

# Midterm Examination

CSCE 4623 (Fall 2017)

October 20, 2017

Name: \_\_\_\_\_

UA ID: \_\_\_\_\_

## Instructions:

1. You have 50 minutes to complete the exam. The exam is closed note and closed book. No material is allowed with you while you complete the exam.
2. There are five sections to this exam. A multiple choice section, a true false section, a fill-in-the-blank section, a short answer section, and a code review section. You should do your best to complete all sections. There is no penalty for getting a question wrong.
3. Any attempts to consult any materials, persons, or other means of obtaining information will be considered an Academic Integrity issue. You will be allowed to finish the examination, and the results will be collected and forwarded to the academic integrity board.
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"I \_\_\_\_\_ have read the academic integrity statement and I agree to abide by the policies outlined within. I understand that unwillingness to agree with the policy will result in my test being returned ungraded. I attest that I have completed this examination without any academic integrity violations, and that the work is my own."

Signature: \_\_\_\_\_

Good luck!

**Multiple Choice** (2 points  $\times$  12 questions = 24 points) Answer the following questions by circling the letter which is the best possible answer of the choices:

1. Which of these is not a Design Pattern that we have discussed in this course?
  - (A) MVC
  - (B) MVR
  - (C) MVP
  - (D) MVVM
2. Which application component can be described as a single screen with a user interface?
  - (A) Activity
  - (B) Service
  - (C) Broadcast Receiver
  - (D) Content Provider
3. Which application component provides access to some central repository of data?
  - (A) Activity
  - (B) Service
  - (C) Broadcast Receiver
  - (D) Content Provider
4. Which of these callbacks is part of both the Activity and the Service lifecycle?
  - (A) onPause()
  - (B) onBind()
  - (C) onStop()
  - (D) onCreate()
5. Which of these is not a type of service that can be created within your application?
  - (A) Bound Service
  - (B) Foreground Service
  - (C) System Service
  - (D) Background Service
6. Which of these is not an action that can be called to interface with a Content Provider?
  - (A) Create
  - (B) Query
  - (C) Update
  - (D) Delete
7. What field in the Intent Object is not populated if you are using an Implicit intent?
  - (A) Data
  - (B) Action
  - (C) Component Name
  - (D) Flags
8. Why would you use a PendingIntent?
  - (A) The Intent may or may not be serviced.
  - (B) The Intent is to be handled as if it were operating within my application.
  - (C) The Intent object has extra fields that need to be passed along
  - (D) Always use a PendingIntent

9. Which of these is not a test that is checked when resolving an Intent against Intent Filters?
  - (A) Action
  - (B) Flags
  - (C) Data
  - (D) Category
10. In the MVC design pattern, what does the “V” stand for?
  - (A) Variable
  - (B) View
  - (C) Viewmodel
  - (D) Nothing – MVC is not a design pattern
11. In the MVP design pattern, what job does an interactor perform?
  - (A) Specifies the data to be changed
  - (B) Maps events to changes
  - (C) Changes the data
  - (D) Nothing – MVP is not a design pattern
12. If an Intent Filter does not specify any actions, can an Implicit Intent match to it?
  - (A) Yes – If the Intent also has not action field
  - (B) Yes – Always
  - (C) No – It cannot be matched
  - (D) No – Android Studio will throw an error and the program will not build

**True/False** (2 points × 9 questions = 18 Points) Each statement is either true or false. Fill in T/F in the provided blank space.

1. \_\_\_\_ A foreground service must display a status bar icon
2. \_\_\_\_ An activity can only have one fragment
3. \_\_\_\_ Background services should typically run in the UI thread
4. \_\_\_\_ Implicit Intents will always be handled by some activity
5. \_\_\_\_ The Activity callback onRestart will be called every time an application is run
6. \_\_\_\_ If there are multiple applications that can handle an implicit intent, the user will be presented with an AppChooser dialog
7. \_\_\_\_ A Broadcast receiver may be created in either the context or the manifest
8. \_\_\_\_ The timer manager is the system service which is responsible for scheduling future events
9. \_\_\_\_ Status bar notifications can have actions associated with clicking or clearing the notification

**Fill-in-the-Blank** (2 points × 10 questions = 20 points) Each question is in the form of a sentence with a blank. Fill in the blank with the word/phrase that best completes the sentence.

