Technology In Action Complete 15th edition Evans Solutions Manual

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Technology in Action 15e, Chapter 1

Check Your Understanding 2.1 Answer Key for Print and MIL

Check Your Understanding // Review & Practice 2.1

multiple choice

OBJECTIVE 2.1

1. Which of the following is one of the four major functions of a computer?
   a. Indexing
   b. processing **Correct**
   c. verification
   d. handling

OBJECTIVE 2.3

2. Which of the following statements is TRUE?
   a. All cell phones are now smartphones.
   b. Smartphones have more computing power than desktop computers.
   c. Smartphones do not contain a CPU.
   d. Smartphones are considered a type of computer. **Correct**

OBJECTIVE 2.4

3. Which of the following can be both an input device and an output device?
   a. display screen **Correct**
   b. keyboard
   c. mouse
   d. laser printer

OBJECTIVE 2.7

4. The number of pixels that can be displayed on the screen at one time is known as what?
   a. pixel density
   b. viewing angle
   c. color depth
   d. screen resolution **Correct**

OBJECTIVE 2.8

5. What type of printer heats toner to adhere it to the paper?
   a. inkjet
   b. laser **Correct**
   c. 3D
   d. impact

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Technology in Action 15e, Chapter 2

Check Your Understanding 2. 2 Answer Key for Book and MIL

Check Your Understanding// Review & Practice 2.2

multiple choice

OBJECTIVE 2.9

1. Which of the following is NOT found on a motherboard?
   a. RAM
   b. hard drive **Correct**
   c. sound card
   d. CPU

OBJECTIVE 2.10

2. Which of these is considered the "brains" of the computer?
   a. CPU **Correct**
   b. ROM
   c. RAM
   d. USB

OBJECTIVE 2.11

3. Which of these is an example of optical storage media?
   a. thumb drive
   b. SSD
   c. DVD **Correct**
   d. a flash memory card

OBJECTIVE 2.12

4. Which of the following is NOT a port?
   a. HDMI
   b. Thunderbolt
   c. USB
   d. CPU **Correct**

OBJECTIVE 2.13

5. Which power control option performs a warm boot?
   a. Sleep
   b. Restart **Correct**
   c. Log off
   d. Shut down

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Chapter 2 Make: A Mobile App

Getting to Know App Inventor

App Inventor is a web-based tool for creating mobile apps for Android devices. In this exercise, you'll explore the App Inventor tool and begin working with your first app.

When using App Inventor (on a PC) to build an app, it is very helpful to have an Android device connected to the same wireless network as the PC. This allows you to see changes to your app live on the Android device as shown in the videos below:

Before You Start

For this exercise, you'll need the following:

HARDWARE

1. A computer connected to a WiFi network
2. An Android device (phone or tablet) that is connected to the same WiFi network as the computer. **(Note:** If you don't have an Android device, you can instead work with the emulator in App Inventor. A "phone" will appear on the screen and show what your app will look like running on a phone screen. For information on setting up the emulator, follow these instructions: http://appinventor.mit.edu/explore/ai2/setup)

SOFTWARE

3. The Chrome browser (free and available at https://www.google.com/intl/en-US/chrome/)
4. A Google account (free and available at https://accounts.google.com/signup?service=mail). A Google account will work for all Google services like Gmail, Maps, and Google Play.
5. The MIT AI2 Companion app (free and available at Google Play). Make sure to download the *latest* version onto your Android device.

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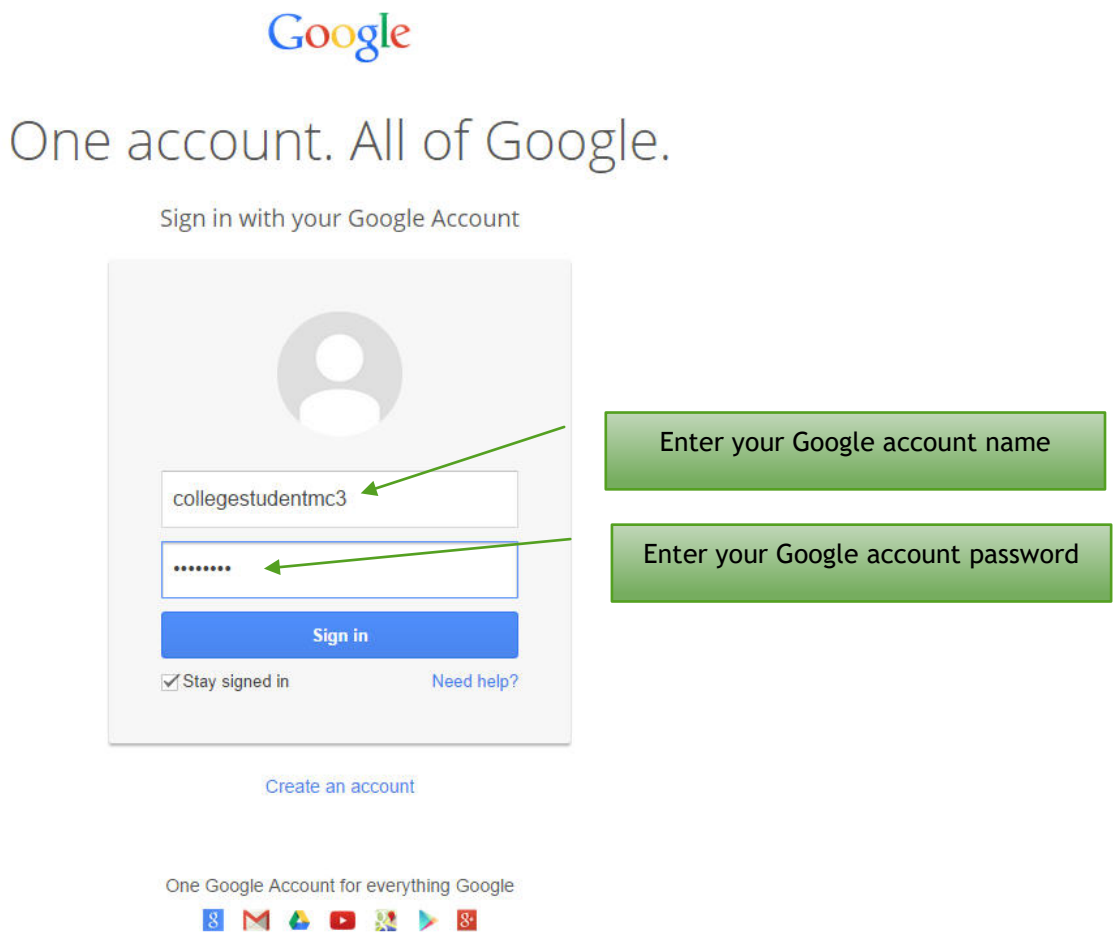
Working with Your First App

It's a tradition in programming to make the first program you write in a new language print "Hello, World" on the screen. For App Inventor, the first program everyone sees is Hello Purr. In this exercise, you will set up your app inventor account and explore the Hello Purr app.

1. Navigate to http://ai2.appinventor.mit.edu. If you've never logged into App Inventor before, you'll be asked to sign in with your Google Account:



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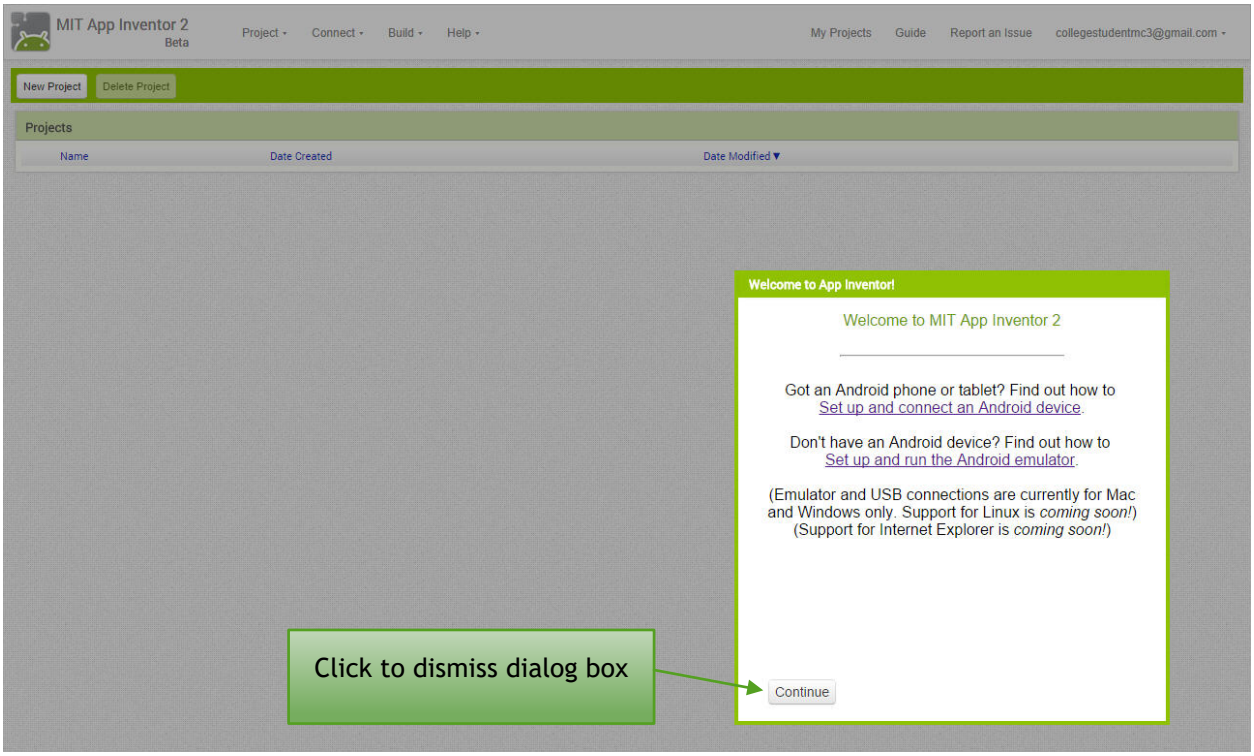
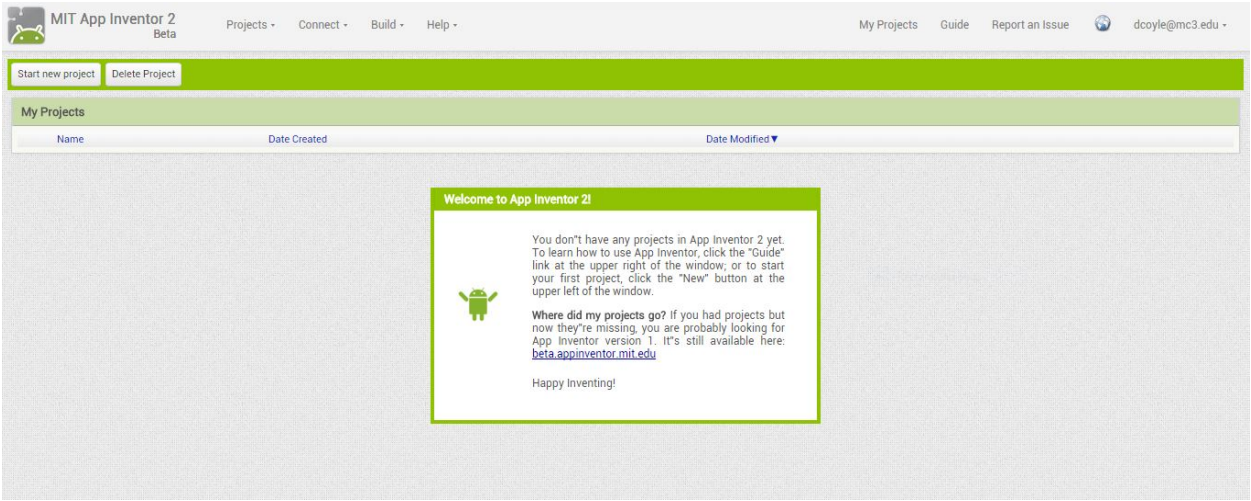
2. Enter your Google account name and password, and allow App Inventor access to your Google account. You'll only be asked to do this the first time you access your account. You will be asked to agree to the Terms of Service (you must accept the terms of service to use App Inventor) and you may be asked to take a voluntary survey.



