



Strathmore
UNIVERSITY

SCHOOL OF ENGINEERING AND COMPUTER SCIENCE
Bsc. COMPUTER NETWORKS AND CYBER SECURITY
END OF SEMESTER EXAMINATION
CNS3102: MOBILE APPLICATION DEVELOPMENT

DATE: 24th JULY 2024

Time: 13:00-15:00 Hours

Instructions

1. This examination consists of **FIVE** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

QUESTION ONE (30MKS)

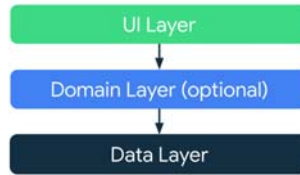
1. Describe Layout Mirroring as used in Android Layout Design **(2mks)**
2. The Navigation component consists of three key parts which facilitate navigation in the application. Describe them. **(3mks)**
3. The **Var** and **Val** keywords are used to describe variables in Kotlin Programming Language. Using an example for each use case, describe their differences. **(4mks)**
4. The activity is a basic component of an android application. The activity undergoes a lifecycle which constitutes different states in the activity execution. Describe the states that an activity goes through and the associated callbacks **(12mks)**
5. When accessing a device location, there are two types of Permissions that you can request in the manifest file. Describe them **(4mks)**
6. Differentiate between *Geocode and Reverse Geocode* **(2mks)**
7. An app architecture defines the boundaries between parts of the app and the responsibilities each part should have. Describe three common architecture principals when designing your application: **(3mks)**

QUESTION TWO (15MKS)

1. What is an Activity in Android? **(1mk)**
2. The Android SDK (Software Development Kit) contains components that aid in development of mobile applications. Describe 5 such components and what they are used for **(10mks)**
3. Discuss the advantages of native app development **(4mks)**

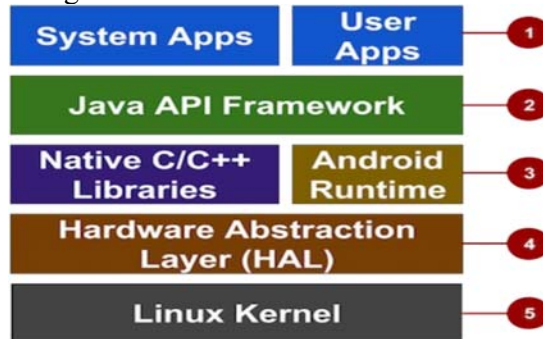
QUESTION THREE (15MKS)

1. A constructor is a concise way to initialize class properties. In Kotlin, there are two types of constructors. Using an example class, define the two types of constructors and illustrate how they are used to initialize class properties. **(4mks)**
2. The Android Manifest file is an XML file included in every project. Describe five roles of the Manifest file **(5mks)**
3. The recommended application architecture encourages the splitting of the app components into three distinct parts, as illustrated in the diagram below. Describe the role of the three layers **(6mks)**



QUESTION FOUR (15MKS)

1. The Android Operating system is a Linux-based operating system comprising of layers as illustrated in the diagram below. Describe the function of each of the layers: **(10mks)**



2. Kotlin Programming Language has been adopted as the preferred programming language for Android apps. What are the key benefits of Kotlin Programming Language? **(5mks)**

QUESTION FIVE (15MKS)

1. The navigation component when building android applications is important to ensure users can be able to transition from one page(activity) to another seamlessly. In order for this to be effective, there are five principles of Navigation. Describe them **(5mks)**
2. Discuss the advantages of cross platform app development **(4mks)**
3. Jetpack Compose was first announced by Google at the 2019 Google IO conference as a better way to build declarative user interfaces. Jetpack compose consist of 6 key features that aid in User interface Design. Describe them **(6mks)**