

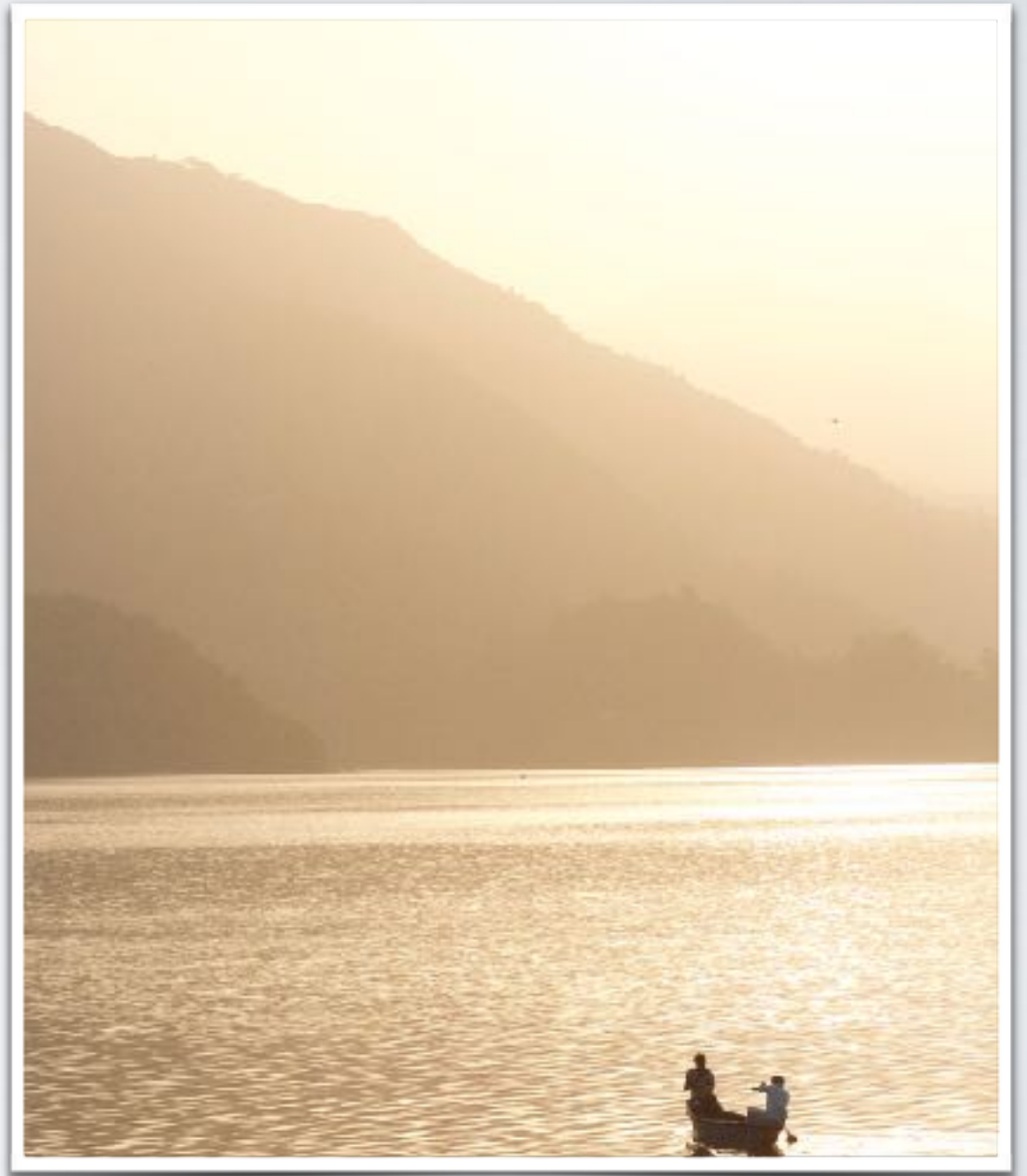
SOFTWARE ENGINEERING BASIC

Lecture 2

Unit Testing / Multitouch explained

AGENDA

- **Homework Questions**
- Unit Testing
- Android concepts
- Multitouch explained



LAB / HOMEWORK

- you did add .gitignore
- you didn't commit generated files (compare with original project)
- you don't have any java files left
- it still works
- you had a look at the generated scala code?
- you optimized the scala code!

