CLEVELAND INSTITUTE OF ELECTRONICS

INTRODUCTION TO ANDROID™ APPLICATION DEVELOPMENT

LESSONS 9011C THROUGH 9020C

Study Guide to accompany *Android™ Application Development for Java™ Programmers*

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This study guide contains excerpts from the Android Application Development Instructor's resources and the book Android™ Application Development for Java™ Programmers by James Sheusi

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Chat with Your Instructor

This Study Guide will offer some suggestions about how to cover the material in the class. One of the things you should know, regardless of the class you are taking, is that the instructor can't be the sole repository of information for the class – and neither can the textbook. Technology simply moves too quickly for that to be a viable option. There is a whole Internet out there. Chances are, someone, somewhere has encountered whatever problem you are having and has solved it. And chances are, someone who has solved your problem has posted the solution on the web. It might not be the exact solution, but it will get you moving toward solving the problem.

Having said that, the vaguer an assignment is, the more you will learn from it. The author of the text will walk you through building a prototypical app and then tell you to "make it better." The tutorial sections sprinkled throughout the chapters are very much like this. We do not want to inhibit you in any way if possible; we want you to think what needs to be improved. Of course, there are always students who need more direction and will need to be dealt with individually. Nevertheless, this is college. Students need to explore – not be led by the nose step by step.

This book assumes that you have knowledge of basic programming practices. Truly, the language does not matter. All of the code sections used in this book are Java instructions. However, you definitely do not want to be learning at this time how to write loops and conditionals. The exercises in Chapter 1 ensure that you have the prerequisite skills. If you cannot write these programs, either review the course previous this one, or at least look into an Introductory Programming class on Java specificallly.

If you have a technical problem, we recommend the following:

- First, check the textbook that accompanies the software.
- Many software products include on-line help. If the answer is not available in the printed materials, try using the Help feature of your software.
- Feel free to call the instruction department during business hours (8:30 AM to 6 PM Eastern time), Monday through Friday, and Saturday during the weekend hours (8:30 AM to 5 PM Eastern time). Be prepared to describe which lesson you're working on and the problem you're having.

Instructional Support Addresses and Phone Numbers
Main Support Help Line: (800) 243-6446 or (216) 781-9400
E-mail address: faculty@cie-wc.edu
Instructional Support is available business hours (Eastern time) Monday through Saturday.
Mailing address: Cleveland Institute of Electronics
1776 East 17th Street
Cleveland, OH 44114

Chapter 1 - Installation and Configuration of Your Development Platform

Overview

The obvious activity in this chapter will be to get Java, Eclipse, and the Android software installed and configured. A little review of Object Oriented Programming languages is suggested if you have not done programming in a while.

Objectives

1. Installation and configuration of Eclipse
2. Installation and configuration of Java
3. Installation and configuration of the Android Development Kit

Lesson 9011C Assignments

□ Read Chapter 1

□ Read Study Guide for Lesson

□ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Continue to the next chapter for lesson exam.

Resources

Java installation:	**http://java.sun.com/j2se/1.4.2/jre/install.html** (Site is now maintained by Oracle®)
Eclipse installation:	**http://www.eclipse.org/downloads/** **http://wiki.eclipse.org/Eclipse/Installation**
Android installation:	**http://developer.android.com/sdk/installing.html**
Java resources:	**http://java.sun.com/docs/codeconv/CodeConventions.pdf** (This document is old, but is still very useful.) **http://docs.oracle.com/javase/tutorial/**

Chapter 2 - Starting an Android Application Project

Overview

The key activity in this chapter is to get an application project started. Eclipse and Android will create the basic "hello, world!" application and add the basic user controls, create the manifest file, etc. The important things is the concept of the "package". This is important to basic Java applications for the PC, but can easily be overlooked in a Java class since the simplest applications can run with no regard to package. Eclipse will create a directory for the package, make the package line for the source code, and add the package name to the manifest. Package requirements are so automated that you may not even be aware of it, so it is a good idea to understand its meaning and value. Also, study the importance of the Activity class and how all applications will extend the Activity class.

As stated in the introduction of the chapter, the Debugger (Debug perspective) is covered during this time.

Objectives

1. Become familiar with the Android Application Components
2. Use the emulator to create a new Android project
3. Debug an Android project
4. Employ the process of an identity
5. Utilize methods to control the activity

Lesson 9011C Assignments

- □ Read Chapter 2
- □ Read Study Guide for Lesson
- □ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Once you have completed the exam continue to the next lesson.
- □ Submit exam and then continue to the next chapter

Resources

Android Resources: **http://andbook.anddev.org/files/andbook.pdf**
(A nice companion for Android Application Development for Java Programmers.)
http://www.ibm.com/developerworks/opensource/tutorials/os-eclipse-android/
(Great resource, but not for beginners.)

Debugging with Eclipse:
http://staff.um.edu.mt/cabe2/lectures/java/ide/eclipse_debugger_tutorial.pdf
http://www.vogella.de/articles/EclipseDebugging/article.html

Android Lesson 9011C Examination

Please complete the following exam. You may use the electronic grading system for quicker response. Simply log on to **www.study-electronics.com** and enter your credentials. Once the exam has been submitted, your results will be returned within 72 hours. You may also e-mail your answers to **faculty@cie-wc.edu**, or fax them to us at 1-216-781-0331. If you have any questions, please contact the Instruction Department.

1. Java is ___________________________ .
   1) open-source
   2) object-oriented
   3) compiled
   4) all of these

2. Java was developed by _______________.
   1) IBM
   2) Sun Microsystems
   3) Microsoft
   4) None of these

3. Eclipse is an open-source development environment.
   1) true
   2) false

4. Eclipse can only be used to develop applications using Java.
   1) true
   2) false

5. Eclipse can only be installed, and Android applications can only be developed on computers running the Windows ® operating system.
   1) true
   2) false

6. Java development requires the Eclipse IDE.
   1) true
   2) false

7. The various panels such as “Java” and “Debug” are called _______________ by Eclipse.
   1) Screens.
   2) Views.
   3) Perspectives.
   4) Environments.

8. The Java language is case-sensitive.
   1) true
   2) false

9. The directory created by Eclipse to store projects is named ____________
   1) Workbook
   2) Projects
   3) Eclipse
   4) Workspace

10. The "Install New Software" menu choice is found under which Eclipse menu?
    1) File
    2) Project
    3) Window
    4) Help

11. Eclipse will save the components of a project in their own _________________________ .
    1) text file
    2) directory or folder
    3) zip file
    4) link

12. The package naming convention commonly used in Java projects is called ______________.
    1) reverse domain name
    2) camel-style naming
    3) author-name
    4) None of these

13. The base class for Android applications is the ______________.
    1) Applet class
    2) Activity class
    3) Swing class
    4) Phone class

14. The application project file used to track versioning is the ___________________.
    1) Java source code file
    2) main.xml file
    3) manifest file
    4) the R.java file

15. The components of the project are laid out in tree fashion in Eclipse's____________ panel.
    1) Editor
    2) Console
    3) Package Explorer
    4) LogCat

16. The path to the main.xml file in a project is ____________________.
    1) src/package
    2) res/layout
    3) res/values
    4) gen/

17. The manifest file is written in the same format as any Java source code file.
    1) true
    2) false

18. All screen elements must be defined in the main.xml file.
    1) true
    2) false

19. The manifest file may be modified by the developer after it is generated by Eclipse.
    1) True
    2) False

20. Errors such as incorrect formulas or poorly constructed decision statements are called ______
    1) syntax errors
    2) logic errors
    3) runtime errors
    4) format errors

END OF EXAM

Chapter 3 - Application Design

Overview

The purpose of the chapter is to show you how to add controls to the user interface, both statically using the main.xml file and dynamically through Java code, and how to write the code which allows the user to interact with the application. The Model-View-Controller paradigm is introduced in this chapter. Some XML basics are introduced since the main.xml file is obviously written in XML format.