3. Click the **Continue** button to dismiss the Welcome to App Inventor dialog box. Your screen should now look like this:



4. At the top of the screen, click **Projects** to display the Projects drop-down menu. From the Projects menu, select **Import Project (.aia) from a repository**. This will display the Built-in Templates screen.

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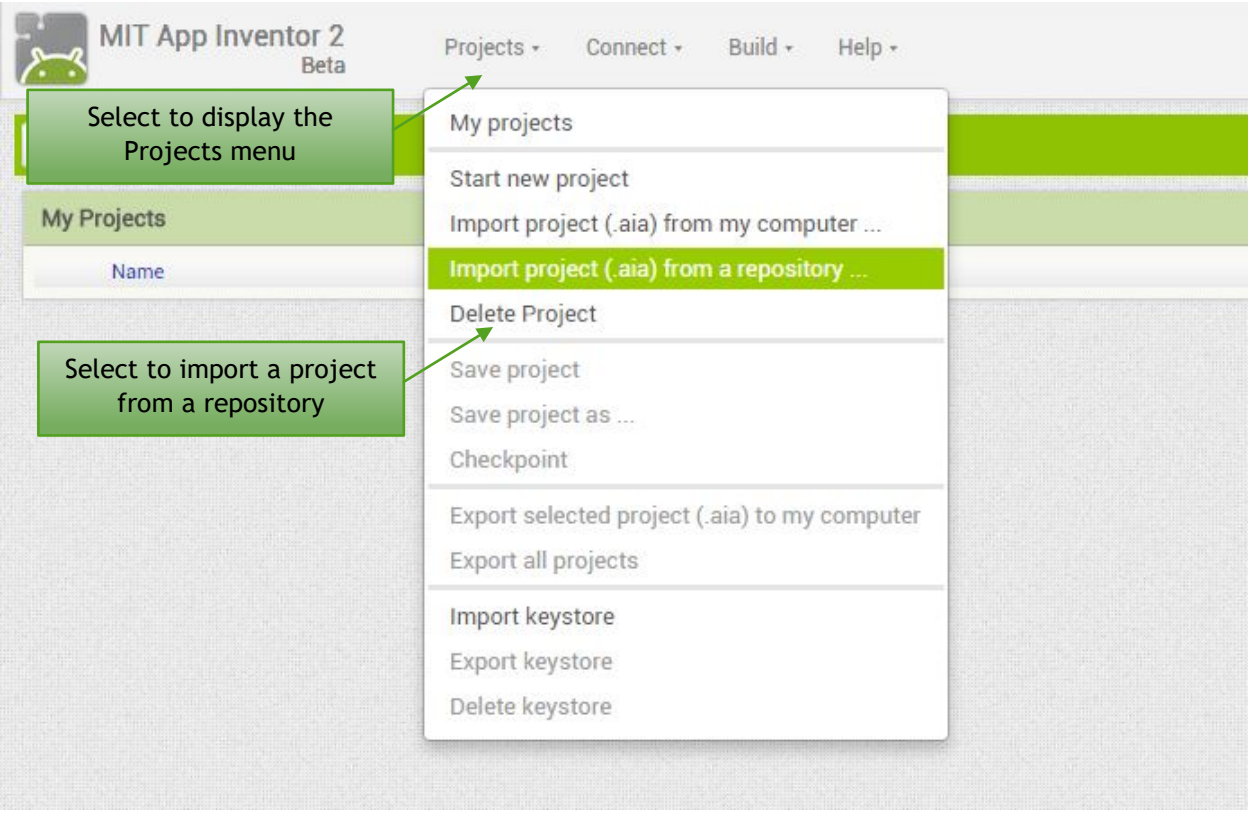

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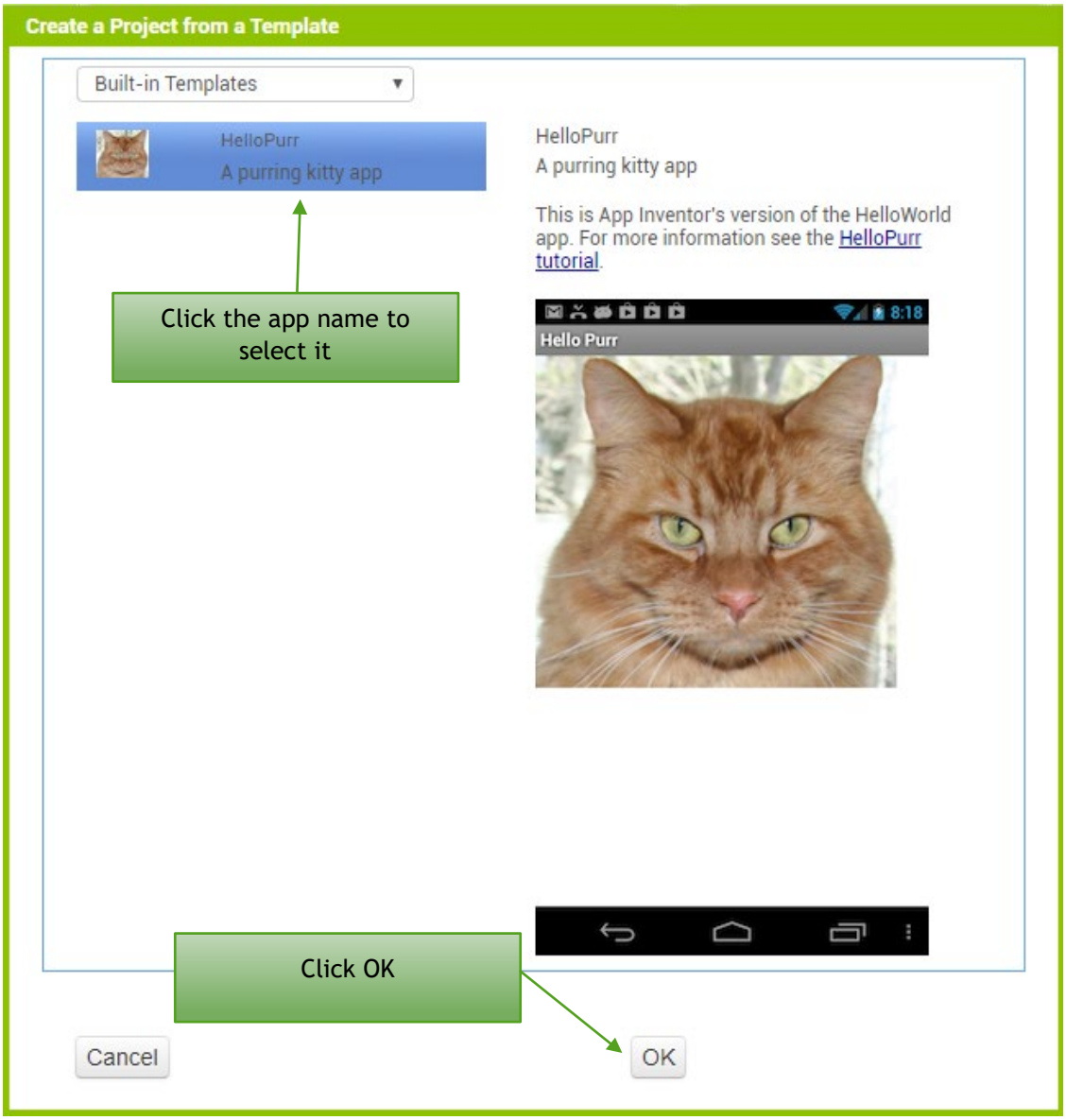
5. Select the **HelloPurr template** from the list in the Built-in Templates group (**Note**: At the time this document was constructed, only one template was available. You may see additional templates listed.)
6. Click **OK** to load the HelloPurr template into AI2.



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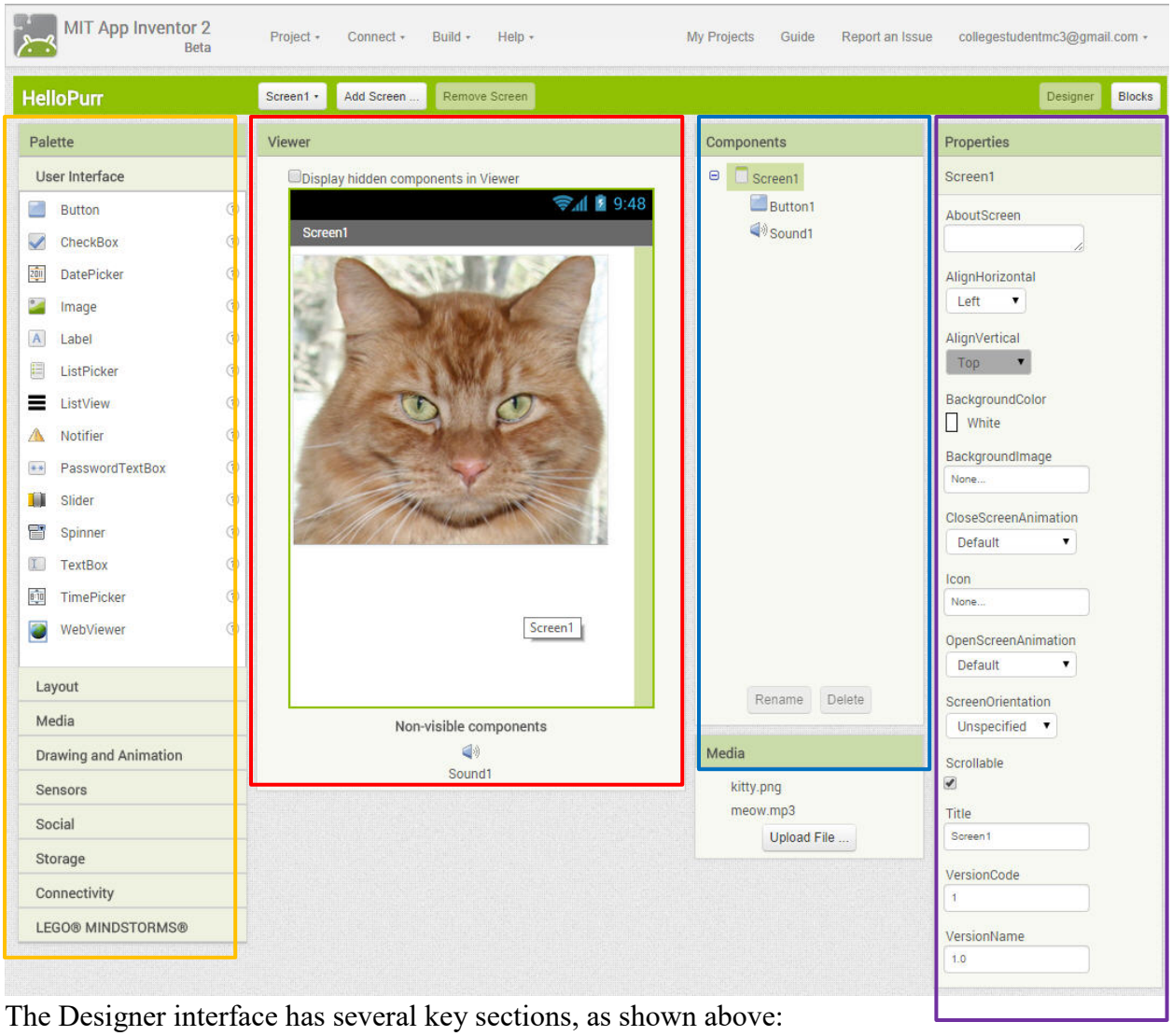

The Designer interface has several key sections, as shown above:

- Palette: This section contains the components you'll use to build apps.
- Viewer: This section shows the components that have been added to the app.
- Components: This section lists all screens in the app, plus the components on each screen. Selecting a screen or component displays the properties for that element in the Properties section.
- Properties: This section lists all properties of the element currently selected in the Components section.

