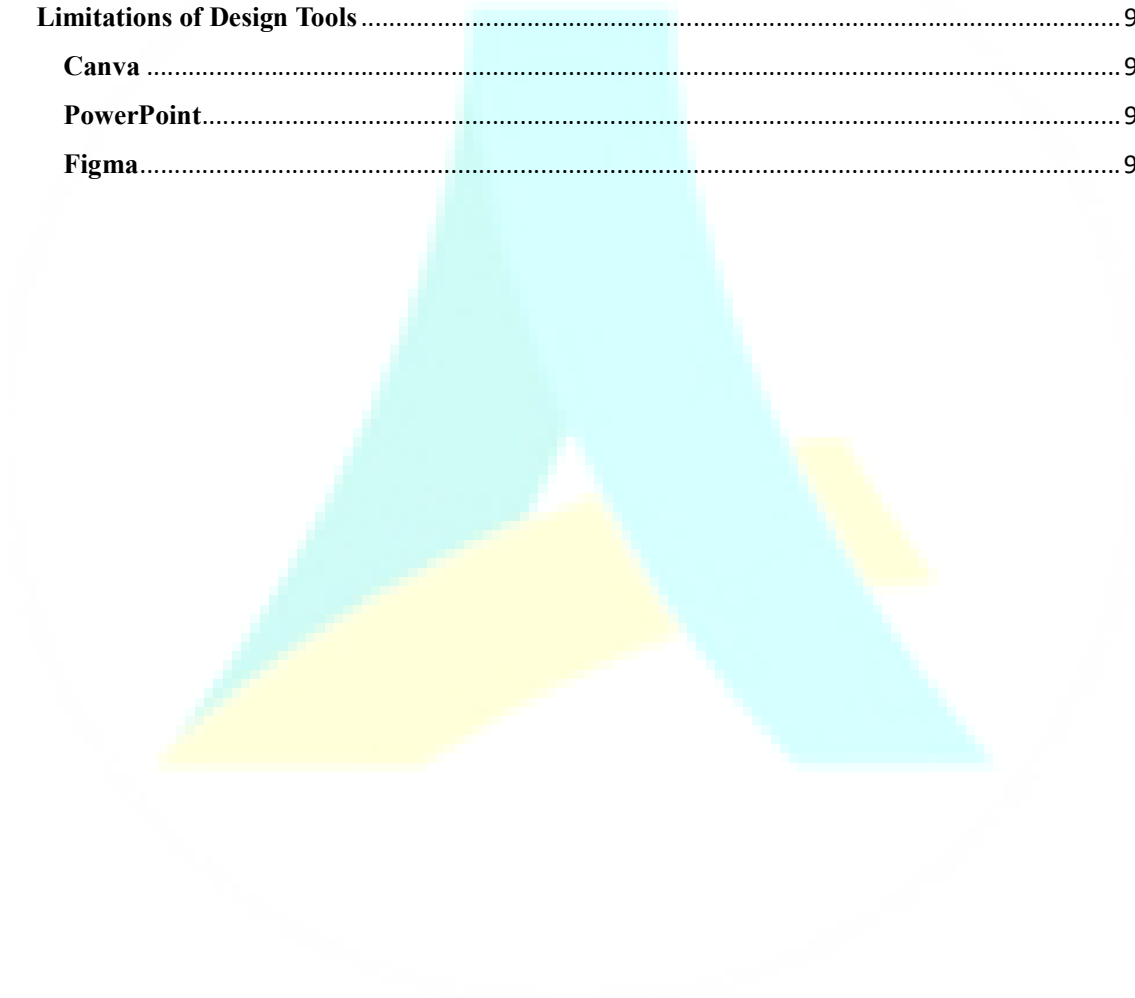


Android App Development

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Android Development Environment

1. Android Studio Overview

Android Studio is the official Integrated Development Environment (IDE) for Android development, built on IntelliJ IDEA. It provides tools for building, testing, and debugging Android applications efficiently.

Key Features

- **Code Editor:** Advanced code editing with suggestions, refactoring, and linting tools.
 - **Layout Editor:** Drag-and-drop interface for designing UI components.
 - **Emulator:** Built-in emulator to test applications without a physical device.
 - **Gradle Integration:** Build automation and dependency management.
 - **Debugging Tools:** Profiler for memory, CPU, and network usage.
 - **Version Control:** Supports Git, SVN, and more.
-

2. Installing and Configuring Android Studio

System Requirements

- **Windows:** Windows 10 or later, x64 processor.
- **Mac:** macOS 10.14 or later.
- **Linux:** GNOME or KDE desktop environment.
- Minimum 8 GB RAM (16 GB recommended).
- Minimum 4 GB disk space (SSD recommended).