DEADLINE FRIDAY MIDNIGHT

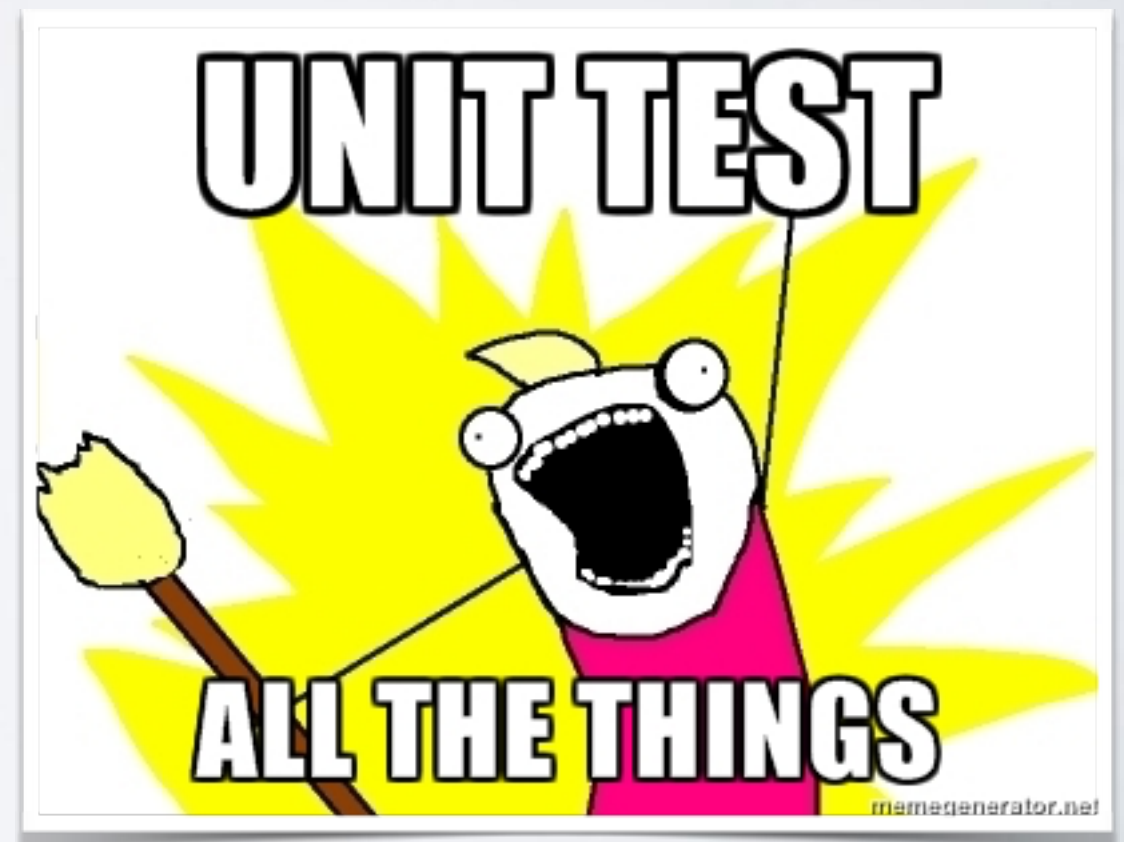
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UNIT TESTS

- Test individual units of source code
- Smallest testable part of a program
- test cases are independent
- fast execution
- repeatable



UNIT TESTS II

- Mock interfaces to untangle source code from environment
- written and run by developers
- integration vs unit tests

UNIT TESTS III

- Unit tests are not suitable for testing complex UI interaction events
- Instead, you should use the UI testing frameworks.
- see: <https://developer.android.com/training/testing/ui-testing/index.html>

UNIT TESTS IV

- JUnit is a very popular unit testing framework
- <http://junit.org/>
- a variant for it exists for Android, too.
- <https://developer.android.com/training/testing/unit-testing/index.html>

UNIT TESTS ...

- For Android, we have
 - Local Unit Tests
 - Instrumented Unit Tests (out of scope)

