteria) which leads to Android being available on a variety of different devices.

Android Inc was founded in 2003 and the eponymous operating system was initially developed for smartphones. Google quickly saw this as an opportunity to enter the cell phone and computing market and bought Android in 2005. The first Android-powered smartphone appeared in 2008 and since then has gone from strength to strength. Android-based smartphones have a majority of the worldwide market and, with the increasing popularity of tablets, it is likely that those running Android will soon experience a similar level of success.

The main differences between the Android operating system and desktop- or laptop-based ones such as Windows or Mac OS X are:

- **No file structure.** There is no built-in File Manager or Finder structure for storing and managing files. All content is saved within the app in which it is created.

- **Self-contained apps.** Because there is no file structure, apps are generally self-contained and do not communicate with each other.

- **Numerous Home screens.** Rather than just one Desktop, there are numerous Home screens on an Android tablet and they can be used to store and access apps.

- **Content is saved automatically as it is created.**

Android is based on the flexible and robust Linux operating system and shares many similarities with it.
**Updating Android**

Since Android is open source and can be used on a variety of different devices, this can sometimes cause delays in updating the operating system on the full range of Android devices. This is because it has to be tailored specifically for each different device; it is not a case of ‘one size fits all’. This can lead to delays in the latest version being rolled-out to all compatible devices. The product cycle for new versions is usually six to nine months.

Since Android is a Google product, their own devices are usually the first ones to run the latest version of the software. Therefore, the Google Nexus 9 has been the first tablet to come with the latest version of Android, i.e. 5.0 Lollipop, while others are still running previous versions, usually 4.3 Jelly Bean, or 4.4 KitKat or earlier. (*Correct at the time of printing.*) For recently-released tablets, an upgrade to the latest version of Android will be scheduled into the update calendar. However, for some older Android tablets, and smartphones, the latest version of the software is not always made available. This can be because of hardware limitations but there have also been suggestions that it is a move by hardware manufacturers designed to ensure that consumers upgrade to the latest products.

The version of the Android operating system that is being used on your tablet can be viewed from within the **System > About tablet** section of the **Settings** app. This is where the operating system can also be updated when a new version is available.

The latest version of Android is 5.0 Lollipop. This is available on the Google Nexus 9. However, most other Android tablets are sold with Android 4.2, 4.3 or 4.4, at the time of printing. This book covers Android 5.0 Lollipop on the Google Nexus 9.
Tablet Terms Explained

As with any computing device, there is a significant amount of jargon that can be used in relation to tablets. Much of this is similar to that used for desktop and laptop computers, while some is more specific to tablets themselves.

- **Processor.** Also known as the central processing unit, or CPU, this refers to the processing of digital data as it is provided by apps (programs) on the tablet. The more powerful the processor, the quicker the data is interpreted.

- **Memory.** This closely relates to the processor and is also known as random-access memory, or RAM. This type of memory manages the apps that are being run and the commands that are being executed. The greater the amount of memory there is, the quicker apps will run. With more RAM they will also be more stable and less likely to crash. In the current range of tablets, memory is measured in megabytes (MB) or gigabytes (GB).

- **Storage.** This refers to the amount of digital information that the tablet can store. In the current range of tablets, storage is measured in gigabytes. There are no external signs of processor or memory on a tablet but the details are available from within the **Device > Storage** section of the **Settings** app.
*Operating System (OS).* This is what links together the hardware and software of the tablet and gives it its functionality. Android is the operating system that is used on a range of different models of tablets and is the one widely used throughout the world.

*Connectivity.* This refers to how the tablet connects to the Internet. This is either by Wi-Fi via a compatible router or through mobile access using 3G or 4G, which requires the use of an appropriate, paid-for, service.

*Graphics card.* This is a device that enables images, video and animations to be displayed on the tablet. It is also sometimes known as a video card. The faster the graphics card, the better the quality the relevant media will be displayed at.

*Wireless.* This refers to a tablet’s ability to connect wirelessly to a network, usually via Wi-Fi.

*Ports.* These are the parts of a tablet into which items can be plugged, such as the micro USB cable for charging the tablet or connecting it to a computer, an HDMI port for connecting the tablet to a high definition TV and the headphone jack.

