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Introduction to Dependency Injection

Mastering Dependency Injection for Cleaner Android Code

DEFINITION

> Dependency Injection (DI) is a design pattern that allows a program to achieve Inversion of Control by passing dependencies instead of hardcoding them. It promotes loose coupling and easier testing in Android applications.

KEY CONCEPTS

Inversion of Control

A principle where the control of object creation is transferred to a container or framework.

Service Locator

A design pattern that provides a central point to retrieve dependencies, but can lead to tight coupling.

Constructor Injection

A method of providing dependencies through a class constructor, ensuring required dependencies are available at instantiation.

Field Injection

Dependencies are assigned directly to fields of a class, often using annotations, but can complicate testing.

Scope Management

Managing the lifecycle of dependencies, ensuring they are created and destroyed appropriately based on their usage context.

EXAMPLES

→ Using Dagger for automatic dependency injection in Android projects.

→ Injecting a database instance into a ViewModel using constructor injection.

→ Using Hilt to simplify DI setup in Android applications.

MEMORY TIPS

★ Remember 'DI' as 'Do It' - it helps in organizing code better.

★ Think of 'Inversion of Control' as 'Letting Go' of direct dependency management.

★ Use the acronym 'SFC' for 'Service Locator, Field Injection, Constructor Injection' to recall key DI methods.

COMMON MISTAKES

✗ Overusing field injection, leading to hidden dependencies and harder testing.

✗ Neglecting to manage the lifecycle of dependencies, causing memory leaks.

✗ Confusing DI with Service Locator, which can lead to tight coupling.

QUICK RECAP

Dependency Injection is a key design pattern for managing dependencies in Android development. It enhances code maintainability and testability by promoting loose coupling. Remember the different methods of injection and their implications for effective use.