The MVC paradigm is conceptual and understanding it does not affect the ability to write an application, though one might argue that it affects the ability to write a good one or a quick one. Application-wise, there is no limit to what can be done on the screen with a handful of text fields (EditText and TextView) and one or to Button objects. One simple idea is to put three buttons on the screen, with the text, “RED”, “GREEN”, and “BLUE”. Using the **.setBackgroundColor( )** method associated with any of the Views on the screen, use the buttons to change background colors. The chapter also covers hex numbers as they are used in setting color RGB values, an application to turn decimal values into hex values is another good exercise.

The chapter also covers creating, customizing, and communicating with the emulator. This is essential if the developer wishes to take advantage of device features such as the use of memory cards, the camera, GPS, and so on. Communicating with the emulator is essential to the developer who wants to add files to the device, set GPS coordinates to simulate those obtained through a provider on a real device, or simply to discover how files and directories are organized. (Remember, the device behaves very similarly to any Linux device, and anyone who has a basic understanding of Linux can issue basic Linux commands and observe the results.) The emulator can be reached through a telnet session, or through the Android Debug Bridge (ADB), a utility included with the Android Development Toolkit.

Objectives

1. Identify and navigate through controls of the emulator
2. Create an interface and configure an Android emulator
3. Run procedures to communicate with the emulator
4. Identify and expand upon key classes and methods

Lesson 9012C Assignments

□ Read Chapter 3

□ Read Study Guide for Lesson

□ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Once you have completed the exam continue to the next lesson.

□ Submit exam and then continue to the next chapter

Resources

Android Resources: **http://andbook.anddev.org/files/andbook.pdf**
(A nice companion for Android Application Development for Java Programmers.)
http://www.ibm.com/developerworks/opensource/tutorials/os-eclipse-android/
(Great resource, but not for beginners.)

Debugging with Eclipse:
http://staff.um.edu.mt/cabe2/lectures/java/ide/eclipse_debugger_tutorial.pdf
http://www.vogella.de/articles/EclipseDebugging/article.html

Android Lesson 9012C Examination

Please complete the following exam. You may use the electronic grading system for quicker response. Simply log on to **www.study-electronics.com** and enter your credentials. Once the exam has been submitted, your results will be returned within 72 hours. You may also e-mail your answers to **faculty@cie-wc.edu**, or fax them to us at 1-216-781-0331. If you have any questions, please contact the Instruction Department.

1. Text box objects and many other related objects are descendants of the _______________.
   1) Frame class
   2) Javax class
   3) View class
   4) String class

2. The "C" in the acronym MVC stands for ______________.
   1) console
   2) controller
   3) color
   4) context

3. Integer values are associated with screen objects that are defined in the main.xml by the ______________.
   1) R.java file
   2) manifest file
   3) Java source code file
   4) any of these files

4. It is quite common for the developer to modify the R.java file directly ___________________.
   1) true
   2) false

5. The emulator's features can be modified by the developer.
   1) true
   2) false

6. The four-digit number that appears at the upper-left corner of the emulator, typically 5554 is ____________________.
   1) a version number for the emulator
   2) a version number for the toolkit
   3) a phone number assigned to the emulator
   4) a port number used for communicating with the emulator

7. The Android OS behaves most like _________________.
   1) Microsoft Windows 7
   2) MS-DOS
   3) Linux
   4) None of these

8. ADB in the Android development context stands for__________.
   1) Android Development Basics
   2) Android Decimal to Binary
   3) Android Debug Bridge
   4) Android Development Beta version

9. The R.java file is written in the same format as _____________________.
   1) the manifest file
   2) Java source code
   3) The main.xml file
   4) plain unformatted text

10. The method, **.findViewById(int)** _____________________
    1) searches a text string in text fields
    2) searches code for unassigned variables of the View class
    3) associates an object in the R.java with a variable in the Java Activity file
    4) all of these

11. Which term describes installing an app on a device or emulator?
    1) Install
    2) Place
    3) Deploy
    4) Implant

12. What does JDE stand for?
    1) Java Development in Eclipse
    2) Java Designer for Eclipse
    3) Java Development Environment
    4) Java Designer Environment

13. What does XML stand for?

1) Extendable Markup Language
2) Extensible Markup Language
3) Extended Markup Language
4) Extra Markup Language

14. For the MVC design pattern, what does MVC stand for?

1) Model-View-Controller
2) Main-Vice-Controller
3) Modulate-Validate-Code
4) Main-View-Code

15. What is the default port number for the emulator?

1) 80
2) 5554
3) 5555
4) 5556

END OF EXAM

Chapter 4 - Controls and the User Interface

Overview

Chapter four expands on the range of user interface controls that can be implemented in an Android application, primarily check boxes, radio buttons and the Spinner class. There are plenty of applications in the book for implementing these controls, but if you are looking for another try adding a TimePicker object to an application. It functions essentially the same as the DatePicker; there is a link for the TimePicker below. The chapter covers the use of Java's Calendar and Date classes for interacting with the DatePicker, so a review of these might be useful.

A suggested activity is to determine which sign in the Chinese Zodiac a student was born under based on date of birth. The math is simple; just subtract 1900 from the birth year (set in a DatePicker), then divide by twelve and save the remainder. (Use the modulus operator, e.g. birth year % 12) This will yield a number between 0 and 11. Using a twelve element array of animals from the list, in order of course, the application can display the animal's name in a text field. Later when graphics are covered, you can rewrite the app with images.

Objectives

1. Integrate check boxes into the program
2. Integrate radio buttons into the program
3. Investigate additional widgets

Lesson 9013C Assignments

- □ Read Chapter 4
- □ Read Study Guide for Lesson
- □ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Once you have completed the exam continue to the next lesson.
- □ Submit exam and then continue to the next chapter

Resources

Chinese Zodiac: **http://www.travelchinaguide.com/intro/social_customs/zodiac/**
(A good link with an on-board calculator as described above. It also lists the animals in order.

Spinner Reference: **http://www.dcpagesapps.com/developer-resources/android/21-android-tutorial-spinners**
(This is a great reference because it describes different ways to populate a spinner; two are covered in the textbook.)
http://developer.android.com/resources/tutorials/views/hello-spinner.html
(Reference from Android docs.)