*Camera.* Most tablets have one, or two, built-in cameras that can be used to take stills photographs or communicate via video with other people. There is usually a front-facing camera on most tablets, for video calls, and some also have a rear-facing one for taking higher quality photos and videos.

*Sensors.* These include a gyroscope for auto-rotating the tablet when it is moved from landscape to portrait and a GPS sensor.

*Apps.* These are the programs on the tablet. See pages 18-19 for more details.

*Touchscreen.* See pages 16-17 for details.
Introducing Android Tablets

Using a Touchscreen

The traditional method of interacting with a computer is by using a mouse and a keyboard as the input devices. However, this has all changed with tablets; they are much more tactile devices that are controlled by tapping and swiping on the touchscreen. This activates and controls the apps and settings on the tablet and enables you to add content with the virtual keyboard that appears at the appropriate times.

Gently does it

Touchscreens are sensitive devices and only require a light touch to activate the required command. To get the best out of your touchscreen:

- Tap, swipe or press gently on the screen. Do not use excessive force and do not keep tapping with increasing pressure if something does not work in the way in which you expected. Instead, try performing another action and then returning to the original one.
- Tap with your fingertip rather than your fingernail. This will be more effective in terms of performing the required operation and better for the surface of the touchscreen.
- For the majority of touchscreen tasks, tap, press or swipe at one point on the screen. The exception to this is zooming in and out on certain items (such as web pages), which can be done by pinching inwards and outwards with thumb and forefinger.
- Keep your touchscreen dry and make sure that your fingers are also clean and free of moisture.
- Use a cover to protect the screen when not in use, particularly if you are carrying your tablet in a jacket pocket or a bag.
- Use a screen cloth to keep the screen clean and free of fingerprints and smears. The touchscreen should still work if it has fingerprints and marks on it, but it will become harder to see clearly what is on the screen.
**Touchscreen controls**

Touchscreens can be controlled with three main types of actions. These are:

- **Tapping.** Tap once on an item, such as an app, to activate it. This can also be used for the main navigation control buttons at the bottom of the touchscreen, or for items such as checkboxes when applying settings for specific items.

- **Pressing.** Press and hold on an item on the Home screen to move its position or place it in the **Favorites Tray** at the bottom of the screen.

- **Swiping.** Swipe down from the top of the Home screen to access the **Notifications Area** and the **Quick Settings** and swipe up from the bottom of the screen to access the **Google Search** box.

For more information about working with apps on the Home screen, the Notifications Area and the Quick Settings, see Chapter Two.
Using Apps

One of the great selling points for Android tablets is the range of apps that is available from third-party developers. Because Android is open source it is relatively easy for these developers to write apps for Android devices. At the time of writing there are approximately 1.3 million Android apps on the market. Some are free while others have to be paid for.

The built-in apps are the ones that give the initial functionality to your tablet and include items such as email, web browser, calendar, calculator and maps. They appear as icons on your tablet’s Home screen, or in the All Apps area, and are accessed by tapping lightly on them once.

New apps for Android tablets are available through the Play Store, or directly from the developer’s website. They can be downloaded from there and will then appear on your tablet.
Managing apps
Unless specified otherwise, Android apps are self-contained and do not interact with each other on your tablet. This has reduced the risk of viruses spreading through your tablet and also contributes to its memory management.

When you switch from one app to another you do not have to close down the original one that you were using. Android keeps it running in the background, but in a state of hibernation so that it is not using up any memory or processing power on your tablet. To do this:

1. Tap on an app to open it and move through its screens as required

2. Tap on the Home button on the tablet’s Navigation bar at the bottom of the screen to return to the Home screen at any point. The app will remain open in the background

3. Tap on the app again. It will open up at the point at which you left it

You can also move back to the Home screen by tapping on the Back button. This takes you back through the screens that you have accessed within the app, until you reach the app’s Home screen, at which point the next screen back will be the tablet’s Home screen. If you do this, the next time that you access the app it will open at its own Home screen.

For more information about the Navigation controls (including the Home button and Back button) see page 33.
Makes and Models

Due to the open source nature of Android it can be used on a range of different devices and several manufacturers use it on their tablets. Two of the main Android tablets on the market are the Google Nexus, 9-inch version, and the Samsung Galaxy Tab 4, 7-, 8- and 10-inch versions.

