Experiment 1: Installation and Configuration of Android Studio

Objective

To guide participants through installing Android Studio and setting up a development environment for building Android applications.

Prerequisites

- Computer with minimum 8 GB RAM, 4 GB free disk space, and dual-core processor (Intel or AMD)
- Supported OS: Windows 10/11, macOS, or Linux
- Java Development Kit (JDK) 8 or higher installed
- Basic programming knowledge in Java or Kotlin
- Familiarity with software installation processes

Expected Outcome

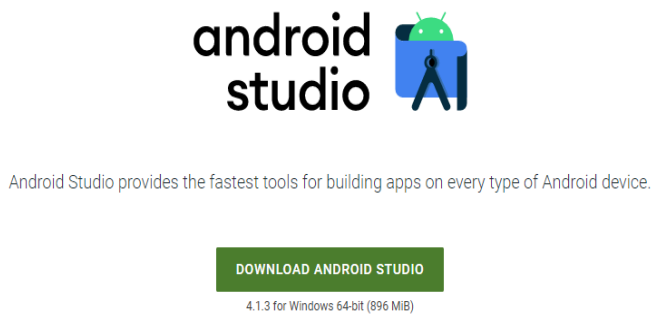
By the end of this lab, participants will be able to:

- Successfully install Android Studio
- Configure Android Studio environment including Android SDK, emulators, and plugins
- Create a new Android project and understand its structure
- Run and debug a basic Android app on an emulator or physical device
- Explore and utilize Android Studio's key features

Procedure

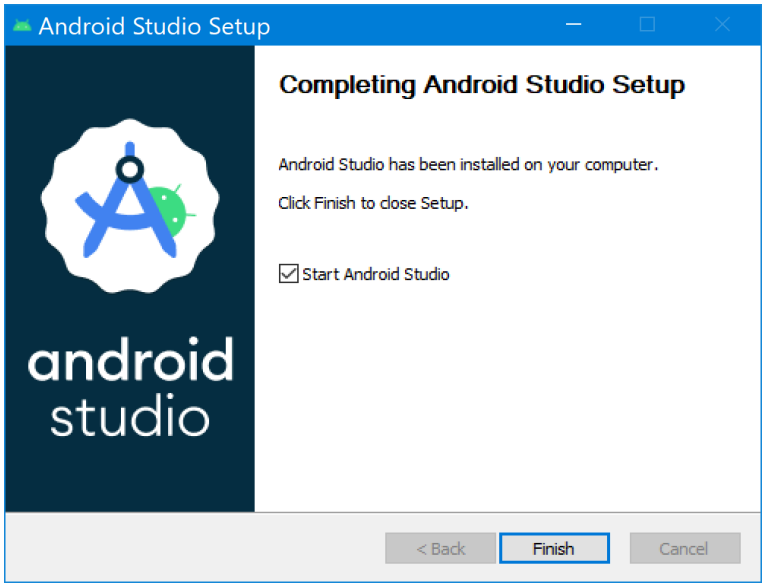
Step 1: Download Android Studio

1. Navigate to the
2. official Android Studio website
3. Click the Download Android Studio button suitable for your operating system
4. Save the installation file to your computer



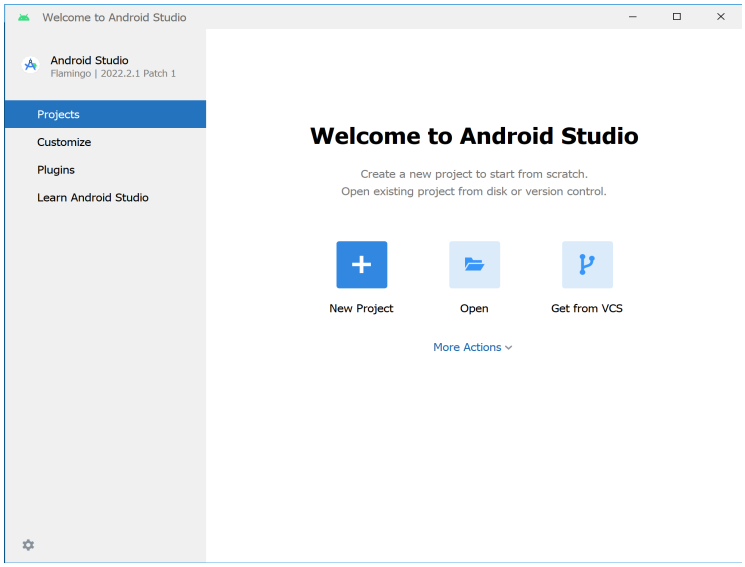
Step 2: Install Android Studio

1. Run the downloaded installer
2. Select the preferred UI theme (Darcula or Light) and click Next
3. Allow Windows Firewall to permit adb.exe network access when prompted
4. Respond Yes to User Account Control prompt to allow installation changes
5. Complete the installation and launch Android Studio