DatePicker Reference:
http://developer.android.com/resources/tutorials/views/hello-datepicker.html

TimePicker Reference:
http://developer.android.com/resources/tutorials/views/hello-timepicker.html

Android Lesson 9013C Examination

Please complete the following exam. You may use the electronic grading system for quicker response. Simply log on to **www.study-electronics.com** and enter your credentials. Once the exam has been submitted, your results will be returned within 72 hours. You may also e-mail your answers to **faculty@cie-wc.edu**, or fax them to us at 1-216-781-0331. If you have any questions, please contact the Instruction Department.

1. The important difference between checkboxes and radio buttons is ________________
    1) their shape
    2) the shape of the checkmark
    3) that only one radio button can be checked at a time
    4) how many can go on a screen

2. Radio buttons on the same ______________ are mutually exclusive, i.e. only one can be used at once.
    1) screen
    2) LinearLayout
    3) RadioGroup
    4) column

3. The state of a checkbox (checked or unchecked) cannot be set in code, only by the application’s user.
    1) true
    2) false

4. The Calendar and Date classes can exchange their values with each other.
    1) true
    2) false

5. Only one DatePicker object can appear on the screen at a time.
    1) true
    2) false

6. Spinner objects can only be populated by an XML created at development time.
    1) true
    2) false

7. The number of values in a Spinner object is limited by the size of the screen.
   1) true
   2) false

8. A DatePicker is the only way to display the current date on the screen__________.
   1) true
   2) false

9. There are actually two Java Date classes, one is found in the java.util package, the other is found in the java.____ package
   1) java.sql
   2) javax.swing
   3) java.io
   4) None of these

10. The DatePicker object responds to changes using the OnDateChangedListener.
    1) true
    2) false

11. To add a string literal block to an app, on which tab do you find the Text block?
    1) Built-in
    2) My Blocks
    3) Advanced
    4) Components

12. The Timer class method schedule uses which of the following units for its delay value?
    1) Hours
    2) Minutes
    3) Seconds
    4) Milliseconds

13. Which section of the App Inventor workspace allows the developer to modify certain aspects of components?
    1) Toolbar
    2) Media
    3) Components
    4) Properties

14. What is the correct order to start the emulator in the Blocks Editor window?
    1) Click ‘New emulator’, slide the green lock icon right to unlock, click ‘Connect to Device’, and select the emulator to start your app.
    2) Click ‘Connect to Device’, click ‘New emulator’, slide the green lock icon right to unlock, and select the emulator to start your app.
    3) Click ‘New emulator’, click ‘Connect to Device’, slide the green lock icon right to unlock, and select the emulator to start your app.
    4) Click ‘Connect to Device’, slide the green lock icon right to unlock, click ‘New emulator’, and select the emulator to start your app.

15. One feature of the Eclipse editor is showing or hiding blocks of code, which makes it easier to scroll through source code. Which of the following is the correct name for this in Eclipse?

1) Code folding	3) Expand/Collapse
2) Section hiding	4) Open/close

END OF EXAM

Chapter 5 - Basic Graphics by Extending the View Class

Overview

Chapter five was mainly intended to cover code-generated graphics, but it includes the concept of importing outside JAR files into a project. The latter by itself is a worth-while topic as it is used later to import classes to calculate the Poisson distribution, parse XML files, and eventually to import classes which implement banner advertisements for income from apps. Even in Java applications it is typical to import external JARS, so it should be understood.

The Poisson distribution curve concept may be a little highbrow, but the goal is to demonstrate how even difficult and specialized applications can be created as easy as a tip calculator. If you choose, simply use some of the "draw" methods to create a stick man on the screen. The hardest part of coded graphics is orienting your brain to the screen coordinates, with the (0,0) position at the top-left rather than the bottom-left of the canvas. An interesting twist on the Doodle program might be to add a few buttons to change the color of the Paint object; just be careful where you declare the Paint object in the application. Another interesting project is to produce text as graphics with the .drawText( ) method. It will allow for a little more creativity than just the typical TextView object.

Objectives

1. Combine graphics with a touch listener (doodle pad application)
2. Investigate practical uses of graphics
3. Continued expansion of list covering classes and methods

Lesson 9014C Assignments

- □ Read Chapter 5
- □ Read Study Guide for Lesson
- □ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Once you have completed the exam continue to the next lesson.
- □ Submit exam and then continue to the next chapter

Resources

Graphics Reference:	**http://bestsiteinthemultiverse.com/2008/11/android-graphics-example/** (Some Graphics examples in code.)
JAR reference:	**http://www.eclipse-blog.org/eclipse-jar/exportingimporting-jar-files.html** (Another perspective on importing/exporting JAR files.)

Android Lesson 9014C Examination

Please complete the following exam. You may use the electronic grading system for quicker response. Simply log on to **www.study-electronics.com** and enter your credentials. Once the exam has been submitted, your results will be returned within 72 hours. You may also e-mail your answers to **faculty@cie-wc.edu**, or fax them to us at 1-216-781-0331. If you have any questions, please contact the Instruction Department.

1. On the screen, the (X,Y) position of (0,0) is at the ________________ corner.
   1) Upper-Left
   2) Upper-Right
   3) Lower-Left
   4) Lower-Right

2. "Drawing" a word on a screen is done with the _______________ method.
   1) drawString( )
   2) drawText( )
   3) drawWord( )
   4) drawAlpha( )

3. The JAR extension on a file name specifies that the file is a _______________.
   1) Java archive file
   2) Java Annotated Reference file
   3) Java Adobe file
   4) None of these

4. To use a class file in an application, the source code must be present ____________________.
   1) true
   2) false

5. A canvas can exist along with other controls on a screen.
   1) true
   2) false

6. Many of the characteristics of coded graphics is determined by the ___________ class.
   1) Paint class
   2) Brush class
   3) Pencil class
   4) Pen class

7. A color value of #000000 would yield _________________ on the object.
   1) black
   2) white
   3) random
   4) None of these

8. Androids can only display graphics in the .JPG format __________.
   1) true
   2) false

9. The “Java Build Path” screen used to add external JAR’s is found by following the following path:
   1) Properties choice under the Project menu.
   2) Preferences choice under the Window menu.
   3) Properties choice under the File menu.
   4) None of these

10. Only one external JAR can be added to a project.
    1) true
    2) false

11. What is the text displayed on the `canvas` after the execution of the following code?

```
super.onDraw(canvas);
Paint dotPaint = new Paint();
dotPaint.setColor(Color.RED);
canvas.drawRect(dotX, dotY, dotX + 20, dotY + 20,
          dotPaint);
a = 1;
b = 2;
a = b;
b = a;
canvas.drawText(“a: “+a+“| b: “+b, 20, 20, dotPaint);
```

    1) `a: 1|b: 1`
    2) `a: 2|b: 1`
    3) `a: 1|b: 2`
    4) `a: 2|b: 2`

12. What is the name for components that are not displayed to the user?
    1) Hidden
    2) Non-visible
    3) Spooled
    4) Background

13. What happens when you select the Download to this Computer option from the Package for Phone menu?
    1) The Java source files are downloaded to the user’s computer.
    2) The generated binary files are downloaded to the user’s computer.
    3) A Java archive file, or .jar file, is downloaded to the user’s computer.
    4) An Android package, or .apk file, is downloaded to the user’s computer.