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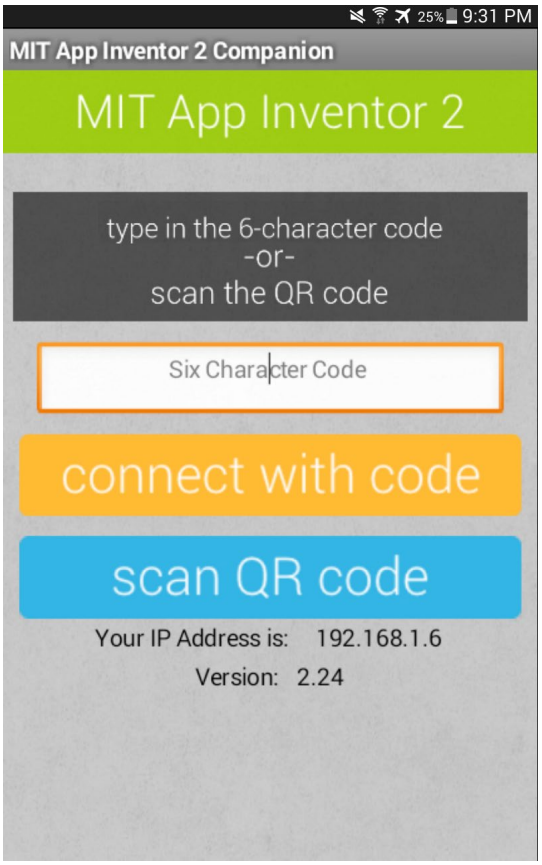
7. Next you need to connect App Inventor and your Android device. Turn on your Android device and launch the AI Companion app. You should see a screen on your Android device that looks like this:



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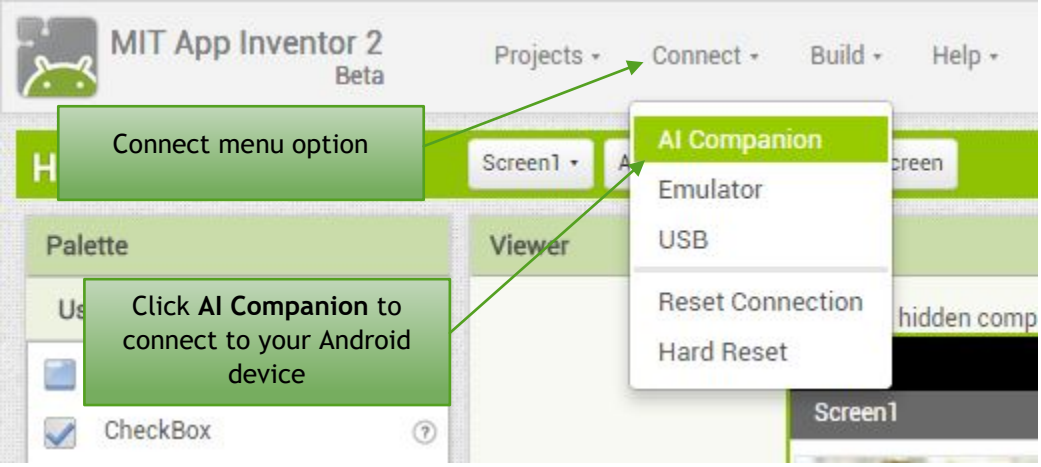
8. On your computer, in App Inventor, click the **Connect drop-down arrow** from the menu at the top of the screen, then click **AI Companion** from the drop-down menu. This launches the Connect to Companion dialog box. (**Note:** If you don't have an Android device, click *Emulator* from the drop-down menu.)



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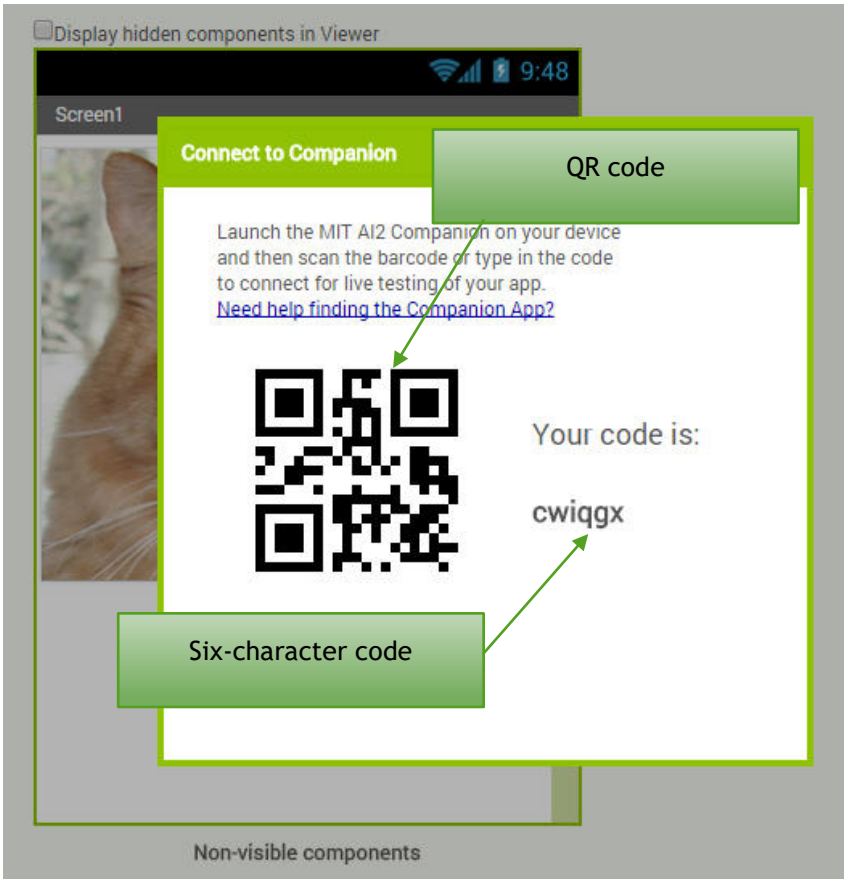
9. Click the button **scan QR code** on your device and hold it so the QR code on your computer screen is in focus. Wait for the two to synchronize. (**Note**: You can also just type the six-character code into the Six Character Code box in the Companion app on your Android device, and then press the orange **connect with code** button.)



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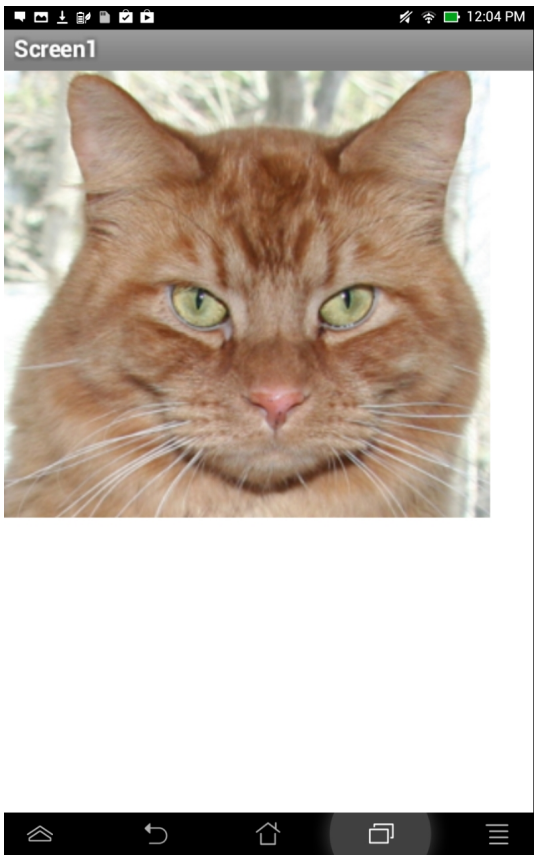
If you successfully connected, the Connect to Companion dialog box should disappear, and the screen on your Android device (or the emulator screen) should now display the HelloPurr app, as shown below:

10. Now take some time to play with your device and see what the app does. Does it make noise? Does your device vibrate (**Note:** the emulator will not vibrate and neither will some tablets.)?



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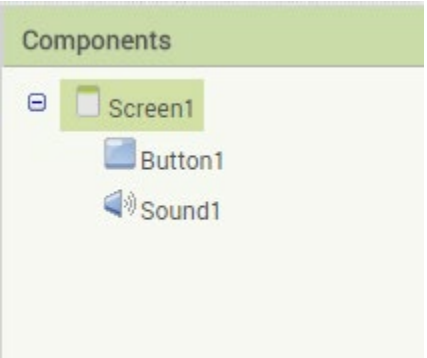
Behind the App

Now that you have loaded the HelloPurr app and played with it, let's examine how the HelloPurr app was designed. We will now explore the AI2 interface to familiarize you with its different components.

