Unit Testing & Debugging

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Agenda

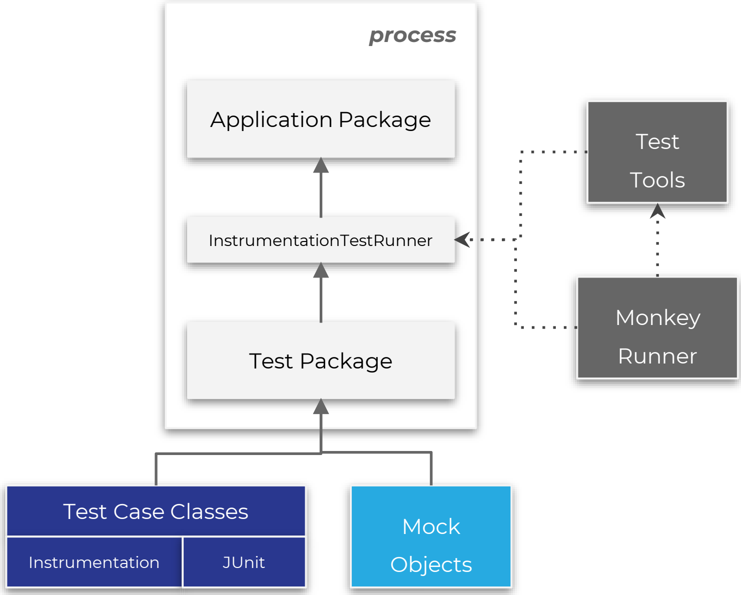
- ❑ Creating Unit Tests for Android App
- ❑ Android Development Tools (ADT)
- ❑ Using the Emulator for Running Android App
- ❑ TraceView
- ❑ Analyzing the Heap

Android App Testing

- You may test any component of your application using the integrated testing framework provided by the Android framework.
- The SDK tools contain equipment for installing and running test programs.
- The SDK tools assist you in setting up and running your tests inside an emulator or the device you are aiming for, whether you are working in Eclipse with ADT or working from the command line.

Test Structure of Android App

The build and test tools for Android rely on the standard organisation of tests, test case classes, test packages, and test projects.



Testing Tools in Android

Numerous tools are available for testing Android applications. To test your Android apps, you can use native tools like JUnit or Monkey or third-party tools..

- **JUnit**
- **Monkey**

JUnit

You must extend the TestCase class and add the function setup() in order to use it. The following is an illustration of how to do it:

```
public class MathTest extends TestCase {
   protected double myVal1;
   protected double myVal2;
   protected void setUp() {
      myVal1= 4.0;
      myVal2= 5.0;
   }
}
```

JUnit

Implement a method that communicates with the fixture for each test. Call assertTrue(String, boolean) with a boolean expression checking the value of a field, variable, or parameter to verify the expected outcomes using assertions.

```
public void testAdd() {

   double myResult= myVal1 + myVal2;

   assertTrue(myResult == 9.0);

}
```

JUnit

The assert methods make a comparison between values you anticipate from a test and actual results, and if the comparison fails, they throw an exception. You can run the methods after they have been defined.

An example is given below

```
TestCase test= new MathTest("testAdd");

test.run();
```

Android Development Tool (ADT)

You can build engaging and potent applications for the Android platform using ADTs. Two general categories of tools can be made.

- **SDK tools**
- **Platform tools**

SDK Tools

- No matter the Android platform you are working on, SDK tools are generally platform independent and must be installed.
- When you install the Android SDK on your machine, these tools are installed automatically.
- The list of available SDK tools is provided below.

    - Android
    - DDMS
    - Draw 9-Patch
    - Emulator
    - Mksdcard
    - Proguard
    - sqlite3
    - traceview
    - ADB

Android Tools- Android

Android is a tools used for development and helps to perform:

- Manage Android Virtual Devices (AVD)
- create and update projects for Android
- New platform add-ons and documentation should be added to your SDK.

Android Tools - DDMS

- Dalvik Debug Monitor Server, sometimes known as DDMS, is a platform service provider.
- The service can involve creating messages, faking calls, taking screenshots, and examining internal threads and file systems.

Android Tools - SQLite3

- The SQLite databases for Android applications are managed via the command line software sqlite3.
- Additionally, the tool enables instant SQL statement execution.
- You have two options for using SQLite: locally or from a remote shell.

Android Tools - Emulator

- On your PC, the Android SDK comes with a virtual mobile device emulator.
- You can use the emulator to develop, test, and prototype Android applications without a physical device.
- In addition to the minimal system requirements for Android Studio, the Android emulator has extra requirements.

Android Tools - TraceView

- When you use the Debug class to record tracing information in your code, you may produce execution logs that can be seen graphically in Traceview.
- You may profile your application's performance and debug it with Traceview.
- You can use Traceview to import trace log files and display their data in a window that depicts your application in two panels whenever you have a trace log file (either by adding tracking code to your programme or by DDMS). :
    - A timeline panel shows the beginning and ending times of each thread and method.
    - A profile panel gives a brief account of what transpired inside a method.

Questions

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