14. Testing the graphical user interface (GUI) during the early stages of development is best done using which of the following methods?
    1) Desk-checking
    2) Using the emulator
    3) On physical devices
    4) You can’t test the GUI.

15. Which of the following could never be found in the file NewClass.java?

1)
```
public NewClass() {
 message = “Hello World!”;
}
```

2)
```
public String title = “New Class”;
```

3)
```
public void doSomething() {
 doSomethingElse();
}
```

4)
```
public OtherClass() {
 message = “Hello, World! Good to see you again!”;
}
```

END OF EXAM

Chapter 6 - Find a Location with Google Maps

Overview

This chapter is organized such that you should allow plenty of time for an understanding of maps and GPS service because along with the long and not so intuitive code; modifications have to be made to the manifest file, different API's have to be chosen for the project and the emulator, and finally a key has to be generated for Google Maps. In a previous chapter we covered connecting to the emulator through telnet; you will use this now to set coordinates to the emulator using the **geo fix** command. Just remember to enter the longitude value first. Coordinates will have to be re-entered every time you restart the emulator, but if you just minimize it between code changes, the current settings will stay present.

There is no shortage of tutorials on Google Maps in Android apps that can be found on the Internet. Below are a few. Sometimes the code may not match the code in the book, but the principles are the same.

Part of the mapping process, although it technically has nothing to do with Android application programming, is creating a map marker with a transparent background. They can be found as downloads, but if you want to create a school logo or something special as a map marker, it will look better with a transparent background. It can be done with PhotoShop®, but this is not free software. Gimp, on the other hand, is open-source and freely downloadable. Below is included some reference on how to create images with transparent backgrounds with Gimp.

Objectives

1. Use Google Maps to graphically represent location
2. Run applications to display location information
3. Continue expansion of list covering classes and methods

Lesson 9015C Assignments

- □ Read Chapter 6
- □ Read Study Guide for Lesson
- □ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Once you have completed the exam continue to the next lesson.
- □ Submit exam and then continue to the next chapter

Resources

Google Maps Reference:

http://www.javacodegeeks.com/2011/02/android-google-maps-tutorial.html
(Good tutorial; covers key generation as well.)
http://mobiforge.com/developing/story/using-google-maps-android
(Another, similar to the previous._
http://code.google.com/android/add-ons/google-apis/maps-overview.html
(A good technical reference from Google.)

Gimp References:

http://geekswithblogs.net/TimH/archive/2006/03/20/72797.aspx
(Very short Gimp reference.)
http://cafesuccess.blogspot.com/2006/09/making-images-with-transparent.html
(A very detailed reference.)
http://acedar.blogspot.com/2007/07/gimp-tutorial-how-to-make-backgrounds.html
(One more detailed reference.)

Android Lesson 9015C Examination

Please complete the following exam. You may use the electronic grading system for quicker response. Simply log on to **www.study-electronics.com** and enter your credentials. Once the exam has been submitted, your results will be returned within 72 hours. You may also e-mail your answers to **faculty@cie-wc.edu**, or fax them to us at 1-216-781-0331. If you have any questions, please contact the Instruction Department.

1. Google Maps uses coordinates in the format Degrees.Minutes.Seconds.
   1) true
   2) false

2. A map key for testing apps in the emulator can be generated on the development computer.
   1) true
   2) false

3. Permission to reveal the Android device's location is set in the ______________.
   1) R.java file
   2) Activity's source code
   3) main.xml
   4) manifest file

4. Applications put on the Android market should use the same debug key for Google Maps.
   1) true
   2) false

5. As long as Google API's are used to develop a mapping application, no adjustment needs to be made to the emulator used to test it.
   1) true
   2) false

6. To look attractive on a map, the location marker should have __________.
   1) a white background
   2) squared edges
   3) a single color
   4) transparent background

7. Production map keys, if desired, can be obtained from _______________.
   1) Microsoft
   2) Android
   3) Google

4) None of these

8. The code, **<uses-permission android:name=”android.permission.ACCESS_FINE_LOCATION”/>** would be found in the __________.
   1) main.xml file
   2) R.java file
   3) strings.xml file
   4) manifest file

9. The main class file for a mapping application should extend the __________ class.
   1) Activity
   2) Map
   3) MapActivity
   4) Google

10. Image files used as map-markers must be downloaded from Google.
    1) true
    2) false

11. Which keyword is used by App Inventor to combine string literals?
    1) Concatenate
    2) Concat
    3) Combine
    4) Join

12. The Blocks Editor is what type of application?
    1) JavaScript
    2) Java
    3) Java Web Start
    4) Eclipse Add-on

13. Tapping the screen registers what event in the Android SDK and App Inventor?
    1) Tap
    2) Press
    3) Touch
    4) Click

14. Which section of the App Inventor workspace lists components available for use in your app in expandable groups?
    1) Toolbar
    2) Viewer
    3) Components
    4) Palette

15. Which section of the App Inventor workspace represents an Android phone’s screen?
    1) Toolbar
    2) Viewer
    3) Components
    4) Palette

END OF EXAM

Chapter 7 - Multiscreen Applications

Overview

While this chapter discusses multi-screen applications, it also covers other techniques which allow packing more information and user controls into an application that would normally fit on one screen at a time. This includes dialog-boxes, screen scrolling, and so on.

This is a relatively long chapter and there is plenty to do using just the exercises in the book. The concept of passing information from Activity to Activity (screen to screen) in the same application is a particularly difficult one, so time should be given to discussions of this. If you are pursuing a neighborhood navigation theme, try assigning a latitude and longitude pair to a couple of variables on one screen, and passing them to a second screen, where they would be used to set a position on a map

Pop-up messages called “Toasts” are covered in this chapter and are used frequently in subsequent chapters. They are relatively simple to implement and are useful in the “catch” section of a try-catch block to report to the user why an exception has occurred.

In the text, the author neglected to implement the “swipe” gesture to move from one screen to another, deferring instead to buttons. In the appendix, there is a code snippet to show a swipe implementation, but it is not a complete application. It shouldn’t be hard to see how it would be incorporated into any multi-screen application. There is also a link to a swipe tutorial listed in the chapter resources section.

Objectives

1. Design and implement multiscreen applications
2. Integrate pop-up dialog boxes
3. Add menus to design
4. Expand and identify elements of list covering classes and methods

Lesson 9016C Assignments

- □ Read Chapter 7
- □ Read Study Guide for Lesson
- □ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Once you have completed the exam continue to the next lesson.
- □ Submit exam and then continue to the next chapter

Resources

Activities and Bundles References:

http://remwebdevelopment.com/dev/a33/Passing-Bundles-Around-Activities.html
http://code.google.com/p/android-helper/wiki/Passing_Information_Between_Activities
(A great example.)

Toast References:

http://developer.android.com/guide/topics/ui/notifiers/toasts.html
(Straight from the source.)
http://mfarhan133.wordpress.com/2010/10/13/pop-upstoast-alertdialog-layout-tutorial-for-android/
(This one covers toasts and pop-ups, but may be a little difficult for novices.)