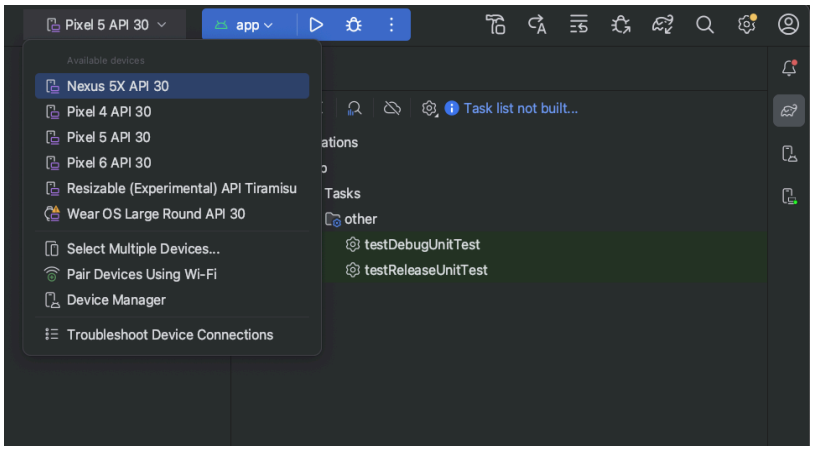
Step 3: Create a New Project

1. On the welcome screen, click New Project
2. Configure the project by selecting template, project name, and location
3. Familiarize yourself with the project structure in the IDE



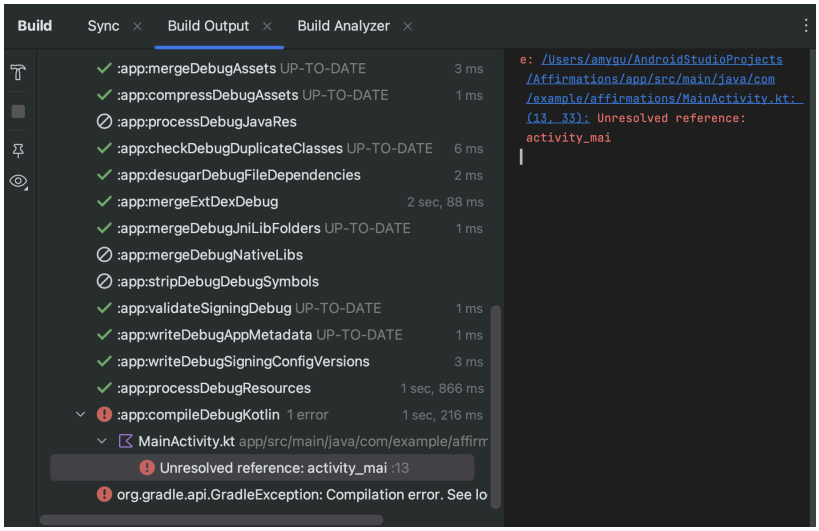
Step 4: Configure Android Virtual Device (AVD)

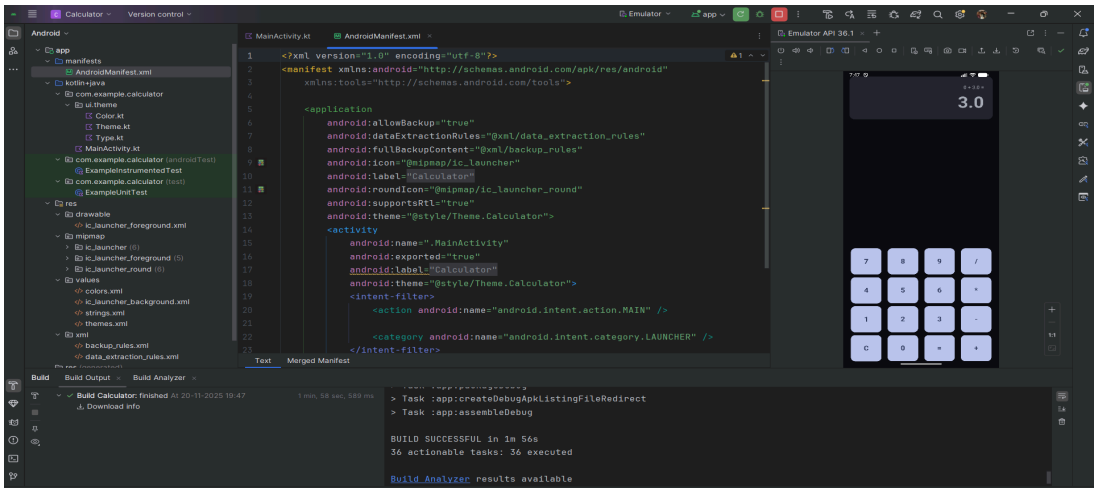
1. Select the device dropdown in the toolbar
2. Use Device Manager to create or select an emulator
3. Optionally, pair a physical device via Wi-Fi for deployment



Step 5: Build and Run the Application

1. Click the Run button (green play icon)
2. Monitor build status in the Build Output window
3. Resolve any compilation errors based on error messages
4. Test the app on the emulator or connected device





Step 6: Explore Android Studio Interface

- Experiment with the code editor, layout editor, and debugging tools
- Use Logcat for viewing runtime logs
- Utilize the Build Analyzer tab for build performance insights

Notes and Troubleshooting

- Ensure JDK is installed and environment variables are set properly
- If firewall blocks adb.exe, allow access for debugging purposes
- Common build errors may include missing resources or unresolved references—check syntax and resource files