ANDROID-GRADLE- SCALA-101

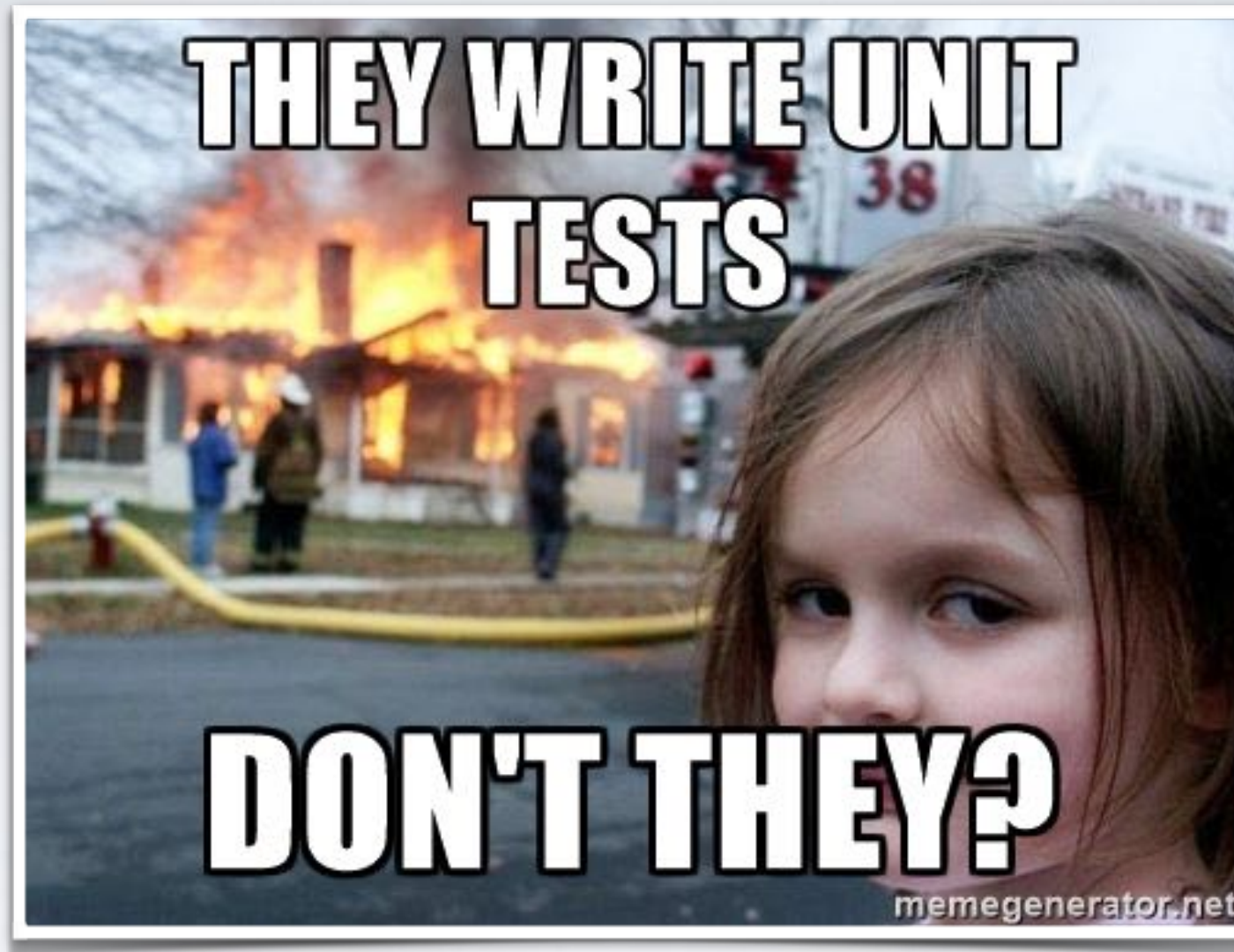


[example on github](#)

SCALATEST

```
... "Agnesa Haxha" when {  
  ... "participating in SWENGB," should {  
    ... "have a github account communicated" in assert(Students.ahaxha.githubUserName.nonEmpty)  
    ... "have created a github account at http://github.com/" + Students.ahaxha.githubUserName in assert(Git  
  }  
  ... "submitting android-BasicGestureDetect" should {  
    ... "have a repository named http://github.com/haxhaagn15/android-BasicGestureDetect" in assert(Github.  
    ... "have not committed local.properties" in assert(!Github.exists(ahaxha.fileIn("android-BasicGestureD  
    ... "have a .gitignore file committed" in assert(Github.exists(ahaxha.fileIn("android-BasicGestureDetect  
  }  
}  
  
... "Alexander Horina" when {  
  ... "participating in SWENGB," should {  
    ... "have a github account communicated" in assert(Students.ahorina.githubUserName.nonEmpty)  
    ... "have created a github account at http://github.com/" + Students.ahorina.githubUserName in assert(Gi  
  }  
  ... "submitting android-BasicGestureDetect" should {  
    ... "have a repository named http://github.com/horinaal15/android-BasicGestureDetect" in assert(Github.  
    ... "have not committed local.properties" in assert(!Github.exists(ahorina.fileIn("android-BasicGesture  
    ... "have a .gitignore file committed" in assert(Github.exists(ahorina.fileIn("android-BasicGestureDetec  
  }  
}
```

there are many ways to write unit tests.