Gesture Reference: **http://smartandroidians.blogspot.com/2010/04/swipe-action-and-viewflipper-in-android.html**
(A fairly simple example, but unlike the snippet in the appendix, this is a full application.

Android Lesson 9016C Examination

Please complete the following exam. You may use the electronic grading system for quicker response. Simply log on to **www.study-electronics.com** and enter your credentials. Once the exam has been submitted, your results will be returned within 72 hours. You may also e-mail your answers to **faculty@cie-wc.edu**, or fax them to us at 1-216-781-0331. If you have any questions, please contact the Instruction Department.

1. The ScrollView and HorizontalScrollView are typically defined in the _________________.
   1) main.xml file
   2) manifest file
   3) R.java file
   4) any of these

2. The ScrollView and HorizontalScrollView can directly contain multiple elements in the next level down.
   1) true
   2) false

3. When a LinearLayout is used with a ScrollView, it should be placed ________________ the ScrollView.
   1) inside
   2) outside
   3) in front of
   4) behind

4. Data to be passed between Activities is placed in a structure called a ______________
   1) batch
   2) collection
   3) bundle
   4) bale

5. Data to be passed between Activities is set in ________________.
   1) question – answer pairs
   2) String – String pairs
   3) key – value pairs
   4) variable – value pairs

6. A simple, temporary pop-up message class for Android is the ____________.
   1) Flash
   2) Flag
   3) Toast
   4) Blast

7. An application implementing the OnGestureListener can be coded to detect the direction of a swipe motion, eg. left-to-right or right-to-left.
   1) true
   2) false

8. Android supports two types of menus, the Options menu and the __________ menu.
   1) Global
   2) Application
   3) Context
   4) Screen

9. The same application can use both types of menus.
   1) true
   2) false

10. The type of menu activated by the device's hardware menu button is the Options menu.
    1) true
    2) false

11. Which is the correct argument sent to the onCreateOptionsMenu method to provide your own menu behavior?
    1) Activity act
    2) Class clss
    3) Menu menu
    4) MenuItem item

12. A constructor is the same as any other method definition EXCEPT for what?
    1) A constructor includes an optional argument list.
    2) A constructor includes an optional access modifier, usually public.
    3) A constructor includes a return type.
    4) A constructor places arguments within parentheses ().

13. Which of the following is NOT included in the class definition?
    1) The class name
    2) Accessor methods
    3) Instance variable declaration
    4) Instance method definition

14. Which of the following components does the Where's My Phone? app use while waiting for a text message in the background?

    1) Activities
    2) Services
    3) Broadcast Receivers
    4) Content Providers

15. Which of the following is NOT part of the Java class declaration?

    1) Name the class.
    2) Import external resources.
    3) Declare any inherited classes.
    4) Declare any implemented interfaces.

END OF EXAM

Chapter 8 - Working with Images

Overview

Chapter eight is a relatively short chapter, but like anything that involves graphics, it can be fun. Aside from the use of images, the chapter also covers the DDMS (Dalvik Debug Monitor Server) perspective in Eclipse. This is used as a "file manager" to load and retrieve files between the development machine and the emulator.

Images are commonly use as displays on a "splash screen" to open an application. As its name implies, this requires construction of a multi-screen application so building an application with a splash screen is a good way to combine this chapter with the last. Splash-screens are slightly different than those techniques covered in the last chapter in that they are temporary and never returned to, so some splash-screen code is included in the appendix. If you are doing an on-going information app, or any other project, now might be a good time to display an image on a splash screen.

Objectives

1. Add images to the applications
2. Integrate stored images versus external content

Lesson 9017C Assignments

□ Read Chapter 8
□ Read Study Guide for Lesson
□ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Once you have completed the exam continue to the next lesson.
□ Submit exam and then continue to the next chapter

Resources

Image References: **http://www.higherpass.com/Android/Tutorials/Working-With-Images-In-Android/**
http://saigeethamn.blogspot.com/2010/05/image-switcher-view-android-developer.html
(Another, more advanced image tutorial.)
DDMS References: **http://www.brighthub.com/mobile/google-android/articles/**

25023.aspx
http://developer.android.com/guide/developing/debugging/ddms.html
(This is the best reference, from the source.)

Splash-screen Reference:

http://www.droidnova.com/how-to-create-a-splash-screen,561.html
(This code is similar to the presented in the appendix. Note that the stop() method used in the thread is deprecated.)

Android Lesson 9017C Examination

Please complete the following exam. You may use the electronic grading system for quicker response. Simply log on to **www.study-electronics.com** and enter your credentials. Once the exam has been submitted, your results will be returned within 72 hours. You may also e-mail your answers to **faculty@cie-wc.edu**, or fax them to us at 1-216-781-0331. If you have any questions, please contact the Instruction Department.

1. Android only accepts the .jpg image format.
   1) true
   2) false

2. Only one ImageView is allowed on the screen at one time.
   1) true
   2) false

3. All images used in an application must be built into the application by the developer.
   1) true
   2) false

4. Images are stored in which subdirectory of the *res* (resources) directory in the project?
   1) images
   2) drawable
   3) drawings
   4) screens

5. DDMS is a ________________ in the Eclipse IDE.
   1) Perspective
   2) Menu
   3) Plug-in
   4) directory

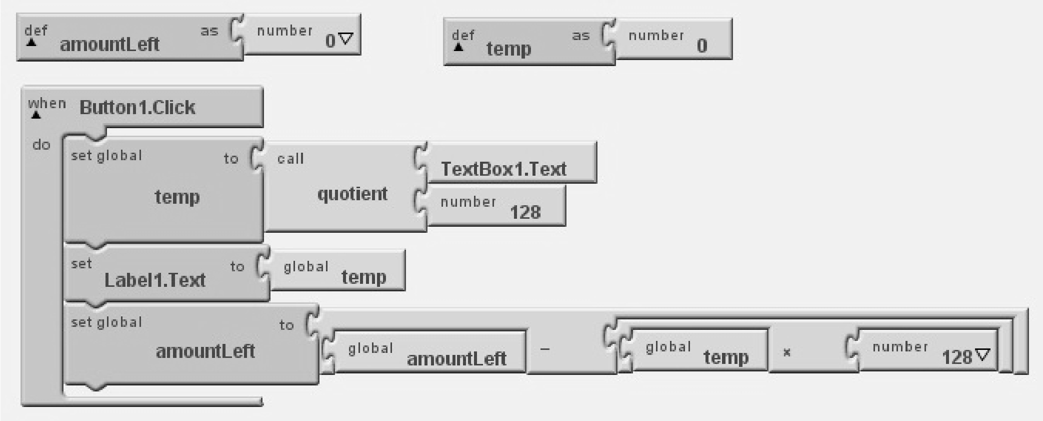
6. GIF format files are allowed in an Android app.
   1) true
   2) false

7. The single image that is included at the start of all Android projects in Eclipse is the ______________.
   1) logo.png
   2) icon.png
   3) icon.jpg
   4) None of these