User Interface

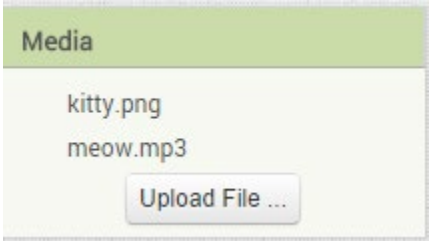
1. Navigate to the Components window. There you see the HelloPurr app uses one screen. That screen has:

- Button1
- Sound1



2. Navigate to the Media window, which shows that there are two files uploaded:

- the image **kitty.png**
- the sound **meow.mp3**



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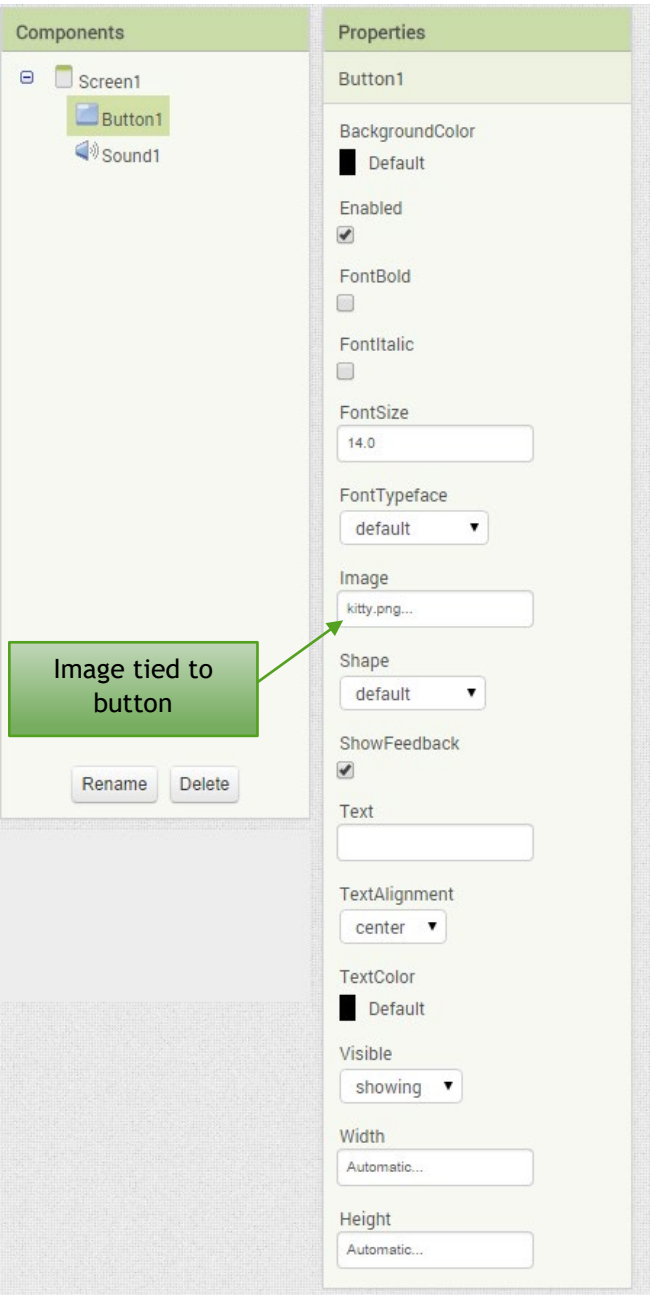
3. In the Components window, click **Button1** to select it. The Properties window shows all the details of that Button. Notice the Button has an image tied to it, kitty.png.



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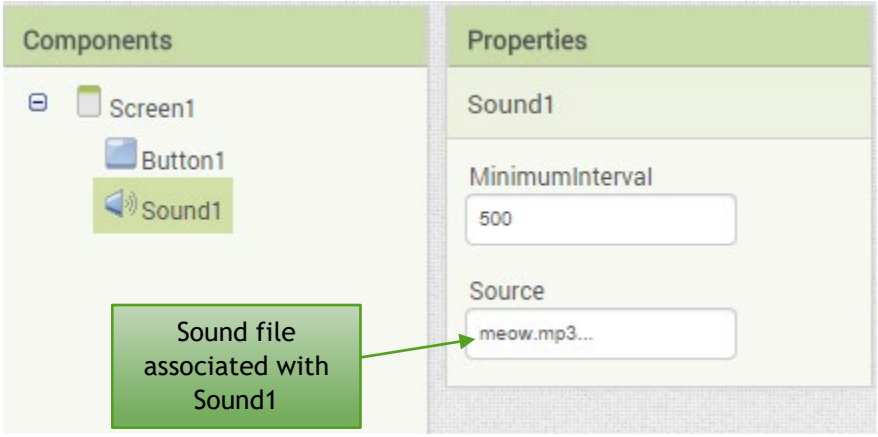
4. In the Components window, click **Sound1** to select it. The Properties window shows it has a Source file associated with it, meow.mp3.



Note: As you make changes to the app in the AI2 user interface on your computer, the app will update automatically on your Android device (or in the emulator).

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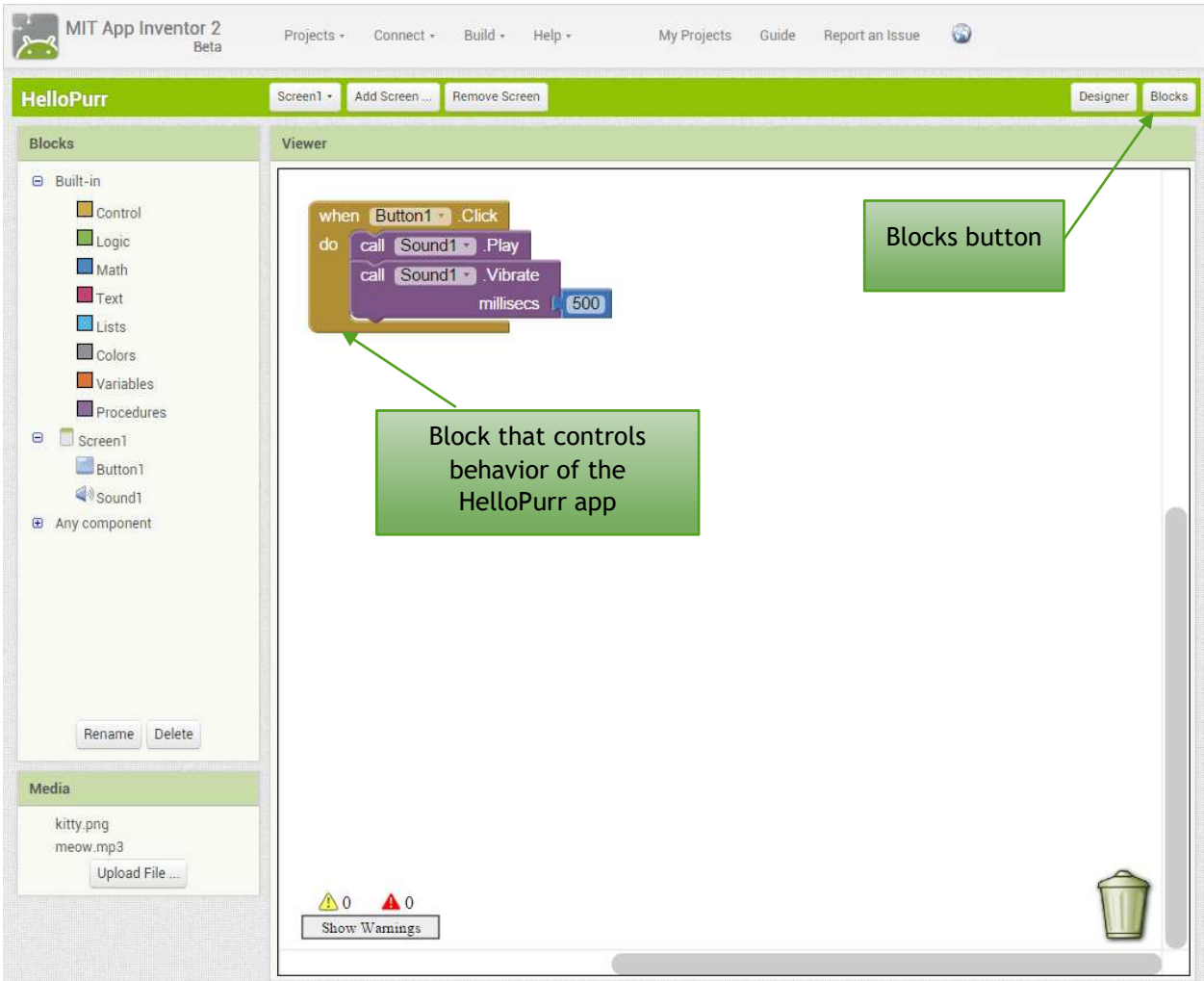
Behavior (Blocks Screen)

Now let's examine how the HelloPurr app is programmed. We will explore the Blocks view to see what is happening.

1. In the upper-right corner of the AI2 screen, click the **Blocks** button. This switches you to the Blocks view, which enables you to control the behavior of the app. ***Blocks*** are representations of programming code built into App Inventor. They make it possible for you to assign actions to components of your app without knowing the details of a complex programming language.



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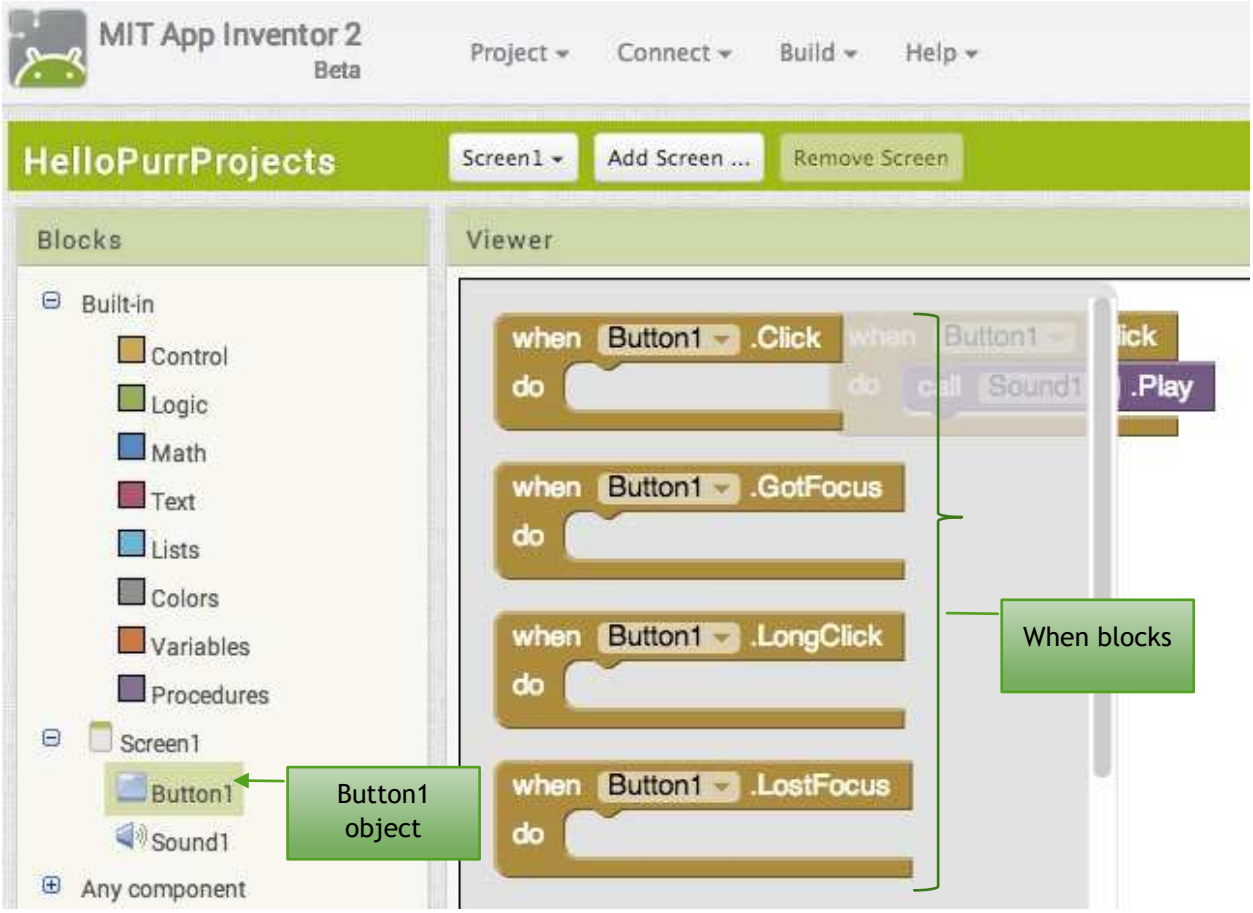
2. In the Blocks palette, click the **Button1** object. This opens the "drawer" of blocks that control the button's behavior.