Installation Steps

1. **Download Android Studio:**
 - Visit [Android Studio Download Page](#).
 - Choose the appropriate version for your OS.
 2. **Install:**
 - Run the installer and follow on-screen instructions.
 - Select additional components like the Android Virtual Device (AVD).
 3. **Initial Setup:**
 - Launch Android Studio.
 - Configure SDK path and required SDK packages.
 - Complete the "Setup Wizard."
-

3. Android SDK and Tools

Overview

The Android Software Development Kit (SDK) is a set of tools necessary for developing Android applications. It includes libraries, tools, and APIs.

Key Components

- **SDK Manager:** Manages SDK versions and updates.
- **Android Debug Bridge (ADB):** Command-line tool for debugging and device communication.
- **AVD Manager:** Creates and manages Android Virtual Devices (emulators).
- **Build Tools:** Includes compilers and utilities for building applications.
- **Platform Tools:** Tools specific to different Android versions.

Configuring SDK

1. Open Android Studio.
 2. Go to **File > Settings > Appearance & Behavior > System Settings > Android SDK**.
 3. Select required SDK Platforms and Tools.
 4. Apply and download the necessary components.
-

4. File Structure in Android Studio

An Android project in Android Studio follows a structured hierarchy:

Key Directories

- **app/:** Contains source code and resources.
 - **java/:** Source code for your application.
 - **res/:** Resources like layouts, strings, drawables, and more.
 - **AndroidManifest.xml:** Application configuration file.
- **gradle/:** Build system files.
- **build/:** Generated build outputs.
- **.idea/:** IDE-specific configuration files.

Build Gradle Files

- **build.gradle (Project Level):** Defines build script repositories and dependencies.
 - **build.gradle (Module Level):** Specifies app-level dependencies, compile SDK version, and more.
-

5. Android Versions

Overview

Android versions are released with specific codenames and API levels. These versions define new features, APIs, and behavioral changes.

List of Android Versions

Version	Codename	API Level
Android 1.0	No codename	1
Android 1.1	Petit Four	2
Android 1.5	Cupcake	3
Android 1.6	Donut	4
Android 2.0/2.1	Eclair	5-7
Android 2.2	Froyo	8
Android 2.3	Gingerbread	9-10
Android 3.x	Honeycomb	11-13
Android 4.0	Ice Cream Sandwich	14-15
Android 4.1-4.3	Jelly Bean	16-18
Android 4.4	KitKat	19-20
Android 5.x	Lollipop	21-22
Android 6.0	Marshmallow	23
Android 7.x	Nougat	24-25
Android 8.x	Oreo	26-27
Android 9	Pie	28
Android 10	Quince Tart	29
Android 11	Red Velvet Cake	30
Android 12	Snow Cone	31
Android 12L	Snow Cone v2	32
Android 13	Tiramisu	33
Android 14	Upside Down Cake	34
Android 15	Vanilla Ice Cream	35
Android 16	Watermelon Sorbet	36

API Levels

Each Android version corresponds to a unique API level. Apps must specify a **minimum SDK version** and **target SDK version** to ensure compatibility.

Design Tools

Overview of Canva

Canva is a user-friendly online design tool that enables users to create professional-quality designs for various purposes. It is widely used for creating graphics, presentations, social media posts, and more without requiring advanced design skills.

Key Features

1. **Drag-and-Drop Interface:**
 - Easy to use, allowing quick customization of templates.
2. **Templates:**
 - A vast library of pre-designed templates for presentations, posters, social media, and more.
3. **Elements:**
 - Access to millions of stock images, icons, shapes, and fonts.
4. **Collaborative Tools:**
 - Share designs with team members for real-time collaboration.
5. **Animations:**
 - Add motion effects to text and images for dynamic designs.
6. **Brand Kit:**
 - Store brand-specific colors, logos, and fonts for consistent branding.
7. **Export Options:**
 - Export designs in various formats such as PNG, JPG, PDF, and MP4.

Using Canva for Presentations (PPTs)

Canva provides dedicated tools for creating visually appealing presentations. Below are the steps to create a presentation using Canva:

Steps to Create a Presentation

1. **Login or Sign Up:**
 - Go to [Canva](https://www.canva.com) and log in or create an account.
2. **Choose a Template:**
 - Select "Presentation" from the templates or search for a specific theme.
3. **Customize the Design:**
 - Add or modify slides using drag-and-drop functionality.
 - Include text, images, and videos as needed.
4. **Apply Animations:**
 - Use transition effects and animations to enhance slide visuals.
5. **Collaborate (Optional):**
 - Share the design link with teammates for real-time collaboration.
6. **Export the Presentation:**
 - Download as a PowerPoint file (PPTX) or present directly from Canva.

