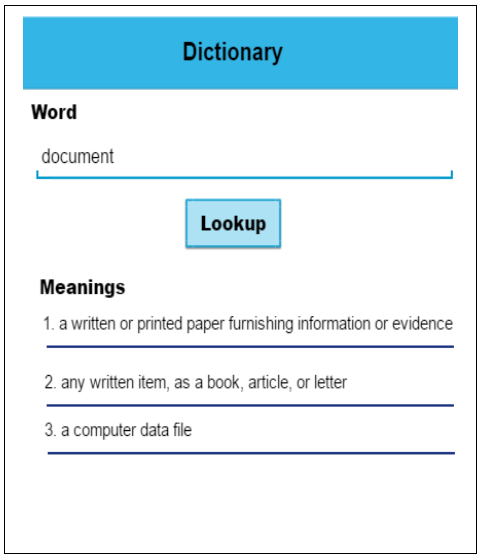
National University of Computer and Emerging Sciences, Lahore Campus

Course:	**Software for Mobile Devices**	**Course Code:**	**CS-440**
Program:	**BS (Computer Science)**	**Semester:**	**Fall 2018**
Duration:	**60 Minutes**	**Total Marks:**	**30**
Paper Date:	**01-Oct-18**	**Weight**	**12.5 %**
Section:	**A & B**	**Page(s):**	**2**
Exam:	**Midterm-I**	**Reg. No.**	

Instruction/Notes: Students are allowed a double-sided single page cheat sheet.
While writing code, make best effort to write correct and relevant code only. Minor syntactic errors are acceptable and will be ignored during marking but overall concept and approach must be correct. You may use a class diagram for illustration (where necessary).

Question 1 **(20 points)**



Consider a UI for a simple Dictionary application, as illustrated above in the picture:

- A dictionary contains a ***list*** of ***meanings*** for a given word, if the word exists in dictionary
- A user may type the word and press lookup button, in order to show the meanings
- There is no limit on number of meanings that may be displayed. UI needs to take care of scroll, in case number of items exceed available screen space
- You may assume that a **Dictionary** class exists with a ***lookup*** function that can ***return*** a ***list/ArrayList*** of meanings for a given word.

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Provide required implementation/ functionality and create the following:

1. Create a **layout**, using any of the declarative or programmatic approaches (hint: xml or java file) (10)

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    >
 <TextView
    android:id="@+id/title"
    style="@style/Title"
    android:text="Dictionary"
    />
 <TextView
    android:id="@+id/word_label"
    style="@style/Heading"
    android:text="Word"
    />
 <EditText
    android:id="@+id/word_field"
    style="@style/Field"
    android:text="Word"
    />
 <Button
    android:id="@+id/lookup_button"
    style="@style/Button"
    android:text="Lookup"
    android:onClick="lookup"
    />
 <TextView
    android:id="@+id/meanings_label"
    style="@style/Heading"
    android:text="Meanings"
    />
 <ListView
    android:id="@+id/meanings_list"
    style="@style/list"
    />
</LinearLayout>
```

2. Handle **necessary** event(s), fetch/bind UI components and provide the functionality. (hint: java file)(10)

```
public class DictionaryActivity extends Activity
{
    Dictionary dictionary;
    EditText word_field;
    ListView meanings_list;
    ArrayAdapter<String> adapter;

    public void onCreate(Bundle savedInstanceState)
    {
          setContentView(R.layout.main)
          word_field = findViewById(R.id.word_field);
          meanings_list = findViewById(R.id.meanings_list);

          adapter = new ArrayAdapter<String>(this,new ArrayList());
          meanings_list.setAdapter (adapter);
    }

    public void lookup(View arg0) {
          adapter.clear()
          adapter.addAll(dictionary.lookup(word_field.getText()));
          adapter.notifyDataSetChanged();
    }

}
```

Question 2 **(10 points)**

Answer the following questions briefly (not more than 5 lines each):

1. Differentiate the compilation procedure for an Android as well as an ordinary Java program? (4)

An ordinary Java Program is compiled to Java Bytecode, using Java Compiler. However, Android Program is first compiled to Java Bytecode, using Java Compiler, and then to Dalvik Bytecode for processing by Android Runtime. An APK comprises of Dalvik Bytecode as well as all the resource files.

2. What is the role of manifest file? What components can be added in the manifest file and what are their uses? (3)

Manifest file holds all the meta information for the application. All the application components e.g. UI Activities are registered in manifest. This information is used by Android OS at multiple stages in application lifecycle, including installation and launch of an application or some other activity.

3. What is Gradle? Please list down some benefits it provides in the development cycle? (3)

Gradle is a dependency management system used by Android. It helps to download relevant libraries, resolve dependencies and run compilation tasks for android development