Programme Name and Semester: BCA 5th Semester
Course Name (BCAS591): Android Programming Lab
Class: BCA
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Laboratory Assignment

(Android Programming Lab - BCAS591)

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1. **Aim/Purpose of the Assignments:** This assignment aims to introduce students to Android app development using Android Studio. Through the assignment, students will learn the basics of creating, customizing, and deploying Android applications.
2. **Learning Outcomes:**
   - ✔ Understand the basics of Android Studio installation and setup.
   - ✔ Develop a simple "Hello World" Android application.
   - ✔ Learn to customize the logo of an Android application.
   - ✔ Gain knowledge of the Android activity lifecycle and implement it in an application.
   - ✔ Create an APK file for Android deployment.
3. **Prerequisites:** Basic understanding of programming concepts. Familiarity with Java programming language is helpful but not mandatory.
4. **Software required:**
   - Android Studio (latest version)
   - Java Development Kit (JDK)
   - Android SDK
5. **Introduction and Theory:** Android Studio is the official integrated development environment (IDE) for Android app development. It provides tools for building, testing, and debugging Android applications. In this assignment, we will start by installing Android Studio, then proceed to create a simple "Hello World" application. We'll also learn about the Android activity lifecycle and how it impacts application behaviour.
6. **Operating Procedure:**
   - Install Android Studio on your computer following the installation instructions provided on the official Android developer website.
   - Open Android Studio and create a new Android project.
   - Write code to display "Hello World" on the screen using TextView.
   - Build and run the application on an Android emulator or a physical device to ensure it functions correctly.
   - Modify the application to change the default logo.
   - Implement the Android activity lifecycle methods such as onCreate(), onStart(), onResume(), onPause(), onStop(), and onDestroy() in your application.
   - Test the application to observe how the activity lifecycle methods are invoked under different scenarios.
7. **Precautions and/or Troubleshooting:**
   - Make sure your computer meets the system requirements for running Android Studio.
   - Ensure that you have a stable internet connection during the installation process.
   - Follow the installation instructions carefully to avoid any errors.

- Check for updates regularly to keep your Android Studio and SDK up to date.

8. **Observations:**
   - Observations may include successful installation of Android Studio, creation of the "Hello World" application, customization of the application logo, and implementation of activity lifecycle methods.
9. **Calculations & Analysis:** There are no specific calculations involved in this assignment. Analysis may involve understanding how the activity lifecycle methods influence the behavior of the application.
10. **Result & Interpretation:** The successful completion of this assignment will result in a functioning Android application that displays "Hello World", has a customized logo, and demonstrates the activity lifecycle behavior.
11. **Follow-up Questions:**
    - Describe the purpose of each activity lifecycle method.
    - How does changing the application logo affect user perception?
    - What are the advantages of using Android Studio for app development compared to other IDEs?
    - Explain the difference between onCreate() and onStart() methods in the activity lifecycle.
12. **Extension and Follow-up Activities (if applicable):** Students can extend their learning by:
    - Adding additional features to the application, such as user input fields or buttons.
    - Exploring advanced topics in Android development, such as RecyclerViews, Fragments, or networking.
13. **Assessments:** Assessment can be done based on the successful completion of each step of the assignment, the functionality of the Android application, and the understanding demonstrated in the follow-up questions.
14. **Suggested readings:**
    - Android Developer Documentation: https://developer.android.com/docs
    - "Head First Android Development" by Dawn Griffiths and David Griffiths.
    - "Android Programming: The Big Nerd Ranch Guide" by Bill Phillips and Brian Hardy.