Google Nexus 9

Google’s flagship tablet, running the very latest version of Android, comes in a 9-inch version. The hardware is produced by HTC but it is very much a Google product and has excellent functionality in terms of processor speed, processor memory and storage.

Nexus controls

As with most tablets, the physical controls (On/Off, Volume) are located around the side of the Nexus (see page 26 for details). There are also various touchscreen controls that are located at the bottom of the screen:

1. Frequently-used apps can be pinned in the Favorites Tray, at the bottom of the screen, above the Navigation buttons

2. Use this button to view All Apps

3. The dots above the All Apps button indicate how many Home screens are available. Tap on a dot to move to that Home screen (or swipe between them)
...cont’d

Samsung Galaxy Tab 4 (7-inch, 8-inch and 10-inch)
With its experience of using Android on its range of Galaxy smartphones, Samsung was well placed to enter the tablets market and it has done this successfully with its Tab 4 range of 7-inch, 8-inch and 10-inch tablets.

The main features are similar to those of the Google Nexus but, at the time of printing, it runs on a slightly earlier version of Android, 4.4 KitKat or earlier.

Samsung Tab 4 controls
The controls on the Samsung Tab 4 are similar to the Nexus, except that they are on the body of the device, rather than on the touchscreen, and they are, from left to right, the Recently-used app button, the Home screen button and the Back button.

Samsung Note
This is similar in some respects to the Tab range, but much of its functionality is done with an S Pen, or stylus (see page 30).

Asus
This is an example of manufacturers developing hybrid tablets. In the case of the Transformer, this is done with a detachable keyboard/docking station.

Lenovo
This comes in 7-inch and 9-inch models and, in addition to apps from the Google Play Store, also provides access to apps in the Lenovo App Shop.

Sony Experia
This includes a range of 8-inch and 10-inch tablets that have high specifications, which are particularly good for gaming.
Android and Google

Most tablets are linked into a specific company for the provision of their services and selection of apps: Apple for the iPad, Amazon for the Kindle Fire and Google for tablets using Android. As with the other tablets, for Android ones you must have a linked account to get the most out of your tablet. This is a Google Account and is created, free of charge, with a Google email address (Gmail) and a password. Once it has been created it will give you access to a number of the built-in Android apps and also additional services such as backing up and storing your content.

When you first set up your tablet you can enter your Google Account details, or select to create a new account. You can also do this at any time by accessing one of the apps that requires access to a Google Account. These include:

- **Play Store**, for obtaining more apps.
- **Play Movies & TV**.
- **Play Books**.
- **Play Newsstand**.
- **Contacts**, for an online address book. When you enter contact details these are made available from any web-enabled device.

When you access one of these apps you will be prompted to create a Google Account. You do not have to do so at this point, but it will give you access to the full range of Google Account services.
Other apps, such as the Photos app for storing and viewing photos, can be used on their own, but if a Google Account has been set up, the content will be backed up automatically.

Some of the benefits of a Google Account include:

- Access from any computer or mobile device with web access, from the page accounts.google.com/
  Once you have entered your account details you can access the Dashboard section, including your Calendar, Gmail and Play Store.

- Keep your content synchronized and backed up. With a Google Account, all of your linked data will be automatically synchronized so that it is available for all web-enabled devices and it will also be backed up by the Google servers.

- Peace of mind that your content is protected. There is a Security section on your Google Account web page where you can apply various security settings and alerts.
Creating a Google Account

A new Google Account can be created in the following different ways:

- During the initial setup of your Android tablet.
- When you first access one of the relevant apps, as shown on page 22.
- From the Settings app and selecting the Accounts option.

For each of the above, the process for creating the Google Account is the same:

1. On the Add your account screen, tap on the Create a New Account button.

2. Enter the first and last name for the new account user and tap on the Next button.
Enter a username (this will also become your Gmail address) and tap on the **Next** button at the bottom of the screen.

Create a password for the account and then re-enter it for confirmation. Tap on the **Next** button at the bottom of the screen.

On the **Your Google Account** page, check on the required items and tap on the **Done** button.