The ***when blocks*** are gold in color and are tied to actions the user may take. **Note:** There are other types of blocks, but we won't deal with them until future exercises.

The HelloPurr app uses the event block "when Button1.Click" (as shown below). This block controls what happens when a user presses Button1 (the picture of the cat) when the app is running. When Button1 is clicked, the Sound1 object is told to play the source file associated with it and the device will vibrate for 500 milliseconds (like a cat purring).

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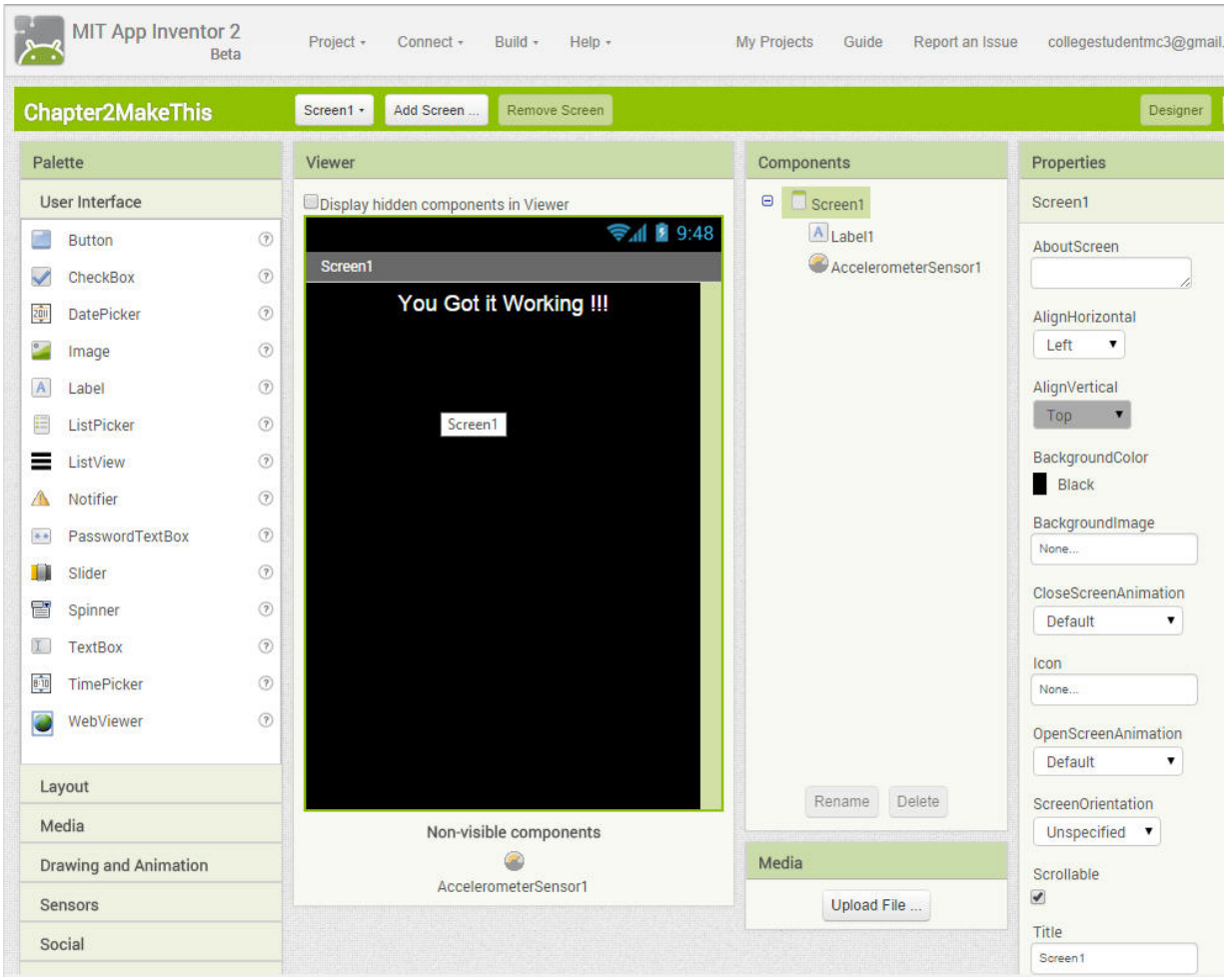
This is the basic pattern for all mobile apps you'll create with App Inventor:

- Design the user interface
- Decide which actions are important (pressing a button, select an item from a list, etc.)
- Program the behavior with blocks

A Mystery App

We have created a mystery app for you to explore. (**Note**: This app requires actions that are not supported in the emulator).

1. Download the file Chapter2MakeThis.aia and save it to your computer.
2. On the App Inventor menu, click **Connect->Reset Connection**.
3. Click **Projects->Import project (.aia) from my computer** and click the **Choose File** button. Navigate to the folder where you saved the Chapter2MakeThis.aia file and select it.
4. Click the **OK** button to load the app into App Inventor. Your screen should look like this:



5. Launch the AI companion app on your Android device.

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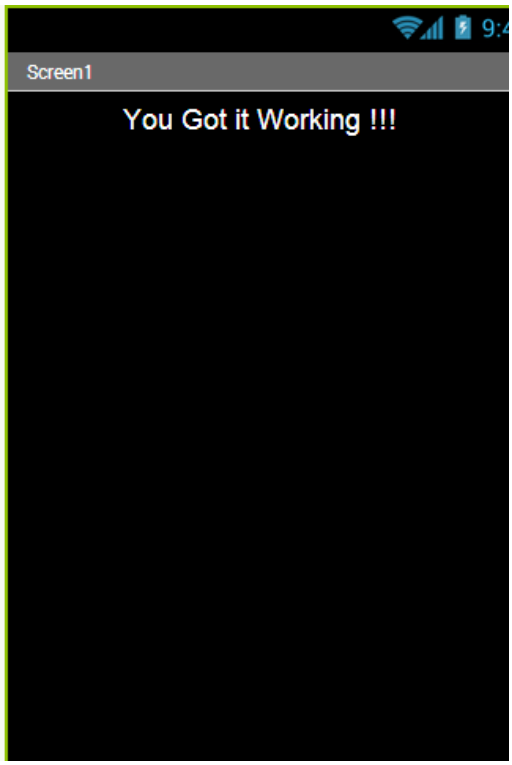
6. On the App Inventor menu, click **Connect->AI Companion** and connect to your Android device. Enter the code either by typing or by scanning the QR code. You device should look like this:



7. Now play with your device. Move it around. Shake it. What is changing? When are things changing? What kind of blocks might be behind this?

8. When you have an idea of what is happening, open the Blocks view and examine the code. Were you correct?

9. Try making some modifications or adding new behaviors. For example, try going to Designer view and adding a Text to Speech component (found in the Palette pane under the Media category) and a Text Box (in the User Interface category) and then using those to extend what the app can do (make the picture say the phrase typed in the text box by the user when the picture is touched).

Now that you know the basics of the App Inventor programming interface and how to connect an Android device to it, you can begin building your own apps!

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Extensions to This Project

1. Take a "selfie" and modify the HelloPurr app to use your picture as the button image instead of the cat image.
2. Record your voice saying something clever. Upload this sound file to the HelloPurr app and tie that sound to the button. Your picture will now have your voice!
3. Add a text to speech component to the HelloPurr app. Enable the user to type in the phrase that will be spoken when the picture button is pressed.

Resources

- User Guide for App Inventor 2
- Guide to Understanding Blocks
- MIT App Inventor Support Forum
- Beginner Tutorials (with videos)

Note: If you want to build the HelloPurr app from scratch, a tutorial to construct it is located at http://appinventor.mit.edu/explore/ai2/hellopurr.html.

MIT App Inventor is a blocks-based programming tool that allows everyone, even novices, to start programming and build fully functional apps for Android devices. Google's Mark Friedman and MIT Professor Hal Abelson co-led the development of App Inventor while Hal was on sabbatical at Google. App Inventor runs as a Web service administered by staff at MIT's Center for Mobile Learning - a collaboration of MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL) and the MIT Media Lab. MIT App Inventor supports a worldwide community of nearly 3 million users representing 195 countries worldwide. App Inventor is an open-source tool that seeks to make both programming and app creation accessible to a wide range of audiences. App Inventor is the property of the Massachusetts Institute of Technology (MIT) and the work licensed under a Creative Commons Attribution-ShareAlike 3.0 Unported License. For more information on App Inventor, go to MIT App Inventor About Us page.

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Technology in Action 15e, Chapter 2

Chapter Quiz Answer Key for Print and MIL

multiple choice

OBJECTIVE 2.1

1. Which of the following functions of a computer is mostly responsible for turning data into information?
   a. output
   b. storage
   c. input
   d. processing **Correct**

OBJECTIVE 2.2

2. In a computer, each_____ can represent one letter, number, or symbol.
   a. byte **Correct**
   b. bit
   c. integrated circuit
   d. megabyte

OBJECTIVE 2.3

3. A(n) _____ is a laptop computer that can convert into a tablet-like device.
   a. 2-in-1 PC **Correct**
   b. Chromebook
   c. ultrabook
   d. all-in-one PC

OBJECTIVE 2.4

4. Touch-screen devices usually feature _____ keyboards.
   a. physical
   b. laser-projection
   c. virtual **Correct**
   d. optical

OBJECTIVE 2.6

5. All of the following are sensors found in certain smartphones EXCEPT
   a. barometer.
   b. accelerometer.
   c. magnetometer.
   d. hygrometer. **Correct**

OBJECTIVE 2.14

6. Ergonomics is an important consideration
   a. for all computing devices. **Correct**
   b. only for laptop computers.
   c. only for laptop and desktop computers, but never for mobile devices.

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d. only for desktop computers.