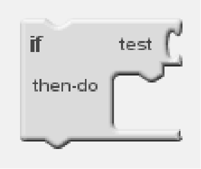
8. Images can be stored and retrieved on an SD Card on a real Android device.
   1) true
   2) false

9. Developers can store multiple versions of the same image using different resolutions starting with API _________.
   1) 1.6
   2) 2.2
   3) 3.0
   4) 4.0

10. The DDMS can be used to transfer files from development machine to the emulator.
    1) true
    2) false

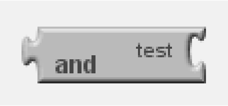

def amountLeft as number 0
def temp as number 0
when Button1.Click
do
set global temp to call quotient TextBox1.Text number 128
set Label1.Text to global temp
set global amountLeft to global amountLeft − global temp × number 128

11. Based on the figure above, what might the code blocks shown imply about the intent of the application?
    1) Count dozens of eggs
    2) Determine the number of hours from the number of minutes
    3) Calculate what power of two the number is
    4) Calculate the number of gallons from the number of ounces



12. The block in the figure above is an example of which type of Built-In blocks?
    1) Math
    2) Logic
    3) Control
    4) None of the above

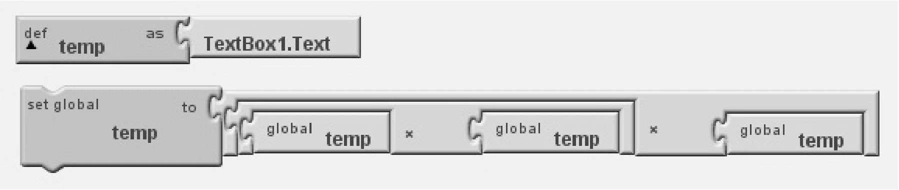
13. Which of the following is NOT represented as a block?
    1) Methods
    2) Errors
    3) Properties
    4) Loops



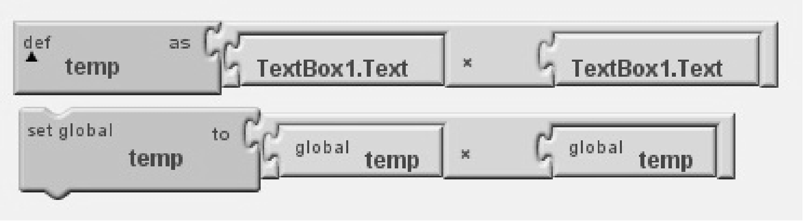
14. The block in the figure above is an example of which type of Built-In blocks?
    1) Math
    2) Logic
    3) Control
    4) None of the above.

15. Assume that the value of `TextBox1` will be set to the value of the variable `temp`. Which of the following sets of code will NOT set `Label1.Text` to the cube of the `Text` value of `TextBox1`?

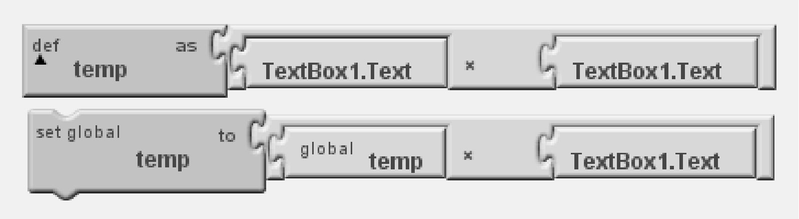
1)



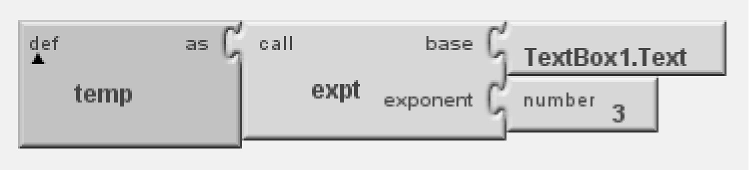
2)



3)



4)



END OF EXAM

Chapter 9 - Text Files, Data Tables, and XML

Overview

Chapter nine covers many topics, the most difficult of which could be SQLite. Again, if you are carrying on a project like the neighborhood directory, you can build a data table of building locations and information, or construct an XML file of the same, or if time permits, do both! The address information application included in chapter 10 will add more XML parsing exposure. One of the exercises at the end of the book will also provide XML experience.

There are several styles and packages for parsing XML. Perhaps the simplest is the XmlPullParser. The reference below after the general XML reference is for the XmlPullParser.

A very simple application you could add to the procedure in the chapter is a single-file “notepad” application which doesn’t need much more than an EditText field and a single text file to store and retrieve contents for the EditText field. Contained below are references on the three main topics.

Objectives

1. Initiate data exchange using XML procedures
2. Expand list of classes and methods

Lesson 9018C Assignments

□ Read Chapter 9

□ Read Study Guide for Lesson

□ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Once you have completed the exam continue to the next lesson.

□ Submit exam and then continue to the next chapter

Resources

Text File References:

http://www.java-samples.com/showtutorial.php?tutorialid=1523
(This is essentially the simple notepad application described above.)

http://android-er.blogspot.com/2010/07/display-text-file-in-resraw_01.html
(This example is similar to the one in the chapter.)

SQLite References:

http://www.anddev.org/working_with_the_sqlite-database_-_cursors-t319.html
(A fairly simple step-by-step example.)

http://mobile.tutsplus.com/tutorials/android/android-sqlite/
(A very detailed advanced example and reference; the example in the book is about as simple as the SQLite topic example can be made.)

XML References:

http://www.w3schools.com/xml/xml_whatis.asp
(A comprehensive set of tutorials on XML in general.)

http://developer.android.com/reference/org/xmlpull/v1/XmlPullParser.html
(XmlPullerParser from Android.)

http://www.xinotes.org/notes/note/1177/
(A reasonably easy XmlPullParser example.)

Android Lesson 9018C Examination

Please complete the following exam. You may use the electronic grading system for quicker response. Simply log on to **www.study-electronics.com** and enter your credentials. Once the exam has been submitted, your results will be returned within 72 hours. You may also e-mail your answers to **faculty@cie-wc.edu**, or fax them to us at 1-216-781-0331. If you have any questions, please contact the Instruction Department.

