The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Electrical and Computer Engineering

238

Study Programme	: Bachelor of Software Engineering Honours
Name of the Examination	: Final Examination
Course Code and Title	**: EEI3269 Introduction to Mobile Application Development**
Academic Year	: 2021/22
Date	: 27th November 2022
Time	: 0930-1230hrs
Duration	: **3 hours**

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **Four (4)** questions.
3. This is a Closed Book Test **(CBT).**
4. Answers should be in clear handwriting.

Question No 1 [40 Marks]

The Case for question No 1: Smart banking and touchless payments are the trending mobile application solutions in the current business world. Innovative-Tech is a well-reputed mobile application development company located in Colombo, and they are trying to develop innovative mobile applications for the banking industry. They have been requested by a client to develop an application that should cover the following areas.

- Users need to register/Signup with the application. Registered users can Sign in using the Correct Username and Password. If the users forget their Passwords, they must be able to reset them.
- Capable of configuring all bank accounts (Add accounts) and payment methods.
- Touchless payment facilities, including a QR scanner.
- Users can check the bank details, including past transactions and amounts (History).
- Other bill payments facilities (Biller Category)

You have been selected as a UI and UX designer for the proposed mobile app development process. Your answer should cover the user's requirements and banking and financial industry perspectives.

1. List down **three** basic factors to consider before developing this type of smart mobile application for the customer.

   (3 Marks)

2. Creating a mind map is very essential for the initial requirements gathering process. Identify **five** main functional areas and then create a mind map for the suggested mobile application.

   (5 Marks)

3. In the preliminary discussions, stakeholders discussed the possibility of using Native mobile application development methods. Write down **two advantages** and **two disadvantages** of Native application development.

(4 Marks)

4. Once finalizing the requirements gathering and preliminary discussions, the development team decided to select the cross-platform mobile app development approach for this project. Write down **two advantages** and **two disadvantages** of cross-platform mobile application development.

(4 Marks)

5. Draw the wireframes for the **three UIs,** the Home page, QR codes to Pay and Biller Category of this suggested application. Use the correct UI elements and components for design.

(6 Marks)

6. Once the development of the application was completed, the project lead decided to do a user acceptance testing cycle. List down the main **two areas of functionalities** and main **two** key areas of **UI/UX features** that need to be tested in this suggested application.

(4 Marks)

7. At the end of the project, the Marketing team of Innovative-Tech company suggested a **Free Distribution Model with Ads** and **Paid Distribution Model.** Briefly explain these two monetization strategies and suggest the most suitable strategy for this application and justify your answer.

(4 Marks)

8. The App development team decided to implement this application using React Native. You have been assigned to develop the **Biller Category** user interface for the proposed app. As a developer, you are requested to fill in the blanks using appropriate React Native components against the given output. (Write down the answers in the provided answer book in the given order)

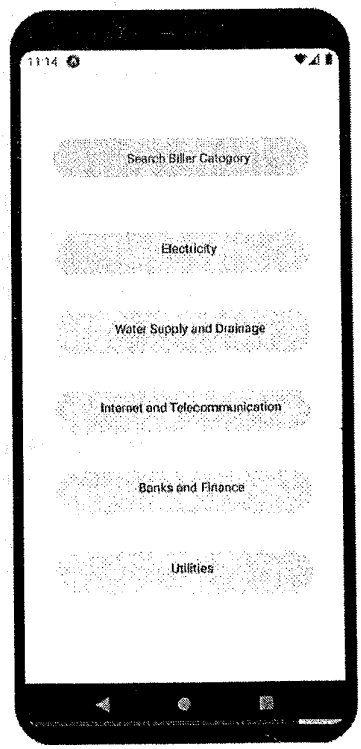
(1*10 = 10 Marks)

```
import * as React from '(___(a)___)';
import {StyleSheet,  Text, View, TextInput, TouchableOpacity,} from "(___(b)___)";

export (___(c)___) function App() {

  return (
    <View style={styles.(___(d)___)}>
      <View style={styles.inputView}>
        <(___(e)___)
          style={styles.(___(f)___)}
          placeholder="Search Biller Catogory"
          placeholderTextColor="#003f5c"
        />
      </View>

      <TouchableOpacity style={styles.billerBtn}>
        <Text style={styles.billerText}>(___(g)___)</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.billerBtn}>
        <Text (___(h)___)={styles.billerText}>Water Supply and Drainage</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.billerBtn}>
        <Text style={styles.billerText}>Internet and Telecommunication</Text>
      </TouchableOpacity>
       <TouchableOpacity style={styles.billerBtn}>
        <Text style={styles.billerText}>Banks and Finance</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.billerBtn}>
        <Text style={styles.billerText}>Utilities</Text>
      </(___(i)___)>
    </(___(j)___)>
  );
}
```



Question No 2 [20 Marks]

1. Software application types can differ based on the mode of use. Name **three software application types** excluding the mobile application.

(3 Marks)

2. Can we use MVC architecture in mobile development? Explain MVC architecture with an illustration.

(5 Marks)

3. Briefly explain the following **three** types of mobile applications and write one popular example for each type.

(6 Marks)

   a) Native Apps
   b) Web Apps
   c) Hybrid Apps

4. Content protocols are used to transfer data between physically separated components in our applications. Name **two content protocols** for mobile applications and briefly explain how it works.

(6 Marks)

Question No 3 [20 Marks]

A mobile operating system is the system software that operates on mobile devices.

1. There are **four main functions** of the Operating System. Describe two of them using examples.

(2 Marks)

2. List down the four main **layers** of the mobile operating system and explain one main functionality of each layer.

(4 Marks)

3. Android and iOS are two major mobile operating systems worldwide. List down **three specific features** of each operating system.

(6 Marks)

4. "Selecting an appropriate tool for a mobile application is the major turning point of the project." Describe the above statement using two native and **two** cross-platform development tools.

(8 Marks)

Question No 4 [20 Marks]

Publishing a mobile application is the general procedure that releases your program to users.

1. Name **two** major application publishing stores available in the market.

(2 Marks)

2. What is the .apk file, and what does it do in the mobile application publishing process?

(4 Marks)

3. The first stage of mobile advertising is to define the Key Performance Indicators (KPIs) and metrics for mobile ads. Briefly explain any **three** popular KPI metrics.

(6 Marks)

4. Mobile application security is the central aspect of publishing. Briefly explain following security mechanisms.
    A. Enforce strong authentication
    B. Patch app and operating system vulnerabilities
    C. Prevent data leaks
    D. Protect against device theft

(8 Marks)