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| **SESSION** | **OCT 2024** |
| **PROGRAM** | **BACHELOR OF COMPUTER APPLICATIONS (BCA)** |
| **SEMESTER** | **VI** |
| **COURSE CODE & NAME** | **DCA3201 MOBILE APPLICATION DEVELOPMENT** |
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**Set-I**

**1. Draw the android architecture diagram with functions of each layer.**

**Ans 1.**

**Android Architecture and Functions of Each Layer**

Android is a versatile operating system that powers a majority of mobile devices globally. Its architecture is layered, enabling smooth interaction between applications and the underlying hardware. Below is an explanation of the Android architecture and the functions of each layer.

**1. Linux Kernel** At the base of the Android architecture lies the Linux Kernel, which is responsible for core system functionalities. It manages essential hardware components like memory, power, and network. Additionally, the kernel provides device drivers for hardware such as cameras, Bluetooth, and audio. This layer ensures a secure and efficient interaction between

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**2a. How would you create an empty project in Android Studio. Enlist the major steps.**

**b. Describe about the function of .java and .xml files in an Android project?**

**Ans 2.**

**a. Creating an Empty Project in Android Studio**

To create an empty project in Android Studio, follow these major steps:

**1. Open Android Studio:**  
Launch Android Studio on your computer. Ensure that it is properly installed and configured with the required SDKs.

**2. Start a New Project:**  
On the welcome screen, click on the option **"Start a new Android Studio project"**. This initiates the project creation wizard.

**3. Configure the Project:**  
In the next screen, provide the following details:

* **Application Name:** Enter the name of your application (e.g., "MyEmptyApp").

**3. Describe Dalvik Virtual Machine and Android Run Time (ART).**

**Ans 3.**

**Dalvik Virtual Machine (DVM)**

The Dalvik Virtual Machine (DVM) was the original runtime environment used in Android systems up to version 4.4 (KitKat). It is a type of virtual machine optimized for mobile devices with limited memory and processing power. Unlike Java Virtual Machines (JVM), DVM operates on **Dalvik Executable (.dex) files**, which are compact and efficient for resource-constrained environments.

Key features of DVM include:

* **Register-based Architecture:** Unlike JVM’s stack-based design, DVM uses a register-based model, which improves execution efficiency for most operations.
* **Low Memory Usage:** DVM’s optimized memory management allows Android apps to

**Set-II**

**4. Explain the role of LoaderManager. LoaderCallbacks in managing Cursor Loaders and the significance of its methods in the Android Loader framework**

**Ans 4.**

**Role of LoaderManager and LoaderCallbacks in Managing Cursor Loaders**

In Android, **LoaderManager** and **LoaderCallbacks** play a vital role in managing data loading operations, particularly when using **CursorLoaders** to access data from a content provider or database. These components are part of the Loader framework, designed to efficiently handle data queries and lifecycle changes.

**Role of LoaderManager**

LoaderManager is responsible for managing the lifecycle of loaders, such as starting, stopping, and retaining loaders during configuration changes (e.g., screen rotations). It ensures that data

**5. Discuss how Broadcast Receivers work in Android and provide an example scenario where they might be useful**

**Ans 5.**

**How Broadcast Receivers Work in Android**

Broadcast Receivers in Android are components that allow applications to listen for and respond to system-wide or application-specific broadcast messages. These messages are announcements sent by the Android system or other applications to indicate that a specific event has occurred. For instance, system broadcasts include events like changes in network connectivity, battery level updates, or device boot completion.

Broadcast Receivers are primarily used for decoupling event-driven communication between

**6. Discuss the various CRUD operations available in SQLite database. Explain them with the help of suitable example.**

**Ans 6.**

**CRUD Operations in SQLite Database**

SQLite is a lightweight database engine commonly used in Android applications for local data storage. CRUD stands for **Create, Read, Update, and Delete**, representing the fundamental operations for managing data in a database. SQLite enables these operations through SQL queries executed programmatically within the application.

**1. Create (Insert Data)**

The **CREATE** operation involves adding new records to a database table. This is achieved using the INSERT SQL statement.

**Example:** Suppose we have a table called Students with columns id, name, and grade. To insert a new record:

ContentValues values = new ContentValues();