1. All text files implemented in an Android app are read-only.
   1) true
   2) false

2. Android is able to use the java.io package without modification.
   1) true
   2) false

3. openFIleInput( ) and openFileOutput( ) are methods that belong to Android's ______________ class.
   1) Activity
   2) File
   3) Context
   4) Bundle

4. SQLite data tables support primary keys.
   1) true
   2) false

5. SQLite supports the "date" data type.
   1) true
   2) false

6. A SQLite database in an application is limited to one table.
   1) true
   2) false

7. The Android Development software comes with an XML parser package.
   1) true
   2) false

8. Tags are viewed by the XmlPullParser as ___________.
   1) data types
   2) tags
   3) symbols
   4) event types

9. XML has a very high tolerance for poorly constructed files. In other words, if you misalign your tags, XML parsers will forgive the mistake.
   1) true
   2) false

10. There is only one XML parser package available for Android development.
    1) true
    2) false

11. In the following `onOptionsItemSelected()` method, which `id` is most likely associated with starting a new session?

```
public boolean onOptionsItemSelected(MenuItem item) {
   switch (item.getItemId()) {
      case R.id.item1:
        new();
        return true;
      case R.id.item2:
        open();
        return true;
      case R.id.item3:
        close();
        return true;
      case R.id.item4:
        info();
        return true;
      default:
        return super.onOptionsItemSelected(item);
   }
}
```

   1) item1
   2) item2
   3) item4
   4) none, it will be handled by the default case

12. What is the correct way to retrieve the value from a component named TextBox1?
    1) TextBox1.Value
    2) TextBox1.getValue()
    3) TextBox1.Text
    4) TextBox1.getText()

13. Which of the following is most likely to be seen in the default case of the `onOptionsItemSelected` method?
    1) return super.onCreateOptionsMenu(item)
    2) return super.onOptionsItemSelected(item)
    3) return super.onCreateOptionsMenu(MenuItem item)
    4) return super.onOptionsItemSelected(MenuItem item)

14. What property is used to set the text that will display in an app's top information bar?
    1) Label
    2) Text
    3) Title
    4) TopText

15. What property is used to set the text displayed temporarily in a text box before a user enters their own information?
    1) Label
    2) Tip
    3) HoverText
    4) Hint

END OF EXAM

Chapter 10 - Client-Server Applications

Overview

While this chapter has little to do with Android-specific coding, it is essential to writing applications that are intended to use real-time data. Fortunately, Android uses the java.net package without any special considerations.

You develop your own messaging systems using client-server principles, providing the devices are on the same subnet. It was mentioned earlier that the location information system uses an XML stream from Google to provide latitude and longitude values. This chapter provides code for that application, which can be adapted for more comprehensive applications.

Objectives

1. Develop client/server applications
2. Identify device through use of IP address
3. Identify and utilize port communications
4. Continue expansion of list of key classes and methods

Lesson 9019C Assignments

- □ Read Chapter 10
- □ Read Study Guide for Lesson
- □ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Once you have completed the exam continue to the next lesson.
- □ Submit exam and then continue to the next chapter

Resources

java.net resources:

http://systembash.com/content/a-simple-java-tcp-server-and-tcp-client/
http://www.oracle.com/technetwork/java/socket-140484.html
http://java.sun.com/webservices/reference/tutorials/jaxp/html/stax.html

(This last link discusses parsing XML from a data stream, to be used with client-server applications. It is not the simplest, but it comes from the source.)

Android Lesson 9019C Examination

Please complete the following exam. You may use the electronic grading system for quicker response. Simply log on to **www.study-electronics.com** and enter your credentials. Once the exam has been submitted, your results will be returned within 72 hours. You may also e-mail your answers to **faculty@cie-wc.edu**, or fax them to us at 1-216-781-0331. If you have any questions, please contact the Instruction Department.

1. Android applications require a special networking package different from java.net.*
   1) true
   2) false

2. A socket consists of an IP address and a _______ number.
   1) thread
   2) MAC
   3) port
   4) none of these

3. A 16-bit number can hold an unsigned value as high as ______________ .
   1) 16
   2) 256
   3) 65536
   4) none of these

4. Application programmers should avoid using port numbers 0 to 1023 for their own applications.
   1) true
   2) false

5. The port number assigned by Eclipse to the first open emulator is ______.
   1) 1024
   2) 5554
   3) 1024
   4) 8086

6. The Java package that manages data streams is the __________ package.
   1) java.net
   2) java.io
   3) java.data
   4) javax.swing

7. On the client side, the InetSocketClass takes ________ arguments in its constructor.
   1) none
   2) one
   3) two
   4) three

8. Requesting a web page can only be done by browser software.
   1) true
   2) false

9. 192.168.1.1 is an IP address that is ____________.
   1) invalid
   2) loop-back
   3) unroutable
   4) all of these

10. 127.0.0.1 is an IP address that is ________________.
    1) invalid
    2) loop-back
    3) unroutable
    4) none of these

11. Which line in the following code does NOT include an error?

```
0 public int foo() {
1  super.onDraw(canvas);
2  Paint dotPaint = new Paint();
3  dotPaint.setColor(Color.RED);
4  doble i = 1;
5  j = 2;
6  i = j * i;
7  j = Math.pow(i, j);
8  canvas.drawText(“i: ” + i + “|j: ” + j);
9 }
```

   1) Line 4
   2) Line 5
   3) Line 7
   4) Line 8

12. Which of the following is the LEAST common in game programming?
    1) Gathering input from the user
    2) Rendering objects on screen
    3) Retrieving data from a database
    4) Managing data processing and rendering the display with a loop

13. What does JNLP (the type of file a Java Web Start application is stored in) stand for?

    1) Java New Language Processor
    2) Java NAT Layers Protocol
    3) Java Native Language Processor
    4) Java Native Launch Protocol

14. What happens to the grayed-out, temporary text displayed in a text box when a user begins to enter information?

    1) It disappears.
    2) It is highlighted on click.
    3) It stays until maually deleted.
    4) It is replaced one character at a time while the user types.

15. How are the properties of each component stored?

    1) Class instance variables and their values in Java
    2) Comma separated values in a plain text file.
    3) Key/value pairs called attributes in JSON
    4) Key/value pairs called attributes in XML

END OF EXAM

Chapter 11 - Publishing Your Application

Overview

This chapter is intended to be informational and not really testable material. Instead of general references there are included links to some android markets and some ad sites that allow application programmers to carry ads on their creations create some revenue.

The two ad sites used, namely admob.com and jumptap.com, each have JAR files that must be added to a project, so here is another reason why understanding how to add external JARs, covered in chapter 5, is essential. All of the sites provide comprehensive instructions, and provide a web address where the subscriber can track his/her activity.

Objectives

1. Publishing the application
2. Create and develop key for signed application

Lesson 9020C Assignments

- □ Read Chapter 11
- □ Read Study Guide for Lesson
- □ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Continue to the next chapter for lesson exam.

Resources

Android application market sites:

http://market.android.com/publish
(This is the premiere Android market. There is a fee to belong, but the developer can load many applications under one account.)
https://www.andapponline.com/
(At the time of this writing, this is a free site for uploading and distributing free applications. However, there may be a commission to be paid for pay apps.)
http://www.amazon.com/mobile-apps/b?ie=UTF8&node=2350149011

App advertising sites:	**http://www.admob.com/** (Run by Google.) **http://www.mojiva.com/** **http://www.jumptap.com/**

Chapter 12 - Applying the Principles

Overview

The new concept here is the detection of a touch on the screen and the recording of those coordinates. These coordinates will mark the location and associate a picture to a phone number. This will need to be done in two parts. Part one will require loading the image, then detect the coordinates of the faces in that image, and then associate the coordinates with a specific phone number.

The second part will require the retrieval of all the coordinates, match them to numbers in persistent storage, and then display the saved image at start up. This will enable us to have a visual phone book, which is searchable and stored.