Making Designs in Microsoft PowerPoint (MS Office)

Microsoft PowerPoint is another powerful tool for creating visually engaging presentations. While primarily used for slide decks, it can also be leveraged for custom graphic designs.

Steps to Create Designs in MS PowerPoint

1. **Open PowerPoint:**
 - Launch Microsoft PowerPoint and create a new blank presentation.
2. **Customize the Slide Size:**
 - Go to **Design > Slide Size > Custom Slide Size** to set dimensions based on your design needs (e.g., poster or banner size).
3. **Use Shapes and Icons:**
 - Access **Insert > Shapes** to add geometric designs.
 - Use **Icons** for ready-made vector graphics.
4. **Insert Images and Videos:**
 - Add visuals by navigating to **Insert > Pictures** or **Insert > Online Pictures**.
5. **Apply Design Themes:**
 - Use **Design > Themes** to apply a consistent visual style.
6. **Add Animations and Transitions:**
 - Use the **Animations** tab to bring motion effects to elements.
7. **Export the Design:**
 - Save your slide as an image (PNG/JPG) or export the entire presentation as a PDF.

Tips for Effective Designs in PowerPoint

- **Layering:** Arrange elements with the **Send to Back** or **Bring to Front** options.
 - **Alignment:** Use the **Align** tools under the Arrange menu to ensure consistent spacing.
 - **Custom Fonts:** Install and use unique fonts for a distinct style.
-

Overview of Figma

Figma is a collaborative design tool primarily used for UI/UX design. It operates entirely online, making it accessible from any device with an internet connection. It is widely preferred for creating prototypes, wireframes, and interactive designs.

Key Features

1. **Real-Time Collaboration:**
 - Multiple users can work on the same design simultaneously.
2. **Cross-Platform Accessibility:**
 - Works on web browsers, eliminating the need for installations.
3. **Design and Prototyping:**
 - Seamless transition from design to interactive prototypes.

4. **Version Control:**
 - Keeps track of changes with an autosave and version history feature.
 5. **Plugins:**
 - Extensive plugin library for icons, stock images, and additional functionalities.
 6. **Component System:**
 - Reusable components for maintaining design consistency.
 7. **Integrations:**
 - Integrates with tools like Slack, Jira, and Zeplin for streamlined workflows.
-

Using Figma for Designs

Figma provides powerful tools to create designs collaboratively and efficiently. Here are the steps to use Figma:

Steps to Create a Design in Figma

1. **Sign Up or Login:**
 - Go to [Figma](#) and log in or create an account.
2. **Create a New File:**
 - Click on "New File" to start designing.
3. **Use Frames:**
 - Add frames (artboards) to define your workspace.
4. **Design with Tools:**
 - Use shapes, pen tools, and text tools to create layouts.
 - Drag and drop images or icons into your design.
5. **Prototyping:**
 - Link frames to create interactive prototypes.
6. **Collaborate:**
 - Share the file link with team members for feedback and edits.
7. **Export the Design:**
 - Export frames or elements as PNG, JPG, or SVG formats.

Tips for Using Figma Effectively

- **Leverage Plugins:** Use plugins for tasks like icon insertion, stock photo access, or wireframe creation.
 - **Organize Layers:** Name layers and group related elements for easy navigation.
 - **Master Components:** Create components for reusable elements like buttons and headers.
-

Advantages of Design Tools

Canva

1. **Ease of Use:** Intuitive interface suitable for beginners.

2. **Time-Saving:** Pre-designed templates speed up the design process.
3. **Wide Accessibility:** Works on browsers and mobile apps.

PowerPoint

1. **Offline Access:** Fully functional without an internet connection.
2. **Robust Customization:** Advanced features for creating unique designs.
3. **Familiar Interface:** Ideal for users accustomed to MS Office.

Figma

1. **Collaboration:** Real-time design edits with team members.
2. **Cross-Platform:** Works on any device with internet access.
3. **Prototyping:** Interactive mockups for UI/UX workflows.

Limitations of Design Tools

Canva

1. **Limited Customization:** May not satisfy advanced design needs.
2. **Premium Content:** Some features require a paid plan.

PowerPoint

1. **Design Constraints:** Less suited for modern design needs.
2. **Learning Curve:** Advanced features may require practice.

Figma

1. **Internet Dependency:** Requires a stable connection.
 2. **Resource Intensive:** May lag on lower-spec devices.
-