If your chosen username has already been taken you will be prompted to amend it. This can usually be done by adding a sequence of numbers to the end of it, but make sure you remember the sequence correctly.
Introducing Android Tablets

Turning On and Controls

The button for turning a tablet on and off is located on the side of the body of the device in most cases, as are the other buttons and ports that can be used for various functions on your tablet.

**On/Off button.** This can also be used to put the tablet into Sleep mode. Press and hold for a couple of seconds to turn on the tablet. Press once to put it to sleep or wake it up from sleep.

**Volume button.** Press at the ends to increase or decrease volume.

**Camera.** This is the main, front-facing, camera for taking pictures.

**Headphone jack**

**Micro USB port.** This can be used to attach the tablet to an adapter for charging, or to a computer for charging or to download content from the tablet, using the supplied USB cable.

Some tablets also have a slot for a SIM card, if they have the functionality for making phone calls through a mobile data provider.

The micro USB port on a tablet can be used to connect an HDMI cable, which can then be connected to an HD (High Definition) television so that you can view whatever is on your tablet on a large screen.

Most tablets have at least one camera; a front-facing one for video calls. Some also have a second camera, on the back, for taking photos and videos.
Battery and Charging

All tablets run on internal batteries which usually offer up to approximately 10 hours of average usage.

Tablet batteries can be charged with a USB adapter that connects via the tablet’s micro USB port, with a supplied cable. This can also be connected to a desktop or laptop computer, but this takes longer to charge the tablet than using the dedicated adapter.

To charge a tablet’s battery:

1. Attach the micro USB cable to the tablet

2. Connect the USB cable to the adapter, using the USB jack

3. Connect the adapter to the mains power. It is best to charge it fully before disconnecting it from the mains power, although it can still be used while it is being charged

To save battery consumption, turn down the screen brightness (Settings > Device > Display) and turn off Wi-Fi and Bluetooth if not in use (Settings > Wi-Fi/Bluetooth).
Introducing Android Tablets

When you first turn on your tablet (by pressing and holding the On/Off button) you will be taken through the setup process. This only has to be done once and some of the steps can be completed, or amended, at a later time, usually within the Settings app. The elements that can be applied during the setup process are:

- **Language.** This option lets you select the language to use for your tablet. Whichever language is selected will affect all of the system text on the tablet and it will also apply to all user accounts on the tablet.

- **Wi-Fi.** This can be used to set up your Wi-Fi so that you can access the Web and online services. In the Select Wi-Fi window, tap on the name of your router.

  Enter the password for your router and tap on the Connect button.

- **Google Account.** At this stage you can create a Google Account, or sign in with an existing one. Once you have done this you will have full access to the Google Account services and you will not have to enter your login details again.
• **Apps & data.** This option can be used to set up your new tablet from a backup that you have made on another device. This will include all of the apps and settings that you have on the other device. You can also set up your tablet as a new device.

• **Google services.** This includes options for which of the Google services you want to use, including backing up your tablet, using location services and sending feedback to Google.

• **Google Now.** This is the personal digital assistant function that can be used to display a range of cards with the information that is most important to you (see pages 52-56).
Adding Accessories

As with most electrical gadgets, there is a wide range of accessories that can be used with Android tablets. Some of these are more cosmetic, while others provide useful additional functionality. Some to consider are:

- **Docking station.** This can be used to attach to your tablet and it doubles as a stand for viewing content and also for charging your tablet.

- **Stylus pen.** This is a pen with a rubber tip that can be used to write on a tablet, tap on items to activate them and also swipe between screens or pages.

- **Battery charging pack.** This is a mobile unit that can be used to charge your tablet when you are away from a mains source of power. The pack is charged initially (indicator lights show how much charge is available) and it can then be plugged into the tablet to give it additional power.

- **Cover.** This can be used to protect the tablet and, in some cases, they double as a stand for viewing content on the tablet.

- **Screen protector.** If you want to give your tablet’s screen extra protection, these sheets of clear plastic are a good option. Some of them also come with cleaning cloths.

- **USB adapter.** This is an adapter that connects to your tablet’s micro USB connector so that USB devices can be connected to it. This can include digital cameras, pen drives and card readers for photos.

- **Mobile Wi-Fi unit.** This is a unit that can provide Wi-Fi access when you are away from your own Wi-Fi router. They are used with pay-as-you-go SIM cards so you only pay for what you use and do not need to have a long-term contract.