OBJECTIVE 2.7

7. The most common output device for soft output is a
   a. laser printer.
   b. scanner.
   c. inkjet printer.
   d. display screen. **Correct**

OBJECTIVE 2.8

8. _____ printers work by spraying tiny drops of ink onto paper.
   a. Inkjet **Correct**
   b. Cloud-ready
   c. Laser
   d. Large format

OBJECTIVE 2.12

9. The fastest computer port is the _____ port
   a. USB
   b. expansion
   c. Thunderbolt **Correct**
   d. WiFi

OBJECTIVE 2.13

10. Which component of a computing device drains the battery the fastest?
    a. hard drive
    b. display screen **Correct**
    c. WiFi adapter
    d. Bluetooth adapter

true/false

1. Data and information are NOT interchangeable terms. **True, OBJECTIVE 2.1**
2. RAM is volatile storage. **True, OBJECTIVE 2.9**
3. Conventional disk drives are superior to SSD drives because they have no moving parts. **False, OBJECTIVE 2.11**
4. A touch pad is a pointing device usually found in laptops. **True, OBJECTIVE 2.5**
5. The “brain” of the computer is the USB. **False, OBJECTIVE 2.10**

Chapter 2: Looking at Computers: Understanding the Parts

Content Instruction

	Description & How to Use	Location	How Assessed	Grade to MyITLab
Book or e-text Chapter	Looking at Computers: Understanding the Parts	E-Text available in MyITLab Course Materials	NA	Shown as Viewed
PowerPoint Presentations: Standard, Audio	Ready-to-use presentations/lecture resource based on chapter objectives.	Student Resources	NA	Shown as Viewed
Sound Bytes • Binary Numbers Interactive • Smartphones Are Really Smart	An audio/visual lesson on topics that extend the chapter material, including a built-in quiz.	Student Activities Folder	Interactive, auto-graded quiz	Grade

Student Preparation and Review

Chapter Overview Videos	Three minute videos covering main topics of each chapter part.	Student Activities Folder	NA	Shown as Viewed
Chapter Review	A written summary of chapter content	End of Chapter in Text	NA	NA
Check Your Understanding Quizzes	A self-check quiz covering the Objectives of each Chapter Part (2 per chapter). Can be used to ensure students have done assigned reading as well.	Student Activities Folder	Auto-graded quiz in MyITLab	Grade
Helpdesk Activities: • Understanding Bits & Bytes • Exploring Storage Devices and Ports	Interactive lessons that relates directly to chapter objectives and put the student in the role of a support staffer answering customer questions.	Student Activities Folder	Simulated, auto-graded activity	Grade

Active Learning Options

Try This Project: What's Inside My Computer?	Short hands-on projects that expand on a chapter topic.	Student Activities Folder	Rubric/sample solution	NA

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	NOTE: A walk through video for the project is also included in the Student Resources Folder			
Make This Project: Make: A Mobile App	Step-by-step instructions leading students to construct an Android mobile app. **NOTE:** Includes a Video Walk Through	Step-by-step instruction documents and video tour guide in Student Activities Folder	Rubric /sample solution	NA
Solve This Project (Grader Project) Technology Wish List	Hands-on projects that require students to demonstrate understanding of concepts in the chapter using Microsoft Office applications.	Student Activities Folder Data and Solution Files also found in Instructor Resources	Auto-graded, live-in the application projects	Grade
IT Simulation: What is a Computer?	Active learning environment that correspond to chapter content.	Student Activities Folder	Simulated, auto-graded activity	Grade
Chapter Assessment				
Chapter quizzes	Objective quiz covering all chapter learning objectives	Student Activities Folder	Auto-graded quiz	Grade
Test bank quizzes	Covers all objectives from the chapter with ~70 questions per chapter	Instructor Resources	Auto-graded, objective-based quiz	Grade
Sound Byte Assessments	Sound Byte Testbank questions	Student Activities Folder	Auto-graded, objective based quiz	Grade
Soft Skills and Team Work				
Team Time: Portable Computing Options	End of Chapter project related to chapter content requiring several students to complete.	End of Chapter text activities	Rubric	NA
Ethics in IT: What is Ethical Computing?	In-chapter boxed element discussion ethical topic relating to chapter content.	In text	NA	NA

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Ethics Project: Green Computing	Team exercise covering an ethical topic that relates to chapter content.	End of Chapter text activities	Rubric	NA
Currency Topics				
Tech Bytes Weekly	Weekly blog with curated articles related to current technology news, including ready-to-use discussion questions.	Student Activities Folder	NA	Viewed Link
Instructor Resources				
Instructor Resources Link in MyITLab or Pearsonhighered.com/techinaction	Includes solution files, PPT presentations, and various versions of the testbank (BB, Canvas, etc.), and Make This Project Grading guidelines & videos.	In MyITLab or on Pearson Higher Ed site	Various resources to assist with teaching and assessing.	NA

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TECHNOLOGY IN ACTION
FIFTEENTH EDITION

SUPPORT/WEB RESOURCE LINKS

***Technology in Action* Companion Website:** pearsonhighered.com/techinaction. Find additional resources to support and supplement chapter topics, including an Online Chapter Review and Web Research Projects.

***Technology in Action* MyITLab:** pearsonmylabandmastering.com/northamerica/myitlab/. Access the MyITLab site.

24x7 Pearson Technical Support: 247pearsoned.custhelp.com. Obtain help by phone, e-mail, or chat, or explore the knowledge base to find answers right on the site.

Chapter 2: Looking at Computers: Understanding the Parts

Amazon Fire: amazon.com/. In the Search bar, type Kindle Fire, and then press Enter. A tablet computer with an integrated multitouch-sensitive screen designed to read e-books, run simple apps, and provide access to WiFi for Internet connectivity.

Android: android.com. A customizable OS that powers a variety of devices from phones and tablets to watches, and more.

App Inventor: appinventor.org/. A site that offers a course taught by USF Professor David Wolber through which students of all ages can learn how to invent and program an app within hours.

Apple: apple.com. Information about Apple's macOS, iOS, iPhone, Watch, iPad, iPod, and iTunes, as well as information about Mac computers such as MacBook Air or iMac.

Apple AirPrint: apple.com. Click the Search icon, then search for AirPrint and select from the list of articles.

Apple Siri: apple.com. To locate information on Siri, click on the Search icon, type Siri in the search text box, and then press Enter. An iOS personal assistant for the iPhone, iPod, and iPad that allows users to access the Internet and other features by voice command.

ASUS ZenBook: asus.com/US/. A light, thin, laptop built with a stronger laptop alloy. The ZenBook does not have a CD/DVD drive, but does have USB-C 3.1, USB 3.0, HDMI, VGA, RJ45 LAN, and 3-in-1 SD card reader ports.

AT&T: att.com. The official site for AT&T, where users can purchase a phone, phone service, and other services.

BBC: bbc.com/. The official web site for the British Broadcasting Company.

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Bluetooth: bluetooth.com. This is the official site for Bluetooth technology.

Computer Ethics Institute: computerethicsinstitute.org. This site provides information on ethical issues associated with the advancement of information technologies in society.

Consumer Reports: consumerreports.org/cro. Expert reviews on thousands of consumer products are included here.

Dragon NaturallySpeaking: nuance.com/dragon/. Software by Nuance that allows users to dictate content into a computer.

Dropbox: dropbox.com. This free service lets users easily share and bring photos, documents, and videos anywhere.

Epson: epson.com. A site that provides access to learn about and purchase Epson products, including printers, ink, projectors, scanners, and more.

Facebook: facebook.com. This popular social networking service has more than 1.5 billion users.

Google: google.com. A free online search utility.

Google Assistant: assistant.google.com/. An intelligent personal assistant app that responds to voice commands to access the Internet and perform various tasks.

Google Cloud Print: google.com/cloudprint/learn/. New technology that connects printers to the web allowing you to print from your phone, tablet, PC, or other web-connected devices.

Google Chromebook: google.com/chromebook/. A computer that uses Google Chrome OS.

Google Drive: drive.google.com/. A personal drive offered by Google with at least 15 GB of free storage space. The drive can be accessed on the web, on a mobile device, or on a computer.

Google Hangouts: hangouts.google.com/. An online video app that makes it easy to send messages, make voice and video calls, or videoconference with multiple people. This link may have to be copied and pasted into the browser address bar.

Google Maps: google.com. Click the Google Apps button in the top right corner, and then click Maps. Google Maps uses GPS to allow users to navigate from one location to another or find a specific location such as a gas station, restaurant, or store.

HP: hp.com. The official site for HP products.

Intel: ark.intel.com/. A site that provides information about different computer processors.

Kodak: kodak.com. A site that provides hardware, software, and services to the graphic arts, commercial print, publishing, entertainment, and consumer product markets.

Lenovo: lenovo.com. A site that provides access to purchase Lenovo laptops, desktops, tablets, and accessories. The Lenovo Yoga is a laptop with a hinge that enables users to fold the keyboard behind the screen and use the monitor as a tablet.

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LG: lg.com/us. A site that provides access to purchase LG products.

Linux.com: linux.com. The latest information on news that affects Linux users.

Massachusetts Institute of Technology (MIT): web.mit.edu/. The official site for the Massachusetts Institute of Technology.

Microsoft Corporation: microsoft.com. Information about Microsoft software, hardware, and operating systems such as the Office Suite, Microsoft Surface, and Windows 10.

Microsoft Cortana: microsoft.com/en-us. . Click the Search icon. Type Cortana in the Search textbox, and then press Enter. Personal assistant software that manages your calendar, tracks packages, finds files, and even chats with you.

Microsoft Excel: products.office.com/en-us/. Click Products on the red menu bar, and below Applications, click Excel. The spreadsheet application Microsoft bundles with Microsoft Office.

Microsoft OneDrive: onedrive.com. Cloud-based file storage and sharing, as well as free access to Microsoft Office Web Apps.

Microsoft Surface: microsoftstore.com. Click Surface. The official site for information about Surface tablets, as well as Surface Studio and laptops.

Microsoft Windows 10: microsoft.com/en-us/windows/features. Learn more about Windows 10 and take a video tour of the new Windows features.

Microsoft Word: products.office.com/en-us/. Click Products on the red menu bar, and below Applications, click Word. The word processing application Microsoft bundles with Microsoft Office.

MyFitnessPal: myfitnesspal.com/. An app that counts calories and captures data using the cell phone camera to scan UPC codes on food products.

Panono: panono.com. The Panono 360° has 36 fixed-focus cameras that take 36 single images. Images are uploaded to the Panono cloud where they are automatically stitched together for a 360° panoramic image.

PlayStation: us.playstation.com. This site provides information about PlayStation systems and games.

Pokémon Go: pokemon.com/us/. The official site for the Pokémon Go game.

Ricoh Theta S: theta360.com/en/. A device that captures 360-degree still or video images using two cameras.

Rock Band: rockband4.com. Click GEAR in the menu bar to learn more about Rock Band controllers.

Samsung: samsung.com. This site provides access to purchase Samsung products.

Skype: skype.com. This site provides Voice over Internet Protocol (VoIP) service for users to make free phone calls over the Internet.

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Square: squareup.com/. A magstripe reader that allows retailers to accept credit cards anywhere using Apple and Android devices.

Sunway TaihuLight: top500.org/system/178764. This site provides detailed information about the world's fastest supercomputer.

theSkyNet: theskynet.org. An organization that uses software to tie individual computing devices to a grid to process astronomical data during times when individual CPUs are idle or not working to their full capacity.

TOP500.org: top500.org. A project that started in 1993 to provide a ranking for the top 500 supercomputers' abilities to solve a linear set of equations.

Twitter: twitter.com. Twitter is an online social networking and microblogging service, which can be updated with SMS messaging, known as "tweets."

U.S. Department of Defense: defense.gov/. The official government site for the U.S. Department of Defense.

Verizon: verizon.com. Verizon offers wireless devices, accessories, and mobile plans, as well as residential and business solutions for Internet, TV, and phone services.

Wake Forest Institute for Regenerative Medicine: wakehealth.edu/WFIRM.
A research facility that specializes in engineering laboratory-grown organs and replacement tissues to cure rather than treat disease.

WhatsApp: whatsapp.com/. An app that supports free national and international texting from tablets and other devices.

Wii U: nintendo.com/wiiu/what-is-wiiunintendo.com/. A game console by Nintendo.

Wikipedia: wikipedia.org. A popular collaborative online encyclopedia.

Xbox: xbox.com. This is the official Xbox site with information about Xbox systems and games.

ADDITIONAL LINKS

3DPrinting: 3dprinting.com/what-is-3d-printing/. An article explaining the additive manufacturing process of making solid 3D objects from a digital file.

4AllMemory: 4allmemory.com. Find the memory to upgrade your computer.

AAXA Technologies: aaxatech.com/. This site offers digital projectors for business and education.

BBC Future: bbc.com/future/story/20150310-are-you-over-connected. This article discusses whether individuals are over-connected to digital media.

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CalRecycle: calrecycle.ca.gov/electronics/whatisewaste/. Click Electronic Waste below "Where Do I Recycle…" This site defines e-waste and provides links to more information about electronic waste recycling.

