



**EAST WEST UNIVERSITY**  
**Department of Computer Science and Engineering**  
**B.Sc. in Computer Science and Engineering Program**  
**Final 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.

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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: [1+1+2+2]
  - 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. (Note: don't use any content of the this question paper as an example)
2. *MyDownloadTask class* in the following program implements a barebones asynchronous task for downloading a video file from a remote source. Some information and hints for the implementation are given for each method. However, some of those information and hints are incorrect. **Identify** those incorrect information and hints, and then **replace** them with appropriate information or hints. [2+2]

```
class MyDownloadTask extends AsyncTask<Void, Integer, Integer> {
    protected void onPreExecute() {
        // Info-1: codes of this method are executed in worker thread
        // Hints-1: invoke the http(s) request here for downloading
    }
    protected Integer doInBackground(Void...arg0) {
        // Info-2: codes of this method are executed in UI thread
        // Hints-2: accumulate the downloaded data here
        // Hints-3: return the progress percentage from this method
        return progressPercentage;
    }
    protected void onProgressUpdate(Integer...a) {
        // Info-3: codes of this method are executed in worker thread
        // Hints-4: send the progress information to UI thread from here
    }
    protected void onPostExecute(Integer result) {
        // Info-4: codes of this method are executed in UI thread
        // Hints-5: write codes to close the http(s) connection here
    }
}
```

3. Android offers several ways/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:
- Describe** the features of an example application for which a WebView is more preferable over a client-side API based development.
  - Describe** the features of an example 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. This game is widely popular in the sub-continental countries such as Bangladesh, India, and Nepal. 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:
- SholoGutee is being played by two players without any internet and Wi-Fi connections. **Is** it possible to play? **Explain** your verdicts with appropriate statements.
  - You have declared the Wi-Fi permission in AndroidManifest. **Is** it possible to continue playing even if the Wi-Fi router doesn't have any connection to the external internet? **Explain** your verdicts with appropriate statements.
  - Based on your knowledge of online gaming applications, **describe** some additional gaming features for your 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 SholoGutee gaming application. Based on your knowledge of the different business models, answer the following questions:
- Which** business model(s) should you use if you want to earn from users as long as they are using your application? **How** does your chosen model(s) assure this continuous earning from each application?
  - Which** and **how** business model(s) will allow you to earn from both the application users and the third party businesses?
6. **What** are the requirements for mobile application development in the iOS platform? **Describe** some similarities and dissimilarities of the mobile application development in Android and iOS platforms.