Modern University for Business and Science

School of Computer and Applied Sciences

CSC314 – MOBILE APPLICATION DEVELOPMENT

Assignment/Project

Spring 2019-2020

Student's Name: _____

                      (First)   (Father)   (Family)

Student ID Number: _____

Instructor's Name: _____

Assessment weight: 30% of the course

LEARNING OUTCOMES		DEPARTMENTAL USE ONLY	
This assignment will cover the following Learning Outcomes:		Q1	20
		Q2	20
1. Intent		Q3	20
2. Android Activity and its lifecycle		Q4	20
3. Android Layout and the different types		Q5	20
4. Event Listeners and Adapters		Score	100
5. SQLite Database			
6. Retrieve and decode JSON			

Kindly, make sure that you read and understand the following points:

- The **PLAIGAIRISM penalty will be an "F"** on the assignment.
- Each student has to submit his own project/assignment. **Group projects are not allowed**.
- Your name should written onto these sheets; moreover, your answers should be applied on a new document/file to be submitted, along with this file, to the Instructor.
- Total number of pages is **3 pages**.
- Submission Deadline: **June 12, 2020 at 6:00pm**

DO YOUR BEST!

We want to create a mobile application for calculating exchange rates on Beirut market.

The main activity requests a service from the http server on the link "http://www.mubs.edu.lb/json/exam2020.php" and receives the price of known currencies in the following json format (as JSON Array) :

```
[
{"id":1,"title":"USD","vbdl":1500,"realvalue":2200},

{"id":2,"title":"EURO","vbdl":1650,"realvalue":2420},

{"id":3,"title":"Rial
Saoudie","vbdl":400,"realvalue":590},
{"id":4,"title":"Rial
Quatari","vbdl":415,"realvalue":610}

]
```

- id : currency identifier
- title : currency title
- vbdl : value of one unit of this currency according to the official price announced by the Bank of Lebanon (BDL).
- realvalue : value of one unit of this currency among forex traders.
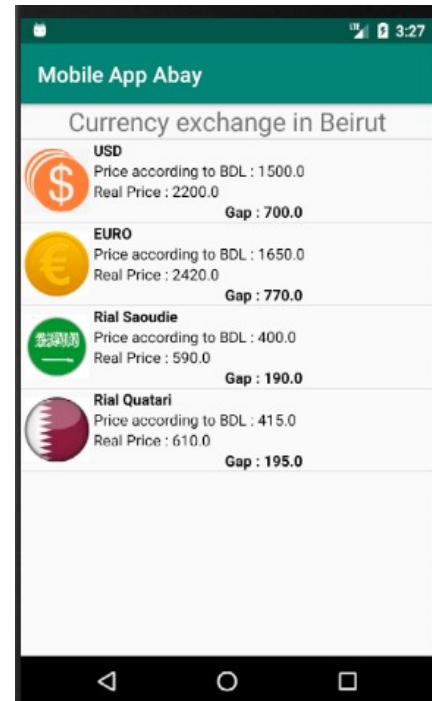
The main activity XML code is as follows:

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".exam2020">
    <ListView
        android:id="@+id/exam2020_list"
        android:layout_width="match_parent"
        android:layout_height="match_parent" />
</LinearLayout >
```

1) Write the class **Currency** which represents each currency received from the server.
2) Write the XML code of the ListView single row to display the currencies according to the example given: we have in the 'drawable' directory the corresponding images to the currencies: currency1.png for the currency with the id 1, currency2.png for currency with id 2, etc.
3) Write the *DataBaseHelper* which contains the following elements:
   - Name of the database :exchange.db
   - The table : *Currencies* (id : autoincrement, title : text, vbdl :real , realvalue : real)
   - Override the methods necessary to create the database and the table.
   - Write a method **getCurrency** which receives the id of a currency as parameter and returns, by reading from the *Currencies* table, an instance of class Currency corresponding to the id received. The method has the following header:

        ```
        public Currency getCurrency (long id) { to complete }
        ```

   - Write a method **getCurrencies** that returns, by reading from the *Currencies* table, an *ArrayList* of type **Currency** corresponding to the id received. The method has the following header:

        ```
        public ArrayList<Currency> getCurrencies() { to complete }
        ```
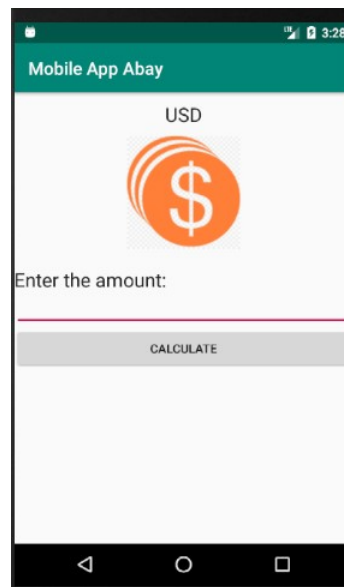
   - Write a method **WriteCurrencies** that receives an ArrayList <Currency> and stores it to the *Currencies* table.

```
public void WriteCurrencies(ArrayList<Currency> list) { to complete }
```

4) MainActivity: Write the MainActivity java class
   a. Write the method onCreate ( ) which
      • Define a reference to the ListView,
      • Launches the query request to the http server and retrieves the result as an ArrayList<Currency>: you should create a class that implements an asynchronous task (AsyncTask) with the necessary methods (override): onPreExecute, doInBackground and onPostExecute.
        In the onPostExecute method:
        i. You should build an ArrayList <Currency> from the received JSON from server.
        ii. You should store the content in the SQLite database using the method **WriteCurrencies** written in the *DataBaseHelper* class.
   b. Create a **SimpleAdapter** instance that allows to fill the content of the *ArrayList <Currency>* in the ListView according to the example given. *Hint*: use the method **getCurrencies()** *(2 points)*
   c. Add an event listener on the click of an item in the ListView that allows to open the ActivityDetail that will be written in the next part (part 6).

5) **ActivityDetail:** below is the xml file (simplified) corresponding to this activity: This activity displays the detail (title and image) of the currency selected in the ListView of the previous activity (Main Activity). When you enter an amount and click on the 'Calculate' button, the result is displayed in the TextView with the id 'exchange_result'

	Initial display (if the user click on USD in the ListView:	*Result of the conversation after entering an amount and clicking on the button btnCalculate:*

``<LinearLayout
  android:orientation="vertical">
  <TextView
android:id="@+id/exchange_title"
android:layout_gravity="center"/>
  <ImageView
 android:id="@+id/exchange_image"
 android:layout_gravity="center"
/>
  <TextView
   android:text="Enter the
amount:" />
  <EditText
 android:id="@+id/exchange_value"
 	
    android:inputType="number"
/>
  <Button
  android:id="@+id/btnCalculate"
    android:text="Calculate" />
  <TextView
 	
android:id="@+id/exchange_result"
    android:padding="10dp"/>
</LinearLayout>```
	Mobile App Abay
	
	USD
	
	Enter the amount:
	
	CALCULATE
		Mobile App Abay
		
		USD
		
		Enter the amount:
		6000000
		
		CALCULATE
		
		Value according to BDL : 4000
		Value according to real market : 2727
		Gap : 1273