Celluon: celluon.com/. A technology company that manufactures a product that projects a laser image of a keyboard onto a flat surface and detects the motion of fingers during typing.

Computer History Museum: computerhistory.org. This site presents a history of how computers really started and how far they have come since their invention.

Ergonomics: ergonomics.org/. This site provides information on ergonomics and the importance of having an ergonomically designed work place.

Good Clean Tech: goodcleantech.pcmag.com. This site provides news, tips, advice, and ideas about how to do more with less. With the help of the editors and analysts at *PC Magazine*, this site highlights companies that have committed to using better ecotechnologies.

Google Documents: docs.google.com. Google's web-based application suite and data storage service that enables users to create documents while collaborating in real-time with other users.

Google Play: play.google.com. Google's online store where apps, movies, books, and more can be purchased.

Leap Motion: leapmotion.com. Leap Motion has developed technology that allows computers to be controlled using hand gestures.

Logbar: logbar.jp/. Information about the Ring, a wearable input device that can be programmed to control iOS and Android compatible devices.

Microsoft Help and Support: support.microsoft.com. Microsoft's support site includes help topics and tutorials for all Microsoft programs. Downloads and updates are also available.

ooVoo: oovoo.com. Web-based video chat and video conferencing software is provided for download.

PCPARTPICKER: pcpartpicker.com/. Build guides to create your own computer.

PC Magazine: pcmag.com/. An online computer magazine that provides information about new and upcoming computer technologies.

PCWorld: pcworld.com. Timely product information for PC, Mac, iPod, and iPhone technologies is included on this site. Thousands of products across 33 categories are available for review, comparison, and expert purchasing guidance.

Presto: collobos.com. Software that allows users to send images and documents from mobile devices to a printer on a home network.

Projector Central: projectorcentral.com. This is a review and information site for projectors.

Shapeways: shapeways.com. Shapeways' 3-D printing service enables users to design and sell custom-printed 3-D objects.

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ThinPrint Cloud Printer: cloudprinter.thinprint.com/. An app that allows users to print from all their devices to a cloud printer.

Thunderbolt: thunderbolttechnology.net/. A site that provides information about Thunderbolt technologies in the News and Blog sections. There is also a Developers section for licensed Thunderbolt developers.

World Community Grid: worldcommunitygrid.org. Software download to make any computer part of a scientific research grid that allows the computer to work on research when the CPU is idle.

Xerox Corporation: xerox.com/. A site that provides access to learn about and purchase Xerox products.

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Answer Key Chapter 2

Team Time

Portable Computing Options

Students should be assessed on the following:

1. Research conducted to evaluate options for portable computing devices
2. Recommendations match the needs and goals of company and staff

	Needs improvement	Done Adequately	Done Well
Research on portable computing device options			
Students have identified the needs and goals of company and staff			
Students have outlined the benefits and disadvantages of various options, identified a solution or combination of solutions, and provided support for the recommendation			

Ethics Project

Green Computing

1. Students need to create and summarize a situation that involves green computing. The event/scenario should involve more than one character so that role-playing can take place.
2. Students need to create an outline to use during a role-playing event.

3. Students role-play the event using chat or other collaborative tools.
4. Students should present their case/experience to the class via PowerPoint or other method as determined by instructor.

	Needs improvement	Done Adequately	Done Well
Students need to create and summarize a situation that involves green computing.			
Students need to create an outline to use during a role-playing event.			
Students role-play the event using chat or other collaborative tools.			
Students should present their case/experience to the class via PowerPoint or other method as determined by instructor.			

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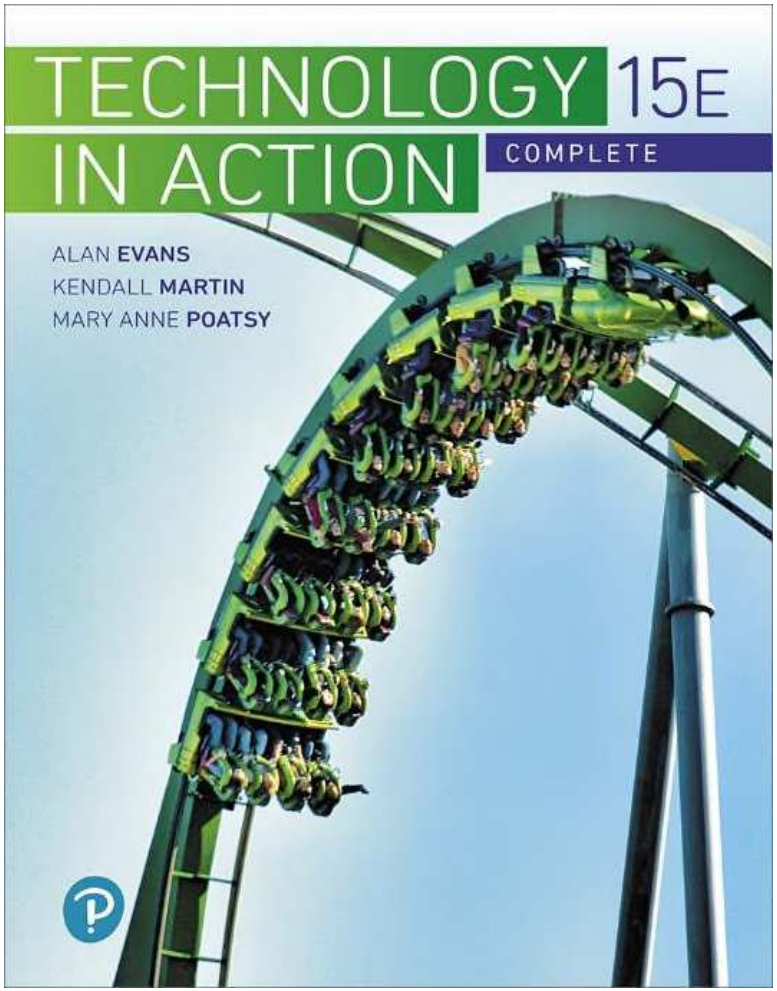

Chapter 2

Looking at Computers:

Understanding the Parts

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Learning Objectives (1 of 3)

2.1 Describe the four main functions of a computer system and how they interact with data and information.

2.2 Define bits and bytes, and describe how they are measured, used, and processed.

2.3 List common types of computers, and discuss their main features.

2.4 Identify the main types of keyboards and touch screens.

2.5 Describe the main types of mice and pointing devices.

2.6 Explain how images, sounds, and sensor data are input into computing devices.

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Learning Objectives (2 of 3)

2.7 Describe options for outputting images and audio from computing devices.

2.8 Describe various types of printers, and explain when you would use them.

2.9 Describe the functions of the motherboard and RAM.

2.10 Explain the main functions of the CPU.

2.11 Describe the various means of storing data and information with computing devices.

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Learning Objectives (3 of 3)

2.12 Describe common types of ports used today.

2.13 Describe how to manage power consumption on computing devices.

2.14 Define ergonomics, and discuss the ideal physical setup for using computing devices.

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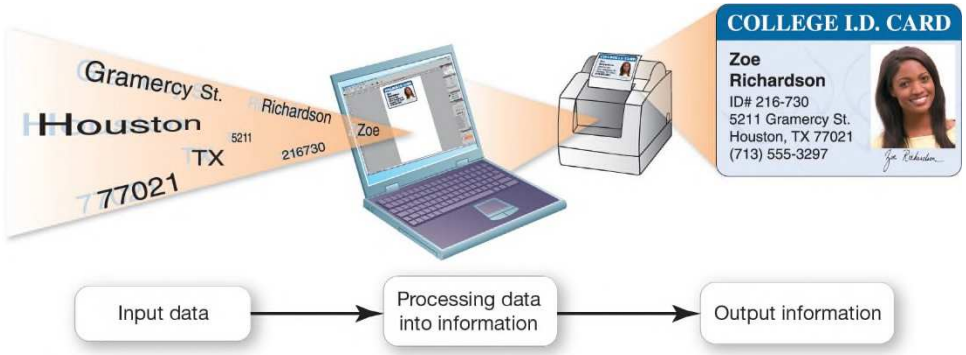
Understanding Your Computer
Computers are Data Processing Devices
(Objective 2.1)

- Perform four major functions
  - Input: Gathers data, allows entering data
  - Processing: Manipulates, calculates, or organizes data
  - Output: Displays data and information
  - Storage: Saves data and information



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Understanding Your Computer
Binary: The Language of Computers
(Objective 2.2)

- Bit
  - Binary digit
  - 0 or 1

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- Byte
  - Unique combinations of 8 bits of 0s and 1s
- Kilobytes, megabytes, gigabytes, terabytes, and petabytes

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Understanding Your Computer

Types of Computers

(Objective 2.3)

- Cell phones
- Tablets
- Laptops and their variants
- Choosing a portable device
- Stationary computers

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Input Devices
Physical Keyboards and Touch Screens
(Objective 2.4)

- Used to enter data and instructions
- Examples
  - Keyboard
  - Touch screen
  - Stylus
  - Virtual keyboard

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Input Devices
Mice and Other Pointing Devices
(Objective 2.5)

- Mouse
- Touch pad (trackpad)
- Game controllers

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Input Devices
Image, Sound, and Sensor Input
(Objective 2.6)

- Popular for images
  - Digital cameras
  - Camcorders
  - Mobil device cameras
  - Flatbed scanners
  - Webcams
- Popular for sound
  - Microphone with voice recognition software
- Sensors

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Output Devices
Image and Audio Output (1 of 3)
(Objective 2.7)

- Send data out of the computer in the form of:
  - Text
  - Pictures
  - Sounds
  - Video
- Examples
  - Monitors
  - Printers
  - Speakers and earphones

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Output Devices
Image and Audio Output (2 of 3)
(Objective 2.7)

- Types of display screens
  - Liquid crystal display (LCD)
  - Light-emitting diode (LED)
  - Organic light-emitting diode (OLED)
- How they work
  - Pixels
  - Aspect ratio
  - Resolution

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Output Devices

Image and Audio Output (3 of 3)

(Objective 2.7)

- Speaker
  - Output device for sound
  - Surround-sound speakers
  - Wireless speaker systems
- Headphones or earbuds
  - Keep from distracting others

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Output Devices
Printers (1 of 2)
(Objective 2.8)

- Inkjet
  - Affordable
  - High-quality color
  - Quick and quiet
- Laser
  - Faster printing speed
  - Higher-quality printouts
  - More expensive

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Output Devices
Printers (2 of 2)
(Objective 2.8)

- Cloud-ready printers
- All-in-one printer
  - Printer, scanner, copier, and fax
- Large format printer
  - Prints oversize images
- 3D printer

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Processing and Memory on the Motherboard
The Motherboard and Memory
(Objective 2.9)

- Motherboard
  - CPU
  - ROM, RAM, and cache
  - Slots for expansion cards
  - Sound/Video cards
  - Network interface cards (NIC)

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Processing and Memory on the Motherboard Processing (1 of 2)

(Objective 2.10)

- Central Processing Unit
  - CPU or processor
  - “Brains” of the computer
  - Controls all functions of the computer’s components
  - Processes all commands and instructions
  - Gigahertz (Billions of tasks per second)

