EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Mid Term I Examination, Summer 2021 Semester

Course: CSE 489 Mobile Application Development, Section-1
Instructor: Md Mostofa Kamal Rasel, Assistant Professor, Department of CSE
Full Marks: 30 (20 will be counted for final grading)
Time: 1 Hour and 20 Minutes

Note: There are **6** (**SIX**) questions, answer ALL of them. Mark of each question are mentioned at the right margin.

1. Briefly answer the following questions. [Mark: 2+2=4]

    a) **Explain** the importance of mobile application development.
    b) **Discuss** the advantages of the Android Operating System.

2. Suppose that you have been asked to develop an android mobile application for the student attendance management. The wire frame of that application home page is given in the appendix (see Page 3). We know that the elements of the user interface (UI) of any page of an application can be declared using XML or java code or even using both. [Mark: 2+4=6]

    a) **Which** option will you choose for designing the UI of the given home page? **State** some of the reasons for choosing such option.
    b) **Write** the XML code for the layouts of the given application home page.

3. The UI of an android application is built using View and View Group objects. A UI layout of a page of an application designed using XML is given in the appendix (Page 3). Now, answer the following questions based on the given XML code. [Mark: 2+4=6]

    a) **Identify** the Views and View Groups from the given XML code.
    b) **Draw** the wire frame for the given page.

4. The main purpose of an activity in the android application is to interact with the users. Every activity goes through a number of events/methods during its life time. Considering the life cycle of an activity, answer the following questions. [Mark: 2+3=5]

    a) **State** the events/methods returning from which an activity may not need to re-initialize user interface. **Why** does the android runtime kill an activity?
    b) Suppose that an activity consumes the maximum portion of the device memory during its lifetime. **Why** should that memory be released before navigating to another activity? In **which** event/method, the consumed memory should be released?

5. Navigation between activities in android is carried out through the intent. Intents are also used to share contents and to trigger actions within and among applications. Answer the following questions based on your understanding of the android intents. [Mark: 2+3=5]

    a) **Explain** implicit and explicit intents with example scenarios.
    b) Suppose that an android based e-commerce application has only two activities such as, ItemListActivity and OrderPlacementActivity.

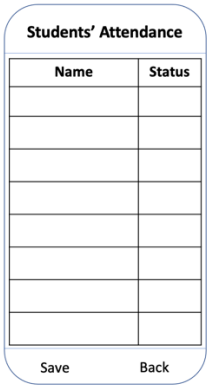
ItemListActivity displays a list of grocery items and allows users to select one or more items from that list. In OrderPlacementActivity, users can mention the quantity of each selected grocery item. Suppose that a user is navigating to OrderPlacementActivity after selecting some grocery items such as, rice, potato, milk, and sugar in the ItemListActivity. Now, **write** the java code to navigate from ItemListActivity and for sharing the selected item names with OrderPlacementActivity.

6. Answer the following questions based on your understanding of android services. [Mark:1+3=4]

   a) Android runtime system sometimes may kill a service that is running in the background. **How** can we tell the android runtime that any killed service should be restarted again whenever possible?
   b) **Demonstrate** an application scenario that effectively uses the bound service.

Appendix

❖ *The following wire frame is used in the application described in Question (2):*



❖ *The following XML code designs a page of the application described in Question (3):*

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">
    <TextView
        android:text="Parent LinearLayout"
        android:textSize="18sp"
        android:gravity="center"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:orientation="horizontal">
        <TextView
            android:layout_width="0dp"
            android:layout_weight="1"
            android:layout_height="wrap_content"
            android:text="Nested Horizontal 1"/>
        <TextView
            android:layout_width="0dp"
            android:layout_weight="1"
            android:layout_height="wrap_content"
            android:gravity="right"
            android:text="Nested Horizontal 2"/>
    </LinearLayout>

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1">
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Nested Relative Layout"
            android:id="@+id/textView"
            android:layout_alignParentTop="true"
            android:layout_centerHorizontal="true" />
        <Button
            android:text="back"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_below="@+id/textView"
            android:layout_centerHorizontal="true"
            android:layout_marginTop="66dp" />
    </RelativeLayout>
</LinearLayout>
```