EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Final Examination, Fall 2021 Semester

Course:	**CSE 489 Mobile Application Development, Section-1**
Instructor:	**Md Mostofa Kamal Rasel, Assistant Professor, Department of CSE**
Full Marks:	**40 (20 will be counted for final grading)**
Time:	**1 Hour and 20 Minutes**

Notes:
- C3 (Applying): Carrying out or using a procedure through executing, or implementing.
- C4 (Analyzing): Breaking materials or concepts into parts, determining how the parts relate to one
- C6 (Creating): Creating a new pattern or structure through generating, planning, or producing
- There are **6** (**SIX**) questions, answer ALL of them. Mark of each question are mentioned at the right margin

1. Android provides several techniques, such as Handler and AsyncTask, for enabling the multithreading in an application. Based on your understanding of multithreading in Android, answer the following questions: [CO3,C3,C4 Marks: 2+4]

   a) Can an AsyncTask be executed in a worker thread? **Explain** your answer.
   b) Suppose that an application needs to execute a long running task. The application also needs to report about the progress of the task to the user as well. **Which** technique among Service, Handler, and AsyncTask will you prefer to accomplish the above mentioned features of the task? Give an **example** and based on that example, **explain** that your preferred technique is the most suitable technique among all alternatives.

2. *MyDownloadTask class* in the following program implements a barebones asynchronous task for downloading a video file from a remote source. However, there are some errors in the parameters and return types. [CO3,C4 Marks: 3+3]

```java
class MyDownloadTask extends AsyncTask <String, Integer, Integer> {
  protected void onPreExecute() {

  }
  protected Integer doInBackground(Void...arg) {

    return result;
  }
  protected void onProgressUpdate(Integer...a) {

  }
  protected void onPostExecute(String result) {

  }
}
```

   a) **Identify** those errors and **correct** them.
   b) **Which** methods in the code given below are optional? **Which** methods are run in the main thread?

3. Android offers several tools or techniques, such as WebView and client-side API, to leverage internet resources. There are both pros and cons of the above mentioned techniques. Based on your understanding of those techniques answer the following questions: [CO3,C3 Marks: 4+4]

   c) **What** types of application should be implemented using the WebView? **List** at least four reasons behind your opinion.
   d) **Describe** the features of an application for which a client-side API is more preferable over a WebView based development.

4. SholoGutee is a turn-based board game played by two persons. In every turn, a player tries to kill the pawns (gutee) as many as possible. Suppose that you are going to develop an android application for playing the SholoGutee. Your developed gaming application must allow the users to play SholoGutee either in offline or online mode. Note that in a turn-based game, the opponent player is informed about the game board either after a countdown is finished or after every move that a player takes. Now, considering the different playing modes, answer the following questions: [CO3,C6,C4 Marks: 4+4]

   a) **How** do you develop the steps or actions that are taken by each player?
   b) Based on your knowledge of online gaming applications, **list** at least three additional gaming features for the SholoGutee application that can be offered to the users if they are connected to the external internet.

5. Suppose that you want to monetize (earning money) your developed application for setting the theme of the android mobile devices. Based on your knowledge of the different business models, answer the following questions: [CO3,C4 Marks: 3+3]

   a) **Which** business model(s) should you use if you want to maximize your earnings? **How** does your chosen model(s) maximize earnings?
   b) **Which** business models are not suitable for the above mentioned application? **Why** are those models not suitable for monetizing?

6. As a mobile application developer, **which** platform between Android and iOS will you prefer? **List** at least five reasons behind your opinion. [CO3,C4 Marks: 1+5]