ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

SEMESTER FINAL EXAMINATION   SUMMER SEMESTER, 2022-2023
DURATION: 3 HOURS   FULL MARKS: 150

CSE 4675: Mobile Application Development

Programmable calculators are not allowed. Do not write anything on the question paper.
Answer all **6 (six)** questions. Figures in the right margin indicate full marks of questions with
corresponding COs and POs in correspondence.

1. a) Security has always been a major concern for businesses, which is even greater when it
comes to mobile apps. That's why Kinetic Solution, a software farm contacted you, a promi-
nent Application Security Administrator to suggest a robust security checklist that can be
followed to find common bugs and handle basic security breaches.
Recommend a generalized security checklist.   15 (CO4) (PO2)

   b) You are a new member of Google's Bug Hunting Community. Generally, you need to fol-
low three steps to find out bugs: explore resources, report security, and at last collect your
bugs as digital trophies and earn paid rewards. You have already covered resources about
Android content providers, Android intent, and Android permission. Assume, a malicious
application has no permission to access mobile component and a good application returns An-
droid intent if it can not parse it. Both of the applications use Android content providers.
Report a step-by-step approach with a diagram of a vulnerability to the Google's Bug Hunting
Community.   10 (CO4) (PO2)

2. a) IUTroomBooking, an app made by some students, was launched today. You can sign in
and book some rooms as a class representative or a faculty member. First, you need to pro-
vide your IUT mail and password. Then you need to confirm the credentials again and if
it matches, you will be signed in. After signing in you get to see the UI. All the labels are
horizontally placed. You need to find the room number in a search bar and then click on
the button to confirm the booking. After all these, everyone using the app will get to see
your credentials inside your booked room.
Find two anti-patterns in the above scenario and provide their solutions.   10 (CO3) (PO2)

   b) ILHAM has the idea of showing every bit of information about a futsal tournament. All
the information will be available after the match, like the number of goals, passes, misses,
crosses, substitutes, and so on. Now he chooses to use a table-like design pattern to show all
the data. The columns contain information regarding the number of goals, passes, substi-
tutes, etc. ILHAM made a prototype and found that users need to scroll sideways (right to
left) to see all the columns. The problem is that users most of the time forget which row rep-
resents which team. Propose a solution with an appropriate tabular design pattern.   5 (CO4) (PO2)

   c) While building an app, it's common to render a `ScrollView` but see nothing on the screen.
Describe two common debugging techniques to solve this issue.   8 (CO2) (PO1)

   d) Discuss both the challenge and opportunity of displaying tabular data in mobile applications. 2 (CO1) (PO1)

3. a) Replace the placeholders (#placeholderX where X can be 1 to 8) with proper keywords of react native so that the Code Snippet 1 will render the Figure 1.

```
1  import {Image, StyleSheet, View, #placeholder1} from 'react-native'
2  import PropTypes from 'prop-types';
3  import {#placeholder2} from 'react'
4
5  import AuthorRow from './AuthorRow'
6
7  const Card = ({fullname, image, linkText, onPressLinkText}) => {
8
9    const [loading, #placeholder3] = useState(#placeholder4)
10
11   const handleLoad = () => {
12     setLoading(false)
13   }
14   return (
15     <View>
16       <AuthorRow
17         fullname={fullname}
18         linkText={linkText}
19         onPressLinkText={onPressLinkText}
20       />
21       <View style={styles.image}>
22         {#placeholder5 && (
23           <ActivityIndicator
24             style={StyleSheet.absoluteFill}
25             size={'large'}
26           />
27         )}
28         <#placeholder6
29           style={StyleSheet.absoluteFill}
30           source={image}
31           onLoad={handleLoad}
32         />
33       </View>
34     </View>
35   )
36 }
37 #placeholder7 default Card
38
39 const styles = StyleSheet.#placeholder8({
40   image:{
41     aspectRatio:1,
42     backgroundColor:'rgba(0,0,0,0.02)'
43   }
44 })
```

Code Snippet 1: A JavaScript code for Question 3.a

Figure 1: An image of a custom card component Question 3.a

b) State the differences between.

   i. Static and Dynamic style.

   ii. Stock and Jailbroken devices.

4.5×2

(CO1)
(PO1)

4. a) Mention the output to the console log of the Code Snippet 2.

5

(CO2)
(PO1)

```
1  const obj = {fname:'atiq', lname:'shafin', age:18}
2  let txt = ""
3  for(let x in obj){
4      txt += obj[x]
5  }
6  console.log(txt);
```

Code Snippet 2: A JavaScript code for Question 4.a

b) Beginners and experts alike frequently run into the problem where a component does not render anything on the screen. State a debugging technique to solve this issue.

5

(CO2)
(PO1)

c) Shafin, a newbie in software development is trying to build a touchable opacity with multiple children as element. He tries several times, only to get errors. Suggest to him a correct way to include multiple children inside a touchable opacity.

5

(CO2)
(PO1)

d) Assume, a View has a child component with 1717×122 (width×height) dimension and the style object as its style prop, shown in the Code Snippet 4. Find the actual height and width of the View.

5

(CO1)
(PO1)

```
1  {
2      marginTop : 22,
3      marginBottom : 40,
4      padding : 13,
5      borderTop : 18,
6      paddingRight : 73,
7      border : 15,
8      margin : 50
9  }
```

Code Snippet 3: A JavaScript code for Question 4.d

e) Demonstrate two approaches to include images in a mobile application with appropriate code examples.

5

(CO1)
(PO1)

5. a) On the Web, Multi-Step registration processes often use process bars to show users where they are and whats next. Discuss the problem faced by mobile application designers when they want to do the same and its solution with illustrations for both the problem and the solution. — 15 (CO4) (PO2)

b) GiftApp, a new start-up selling gifts for different occasions like birthdays, anniversaries, etc., decided to launch their first ever mobile application. The executives want to have a visible sign-in option even when users just roaming around the application. Suggest a sign-in option for GiftApp with necessary illustrations. — 5 + 5 (CO4) (PO2)

6. a) Describe two HTML events. — 5 (CO1) (PO1)

b) Mention the outputs to the console log of the Code Snippet 4. — 6 (CO2) (PO1)

```
1  let x = 5
2  let y = '5'
3  let z = '6'
4  console.log(y<z)
5  console.log(x==y)
6  console.log(x===y)
```

Code Snippet 4: A JavaScript code for Question 6.b

c) Suggest the seven-step process for developing any mobile application. Provide examples for each of the steps. — 14 (CO1) (PO1)