Exam Preparation Guide Sheet

Chapter 1 : Introduction to mobile OS

1. What is Mobile OS? Types of Mobile OS.
2. Structure of Mobile OS with **diagram**(*Low Level Hardware, Kernel, Libraries and Applications)*
3. Kernel used in Android(*Linux*) and IOS(*XNU*)
4. What is Mobile Application Development Environment? Types of Application Development Environment, Pros and Cons of Types. (*Native, HTML and Hybrid)*
5. Difference between Android and IOS. Android Architectures with **diagram** - *hint: include the name of at least three components of each block*
6. ART (Android Run Time) and Dalvik
    a. *Converts .OAT or .DEX format to machine level code*
    b. *Converts our code to machine level which is saved in .dex of .oat file just like JVM converts .class file to machine level*
7. JIT (Just In Time) and AOT (Ahead of Time)
    a. *Compilers used inside DALVIK and ART respectively*
8. Difference between ART and Dalvik
9. Difference between JIT and AOT
10. Short notes
    a. ADB (Android Debug Bridge)
    b. SDK (Software Development Kit)
    c. API (Application Program Interface) ,
    d. Android Studio (IDE for Android Development)

Chapter 2 : Java Architecture and OOPS

1. What is JVM? How it works.
2. Why Java is called platform independent language? *(because java source code can run on all operating systems)*
3. JRE and Java Architecture
4. Java class and objects
5. Class methods, instances, inheritance(types- single, multilevel), polymorphism
6. Interface and Abstract class and its importance

Chapter 3: Android Class and Basics

1. Android Manifest File - Importance, example code and default activity code.
2. Activity class definition (***Activity****: represents the presentation layer of an Android application, e.g. a screen which the user sees. An Android application can have several activities and it can be switched between them during runtime of the application.)*
3. Activity lifecycle (diagram importance)
4. Intent -(*are asynchronous messages which allow the application to request functionality from other services or activities. An application can call directly a service or activity (**explicit intent**) or ask the Android system for registered services and applications for an intent (**implicit intents**). For example, the application could ask via an intent for a contact application. Applications register themselves to an intent via an* `IntentFilter`*. **Intents** are a powerful concept as they allow the creation of loosely coupled applications.)*

   Types of Intents (Explicit and Implicit) - definition, example codes and differences.

5. Permission *(the purpose of a permission is to protect the privacy of an Android user. Android apps must request permission to access sensitive user data (such as contacts and SMS), as well as certain system features (such as camera and internet)*

   Types of permission

   Example of permission code inside manifest file.
6. Fragment Class *(A fragment is a reusable class implementing a portion of an activity. A Fragment typically defines a part of a user interface. Fragments must be embedded in activities; they cannot run independently of activities.)*
7. Fragment Lifecycle with **diagram**
8. Importance of fragments (*reusing view and logic components, tablet support, screen orientation)*

Chapter 4: Android User Interface

1. Define
   a. View
   b. ViewGroup
   c. Layouts and Types (*Linear, Relative, Frame, Table, Constraint) each with some example codes.)*
   d. Spinner *(also discuss the concept of adapter)*

2. Explain Android Layout attributes : (It was asked a couple of times in exam)
   a. android:id
   b. android:layout_width
   c. android:layout_height
   d. android:margin_left
   e. android:layout_gravity
   f. android:padding_right
   g. android:padding
   h. android:orientation
   i. android:text
   j. android:hint
      etc

3. Explain how multiple screen support is achieved in android.
4. What is DPI? Explain directory available for drawables in android.(*mdpi, hdpi, xhdpi, xxhdpi and xxxhdpi)*
5. Write an xml file for **Login Screen** using Linear Layout / Relative Layout.
6. Android Resources (*anim, drawable, layouts, values. Color, xml, styles, menu, etc)*
7. Android Styles with an example

Chapter 5: Advanced Topics

1. Types Notification with syntax and example
    - Notification (status bar notification)
    - Toast
    - Snackbar
      (difference between each of these three)
2. Notification Manager *(3 compulsory components of notification - small_icon, title, text)*
3. Broadcast Receiver class *(Diagram, methods of it, example code both of java class and manifest where it is registered)*
4. Threads in Android
    - **AsyncTask (methods, parameters, syntax and an example)**
    - **Handlers (an example)**
5. AlarmManager - Example
   *(**Alarms** (based on the AlarmManager class) give you a way to perform time-based operations outside the lifetime of your application. For example, you could use an alarm to initiate a long-running operation, such as starting a service once a day to download a weather forecast.*

   ***AlarmManager -** This class provides access to the system alarm services. These allow you to schedule your application to be run at some point in the future)*
6. Alarm Types -
    a. ***RTC (Real Time Clock).** The alarm times are referenced to UTC time. This does not wake the device. Fires the pending intent at a specified time. If the device is asleep, it will not be delivered until the next time the device wakes up.*
    b. ***RTC_WAKEUP.** The alarm times are referenced to UTC time and will wake the device to trigger if it is asleep. Fires the pending intent at a specified time, waking up the device if asleep.*
    c. ***ELAPSED_REALTIME.** This is based on the time elapsed since the device boot. This does not wake the device. It is better for time interval alarms-such as every 30*

minutes. Fires the pending intent after the specified length of time since device boot. If the device is asleep, it fires when the device is next awake.

d. ***ELAPSED_REALTIME_WAKEUP.*** *This is based on the time elapsed since the device boot. This wakes the device if it is sleeping. Fires the pending intent after the specified length of time since device boot. It wakes up the device if it is asleep.*

7. Network, permission for network and check availability of network

Chapter 6: Graphics and Multimedia

1. Graphics and how it is handled in Android
2. Media player Lifecycle**(Diagram)**
3. State of media player
    - Idle State
    - Initialization State
    - Prepared State
    - Completed State
4. Animation and Types
    - Property Animation
    - View Animation
    - Drawable Animation
5. Multitouch and Gestures
6. Events Generated during Multitouch

Chapter 7: Packaging and Monetizing

1. What is Persistent Data Storage? Explain types of persistent data storage available in Android
    - File
    - SharedPreference(Example)
    - SQLite
2. SQliteOpenHelper and it's methods with code

3. Code to create database, tables and insert records like in QT exam
4. Content Provider Class (diagram, crud definition and example)
    - *provides data to applications, via a content provider your application can share data with other applications. Android contains a SQLite DB which can serve as the data provider*
5. The Service class
6. Google Mobile Ads SDK (Types of Mobile Ads)
7. App monetization (Google payment Merchant Account)
8. Step for publishing an android app on play store
9. What is APK and Keystore? Debug APK vs Release APK

********** BEST OF LUCK **********

Oxford College of Engineering and Management (BCA - 8th Semester)