1. The Android system is based the \_\_\_\_\_ operating system.
2. An Activity is typically composed of a layout coded in \_\_\_\_\_ and business logic coded in \_\_\_\_\_.
3. A \_\_\_\_\_ service only runs while attached to another application component.
4. A \_\_\_\_\_ is an event message that can be passed from applications or the system to any subscribing applications.
5. An \_\_\_\_\_ Intent specifies the exact component to start.
6. A \_\_\_\_\_ is the structure which contains Android tasks and the navigation between activities in that application.



**Code Examples** (2 points per question: 18 points) Answer the questions associated with the particular pieces of code.

**Problem 1:** Given the code below (you can assume that it builds), using a content provider that references Table 1, answer the following questions:

ID	Name	Location	Number
1	Joe	Baltimore	5
2	Deshaun	Houston	4
3	Blake	Jacksonville	5
4	Eli	New York	10

Table 1: Player Information

```
String[] projection = {ID,Location,Number};
Cursor myCursor = getContentResolver(MyProvider.CONTENT_URI,projection,null,null,null);
myCursor.moveToFirst();
String a = "";
int b = 0;
try{
    String a = myCursor.getString(1);
    myCursor.moveToNext();
    int b = myCursor.getInt(2);
}
catch(Exception e){
    continue;
}
```

1. What is the value of a after the code executes? \_\_\_\_\_
2. What is the value of b after the code executes? \_\_\_\_\_
3. What value would be returned by myCursor.getCount(); after the code executes? \_\_\_\_\_

**Problem 2:** Given the intent filter and code below (you can assume that it builds and that all permissions and requirements are satisfied), answer the following questions:

```
//Manifest
<activity android:name=".BrowserActivitiy"
android:label="@string/app_name">
  <intent-filter> //FILTER 1
    <action android:name="android.intent.action.VIEW" />
    <action android:name="android.intent.action.SEND" />
    <category android:name="android.intent.category.BROWSABLE" />
    <category android:name="android.intent.category.DEFAULT" />
    <data android:scheme="http"/>
  </intent-filter>
  <intent-filter> //FILTER 2
    <action android:name="android.intent.action.VIEW" />
    <category android:name="android.intent.category.BROWSABLE" />
  </intent-filter>
  <intent-filter> //FILTER 3
    <category android:name="android.intent.category.BROWSABLE" />
  </intent-filter>
</activity>
```

```
//MyActivity.java
Intent myIntent = new Intent();
myIntent.setCategory(Intent.CATEGORY_BROWSABLE);
myIntent.setAction(Intent.ACTION_VIEW);
```

Circle yes or no for the following three questions:

1. Does myIntent match filter 1? yes no
2. Does myIntent match filter 2? yes no
3. Can BrowserActivity handle myIntent? yes no

**Problem 3:** Given the following two activities and their code below (you can assume that it builds), answer the following questions:

```
//MyFirstActivity.java
String myReturnedString = "";
void button1Clicked(){
    Intent myIntent = new Intent(MyFirstActivity.this,MySecondActivity.class);
    Intent.putExtra("test1",1);
    Intent.putExtra("test2","two");
    startActivity(myIntent);
}
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    myReturnedString = data.getStringExtra("test3");
}

//MySecondActivity.java
@Override
protected void onCreate(Bundle savedInstanceState){
    super.onCreate();
    setContentView(R.layout.activity_my_second);
    int myFirstKey = this getIntent().getIntExtra("test1",2);
    String mySecondKey = this getIntent().getStringExtra("test2");
    //ANSWER QUESTIONS 1 and 2 AT THIS POINT
    Intent mySecondIntent = new Intent();
    mySecondIntent.putExtra("test3","Hello");
    setResult(Activity.RESULT_OK, mySecondIntent);
    finish();
}
```

Assume that the function button1Clicked() has executed:

1. What is the value of myFirstKey before MySecondActivity calls finish(); \_\_\_\_\_
2. What is the vlaue of mySecondKey before MySecondActivity calls finish(); \_\_\_\_\_
3. What is the value of myReturnedString after all code has executed?\_\_\_\_\_