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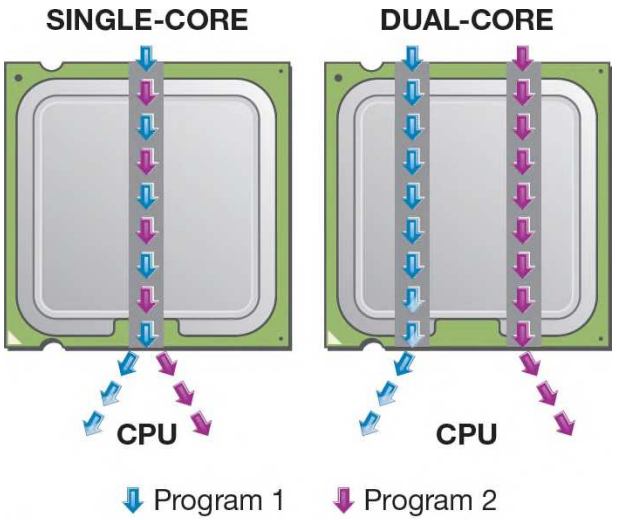
Processing and Memory on the Motherboard Processing (2 of 2)

(Objective 2.10)

- CPU Performance Measures
  - Processor speed measured in hertz (Hz)
    - Megahertz (MHz) or gigahertz (GHz)
  - Number of cores
    - Single
    - Dual
    - Quad
    - Ten



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Storing Data and Information
Storage Options on Computing Devices (1 of 4)
(Objective 2.11)

- Local Storage Devices
  - Hard disk drive
    - Primary storage device
    - Nonvolatile storage
    - Internal drive
    - External hard drive
  - Solid-state Drive (SSD)

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Storing Data and Information
Storage Options on Computing Devices (2 of 4)
(Objective 2.11)

- Portable Storage Options
  - Flash drive
  - Flash memory card

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Storing Data and Information
Storage Options on Computing Devices (3 of 4)
(Objective 2.11)

- Cloud storage
  - Files stored on the Internet
  - Some amount is free
  - Can purchase additional storage

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Storing Data and Information
Storage Options on Computing Devices (4 of 4)
(Objective 2.11)

- Optical storage
  - Compact discs (CDs)
  - Digital video discs (DVDs)
    - Store more data than CDs
  - Blu-ray discs (BDs)

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Connecting Peripherals to the Computer

Computer Ports

(Objective 2.12)

- Thunderbolt
  - Transfer speeds up to 20 Gbps
- Universal serial bus (USB)
  - Transfer speeds of 10 Gbps
- Connectivity port
  - Ethernet port
  - Up to 10,000 Mbps
- HDMI port

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Power Management and Ergonomics
Power Controls and Power Management
(Objective 2.13)

- Battery drain
- Power supply
- Sleep mode
- Warm / Cold boot
- Hibernate

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Power Management and Ergonomics

Setting It All Up: Ergonomics

(Objective 2.14)

- Ergonomics
- Guidelines
  - Monitor position
  - Adjustable chair
  - Proper position while typing
  - Take breaks
  - Adequate lighting
- Assistive (adaptive) technologies

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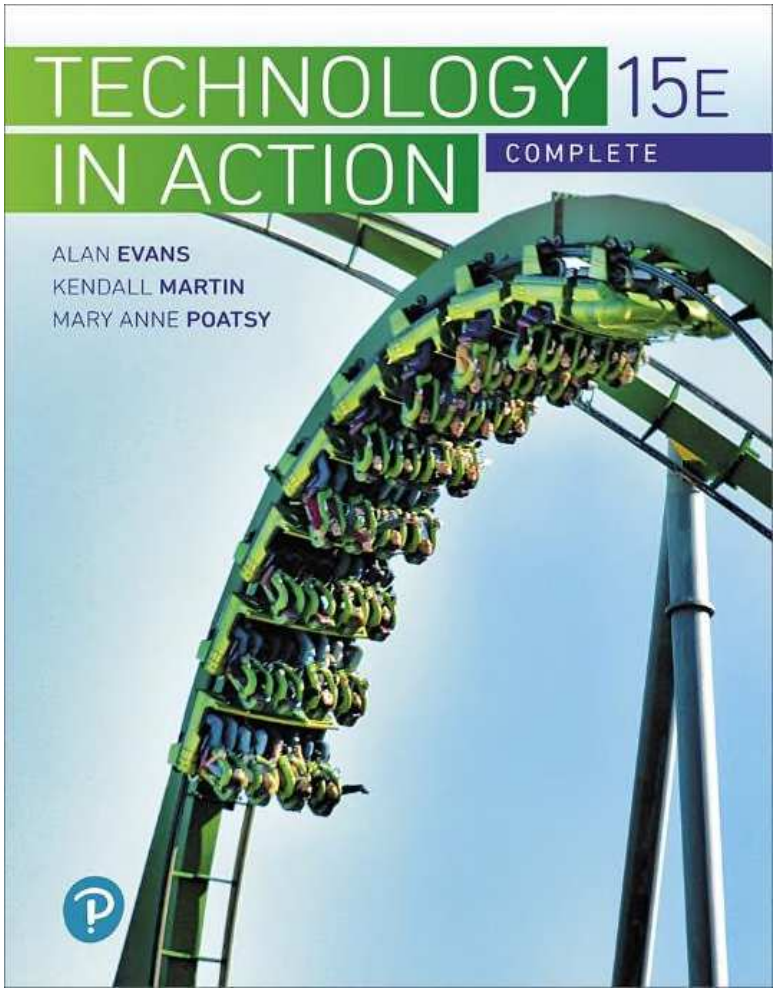

Chapter 2

Looking at Computers:

Understanding the Parts

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Learning Objectives (2 of 3)

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2.9 Describe the functions of the motherboard and RAM.

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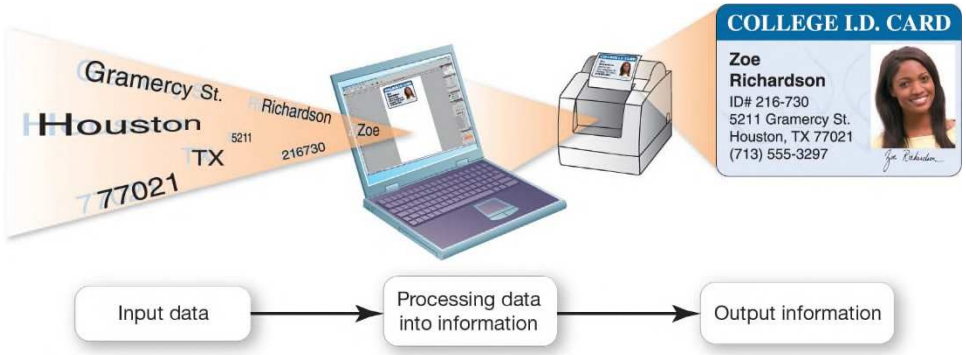

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- Byte
  - Unique combinations of 8 bits of 0s and 1s
- Kilobytes, megabytes, gigabytes, terabytes, and petabytes

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Image, Sound, and Sensor Input
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  - Mobil device cameras
  - Flatbed scanners
  - Webcams
- Popular for sound
  - Microphone with voice recognition software
- Sensors

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Output Devices
Image and Audio Output (1 of 3)
(Objective 2.7)

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Output Devices
Image and Audio Output (2 of 3)
(Objective 2.7)

- Types of display screens
  - Liquid crystal display (LCD)
  - Light-emitting diode (LED)
  - Organic light-emitting diode (OLED)
- How they work
  - Pixels
  - Aspect ratio
  - Resolution

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Output Devices

Image and Audio Output (3 of 3)

(Objective 2.7)

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  - Keep from distracting others

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Output Devices
Printers (1 of 2)
(Objective 2.8)

- Inkjet
  - Affordable
  - High-quality color
  - Quick and quiet
- Laser
  - Faster printing speed
  - Higher-quality printouts
  - More expensive

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Output Devices
Printers (2 of 2)
(Objective 2.8)

- Cloud-ready printers
- All-in-one printer
  - Printer, scanner, copier, and fax
- Large format printer
  - Prints oversize images
- 3D printer

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Processing and Memory on the Motherboard
The Motherboard and Memory
(Objective 2.9)

- Motherboard
  - CPU
  - ROM, RAM, and cache
  - Slots for expansion cards
  - Sound/Video cards
  - Network interface cards (NIC)

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Processing and Memory on the Motherboard Processing (1 of 2)

(Objective 2.10)

- Central Processing Unit
  - CPU or processor
  - “Brains” of the computer
  - Controls all functions of the computer’s components
  - Processes all commands and instructions
  - Gigahertz (Billions of tasks per second)

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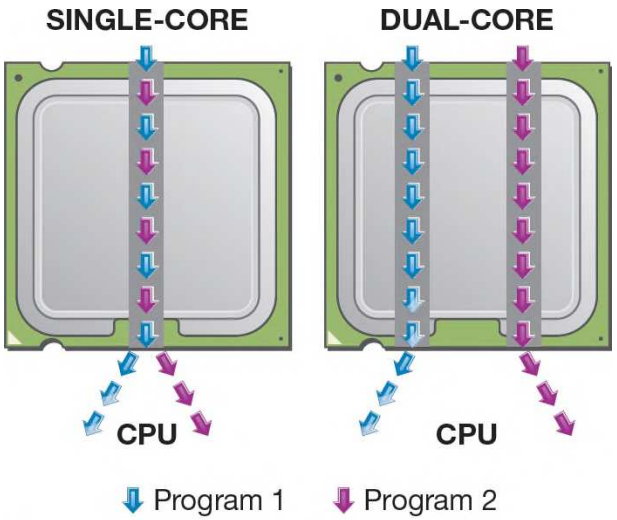
Processing and Memory on the Motherboard Processing (2 of 2)

(Objective 2.10)

- CPU Performance Measures
  - Processor speed measured in hertz (Hz)
    - Megahertz (MHz) or gigahertz (GHz)
  - Number of cores
    - Single
    - Dual
    - Quad
    - Ten



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Storing Data and Information
Storage Options on Computing Devices (1 of 4)
(Objective 2.11)

- Local Storage Devices
  - Hard disk drive
    - Primary storage device
    - Nonvolatile storage
    - Internal drive
    - External hard drive
  - Solid-state Drive (SSD)

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Storing Data and Information
Storage Options on Computing Devices (2 of 4)
(Objective 2.11)

- Portable Storage Options
  - Flash drive
  - Flash memory card

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Storing Data and Information
Storage Options on Computing Devices (3 of 4)
(Objective 2.11)

- Cloud storage
  - Files stored on the Internet
  - Some amount is free
  - Can purchase additional storage

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Storing Data and Information
Storage Options on Computing Devices (4 of 4)
(Objective 2.11)

- Optical storage
  - Compact discs (CDs)
  - Digital video discs (DVDs)
    - Store more data than CDs
  - Blu-ray discs (BDs)

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Connecting Peripherals to the Computer

Computer Ports

(Objective 2.12)

- Thunderbolt
  - Transfer speeds up to 20 Gbps
- Universal serial bus (USB)
  - Transfer speeds of 10 Gbps
- Connectivity port
  - Ethernet port
  - Up to 10,000 Mbps
- HDMI port

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Power Management and Ergonomics
Power Controls and Power Management
(Objective 2.13)

- Battery drain
- Power supply
- Sleep mode
- Warm / Cold boot
- Hibernate

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Power Management and Ergonomics

Setting It All Up: Ergonomics

(Objective 2.14)

- Ergonomics
- Guidelines
  - Monitor position
  - Adjustable chair
  - Proper position while typing
  - Take breaks
  - Adequate lighting
- Assistive (adaptive) technologies

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