Strathmore
UNIVERSITY

School of Computing And Engineering Sciences

Bachelor of Science in Computer Networks and Cyber Security

End of Semester Examination

CNS 3102: Mobile Application Developement

Date: 1st August 2022 **Time: 2 Hours**

Instructions

1. This End of Semester Examination consists of FIVE questions.
2. Answer Question One (COMPULSORY) and any other TWO questions from section B.
3. Clear and precise answers are highly encouraged

SECTION A: Question One: (This Question is Compulsory) (30 Marks)

a) How can a mobile application be secured? **(4 Marks)**

b) What is a Menu as used in Android Development? Discuss 4 types of Menus. **(5 Marks)**

c) Using suitable examples differentiate between started services and bound services. **(4 Marks)**

d) There are two types of intents in Android: explicit intents and implicit intents. Using appropriate example describe the use of these intents. **(4 Marks)**

e) What is the importance of setting permissions within you application Android Manifest File? List 3 permission you would set in your manifest. **(4 Marks)**

f) Discuss 3 Challenges of Android development. **(3 Marks)**

g) Using a suitable illustration, dissect and explain in detail the Android Platform Architecture. **(6 Marks)**

SECTION B: Answer Any Two Questions In This Subsection

Question Two: 15 Marks

Safe Pal is intended to be a city parcel delivery software as a service mobile application. The app is to be used for the primary purposes of delivering parcels within Nairobi and its environs. The app will consist of four main users: parcel sending clients, parcel receiving clients, delivery motorists and application administrator. The main features of the application will include, scheduling delivery of parcels, routing deliveries, assigning delivery motorists, location tracking deliveries, paying for delivery services and confirming delivery fulfilment. You are tasked to further conceptualize this mobile app idea and complete the questions below.

a) Prepare possible wireframes (at least for six screens) for the application idea above. **(6 Marks)**

b) Identify and explain the use of at least six activities to be implemented for this case study. (**6 Marks)**

c) How would you go about securing the applications data? **(3 Marks)**

Question Three: 15 Marks

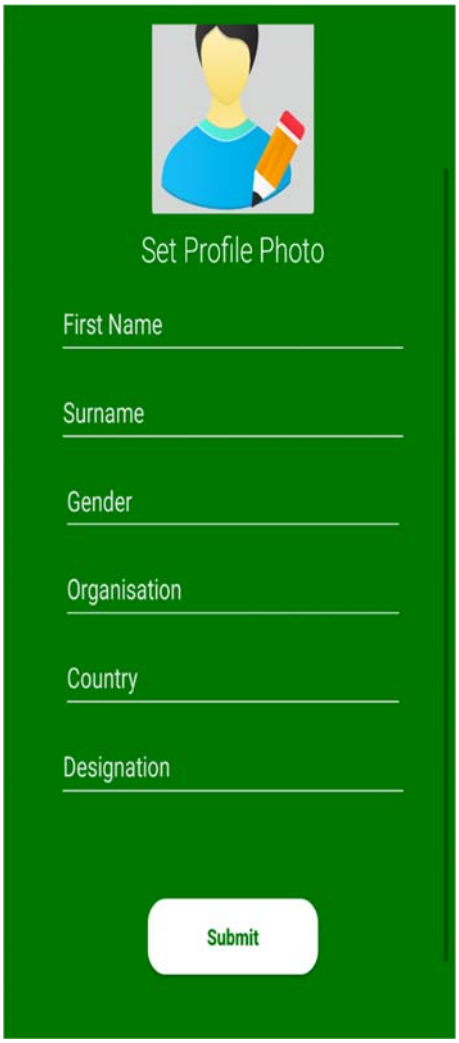
In a world driven by the Internet, mobile apps need to share and receive information from their products' back end (for example, from databases) as well as from third-party sources such as Facebook and Twitter. These interactions are often made through RESTful APIs. When the number of requests increases, the way these requests are made becomes very critical to development, because the manner in which you fetch data can really affect the user experience of an app.

a) Using suitable illustration, differentiate between synchronous and asynchronous request. (**4 Marks)**

b) Explain the two main rules for Android threads. **(4 Marks)**

c) Volley is a networking library developed by Google that seeks to simplify networking asynchronously. With an aid of a diagram, discuss the architecture of volley. **(7 Marks)**

Question Four: 15 Marks
Below is some profile page, use it to answer questions that follow.



a) Write XML code to create the profile page as shown in the mock-up design above **(10 Marks)**
b) Using Kotlin or Java implement a Toast that throws for 2 seconds the message: "Profile Created Successfully". **(2 Marks)**
c) Using Kotlin or Java implement an intent that redirects the user to Login Activity on clicking the submit button. **(3 Marks)**

Question Five: (15 Marks)

Below is some activity code. Your task is to analyse the scenarios (1,2,3,4) presented below and identify in each question:

i) The **code segments** that will run,
ii) The **order of the transitions** between the activity lifecycle states
iii) **Visibility** of the activity in each of these situations.

I've labelled the code segments I want you to

Consider (**A, B, C, D, E, F,G ,H**).

a) Scenario 1: The user starts the activity but does not interact with it. **(2 Marks)**
code segment(s)? Visibility? transition order?

b) Scenario 2: The user starts the activity and starts interacting with it. **(3 Marks)**
code segment(s)? Visibility? transition order?

c) Scenario 3: The user starts the activity, starts using it, then switches to another app. **(4 Marks)**
code segment(s)? Visibility? transition order?

d) Scenario 4: The user starts the activity, starts using it, rotates the device, switches to another app, then goes back to the activity. **(6 Marks)**
code segment(s)? Visibility? transition order?

```
Public class MyActivity extends
AppCompatActivity {
@Override
protected void onCreate( Bundle
savedInstanceState) {
A//Run code A
...
}
@Override
protected void onPause() {
B//Run code B
...
}
@Override
protected void onRestart() {
C//Run code C
...
}
@Override
protected void onResume() {
D//Run code D
...
}
@Override
protected void onStop() {
E//Run code E
...
}
@Override
protected void onRecreate() {
F//Run code F
...
}
@Override
protected void onStart() {
G//Run code G
...
}
@Override
protected void onDestroy() {
H//Run code H
...
}
}
```