Objectives

1. Create Photo Dialer and Flash Mob applications to illustrate and encompass principles and techniques outlined in text
2. Emphasize difference between client side and server side

Lesson 9020C Assignments

- □ Read Chapter 12
- □ Read Study Guide for Lesson
- □ If you have the resources available to you please complete the activities throughout the chapter for it will benefit your learning potential. Once you have completed the exam continue to the next lesson.
- □ Submit exam.

Resources

No new ones necessary

Android Lesson 9020C Examination

Please complete the following exam. You may use the electronic grading system for quicker response. Simply log on to **www.study-electronics.com** and enter your credentials. Once the exam has been submitted, your results will be returned within 72 hours. You may also e-mail your answers to **faculty@cie-wc.edu**, or fax them to us at 1-216-781-0331. If you have any questions, please contact the Instruction Department.

1. Which of the following is NOT an option for packaging an app?
   1) Submit to Android Market
   2) Show Barcode
   3) Download to this Computer
   4) Download to Connected Phone

2. How much does it cost to deploy an Android application to the Android Market?
   1) $0
   2) $25
   3) $50
   4) $100

3. Which of following is the correct term for a piece of information used to activate an Activity, Service, or Broadcast Receiver?
   1) Intent
   2) IntentFilter
   3) Content Provider
   4) Bundle

4. What interface is included in the following code?

```
public class DotSmasherCanvas extends View implements
OnTouchListener {
   int dotX, dotY, score;
   //Other code here
}
```

   1) class DotSmasherCanvas
   2) class View
   3) class OnTouchListener
   4) class int

5. An app that is close to being completed is best tested using which of the following methods?
   1) Desk-checking
   2) Using the emulator
   3) On physical devices
   4) Beta testing

6. What is inherited in the following code?

```
public class DotSmasherCanvas extends View implements
OnTouchListener {
   int dotX, dotY, score;
   //Other code here
}
```

   1) class DotSmasherCanvas
   2) class View
   3) class OnTouchListener
   4) class int

7. Which of the following is an advantage of Motorola’s MOTODEV Studio over App Inventor?
    1) MOTODEV allows you to develop more sophisticated Android Apps.
    2) MOTODEV can be used by nonprogrammers.
    3) MOTODEV allows you to develop for iOS in addition to Android.
    4) MOTODEV is more intuitive to use.

8. Which is the correct argument sent to the `onOptionsItemSelected` method to make menu items useful?
    1) Activity act
    2) Class clss
    3) Menu menu
    4) MenuItem item

9. When using the `Texting` component, where do you find the block to include the automatically included `messageText` argument?
    1) Built-in
    2) My Blocks
    3) Advanced
    4) Components

10. Which is the escape character used in Java’s `String` object?
    1) Percentage sign (%)
    2) Tilde (~)
    3) Backslash (\)
    4) Forward slash (/)

11. Which of the following is the correct final line of code in the definition of the `quit()` method?
    1) finish();
    2) finish(this);
    3) return finish();
    4) return 0; //meaning finished without error.

12. Which interface should be used to handle the `button` press event?
    1) OnPressListener
    2) OnClickListener
    3) pressListener
    4) clickListener

13. What happens when you select the `Show Barcode` option from the `Package for Phone` menu?
    1) A label is created and printed.
    2) The app is converted to JavaScript.
    3) An image is created that shows a machine-readable URL pointing to the app.
    4) Construction instructions for a UPC code are created in XML format.

14. In the following `onOptionsItemSelected()` method, which `id` is most likely associated with accessing the application's help page?

```
public boolean onOptionsItemSelected(MenuItem item) {
   switch (item.getItemId()) {
      case R.id.item1:
        new();
        return true;
      case R.id.item2:
        open();
        return true;
      case R.id.item3:
        close();
        return true;
      case R.id.item4:
        info();
        return true;
      default:
        return super.onOptionsItemSelected(item);
   }
}
```

1) item1
2) item2
3) item4
4) none, it will be handled by the default case

15. Which is the correct definition of the term refactoring?

1) Reducing a trinomial to a set of binomials
2) Rewriting code to make it better without changing its behavior
3) Rewriting code to add forgotten functionality or to remove unnecessary functionality
4) Rewriting code to fix broken functionality

16. Which of the following is NOT true when overriding a method?

1) The subclass is given a method of the same signature as a superclass method.
2) The superclass method is hidden when called from the subclass.
3) The superclass method can no longer be used.
4) You can override any method of the superclass.

17. How do you tag objects for garbage collection?

1) Pass the object reference to a built-in garbage collection method.
2) Set the object references to null.
3) Both 1 and 2
4) Neither 1 nor 2

END OF EXAM

Appendix - Code Snippets

Chapter 7:

```
package com.sheusi.x;

import android.app.Activity;
import android.os.Bundle;
import android.widget.*;
import android.view.*;
import android.view.GestureDetector.OnGestureListener;
import android.content.Context;
import android.content.Intent;

public class Clothing extends Activity implements OnGestureListener{
  /** Called when the activity is first created. */
      ;
      Context myContext=null;
      GestureDetector gd=null;
      TextView tv=null;

  @Override
  public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.main);
    myContext=this.getApplicationContext();
    tv=(TextView)findViewById(R.id.tv);
    gd=new GestureDetector(this);


  }
  public void done(){
      /*This method switches screens (Activities)
       Note: The "Sizing.class" does not exist in this snippit
      */so you shouldn't expect this code to work on its own.

      Intent myIntent=new Intent(myContext,Sizing.class);
            startActivity(myIntent);
  }

/*Instructor note: All six of the methods below must be implemented
since the
 GestureListener is an interface. However, only the onFling( ) method,
which
*/interprets a "swipe" motion has code for a response.
  @Override
  public boolean onDown(MotionEvent e)
  {
    return false;
  }

  @Override
  public boolean onFling(MotionEvent e1, MotionEvent e2, float
velocityX, float velocityY)
  {
      if(Math.abs(e1.getX()-e2.getX())>30)
            done();
    return false;
  }

  @Override
  public void onLongPress(MotionEvent e)
  {
  }

  @Override
  public boolean onScroll(MotionEvent e1, MotionEvent e2, float
distanceX, float distanceY)
  {
    return false;
  }

  @Override
  public void onShowPress(MotionEvent e)
  {
  }

  @Override
  public boolean onSingleTapUp(MotionEvent e)
  {
    return false;
  }
}// ends the public class
```

Chapter 8

```
package com.sheusi.y;

import android.app.Activity;
import android.os.Bundle;
import android.content.Intent;
public class SplashActivity extends Activity {
  /** Called when the activity is first created. */
      // A separate thread allows the splash screen to be temporary
      private Thread splashThread;
  @Override
  public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.splash);
   final SplashActivity sa=this;
   splashThread=new Thread(){
   public void run(){

   try{
   synchronized (this){
       Thread.sleep(5000);
   }
          }catch(InterruptedException ie){}
          finally{
           finish();
      //The code below moves to the next Activity, not included here
        Intent i=new Intent();
            i.setClass(sa,NextActivity.class);
            startActivity(i);
          }
       }//ends run
   }; //ends inner class
    splashThread.start();
  }
}
```