The important thing is to actually write tests.

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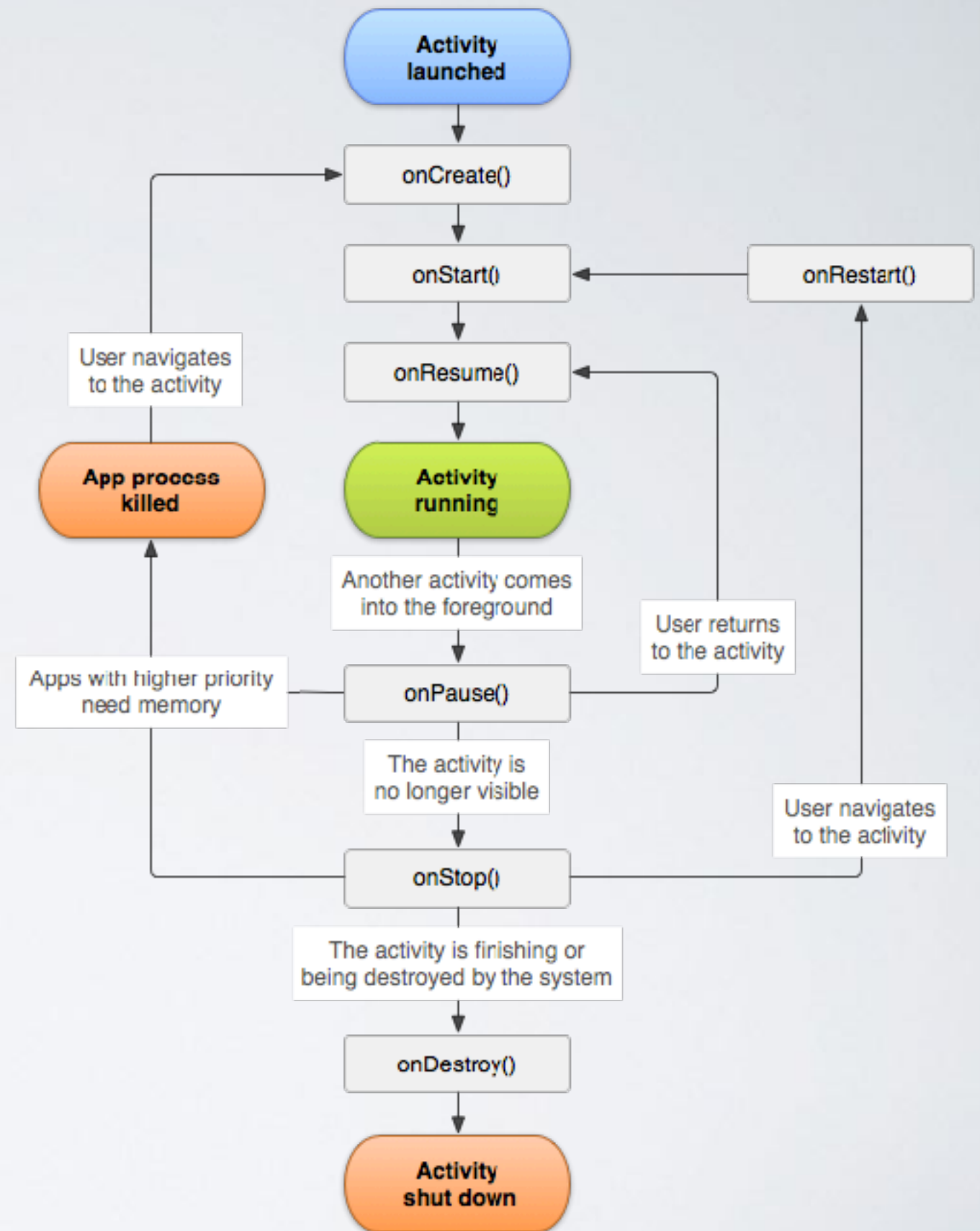
ACTIVITY

- An activity is a single, focused thing that the user can do.
- <https://developer.android.com/reference/android/app/Activity.html>

ACTIVITY

```
public class Activity extends ApplicationContext {  
    protected void onCreate(Bundle savedInstanceState);  
  
    protected void onStart();  
  
    protected void onRestart();  
  
    protected void onResume();  
  
    protected void onPause();  
  
    protected void onStop();  
  
    protected void onDestroy();  
}
```


ACTIVITY LIFECYCLE

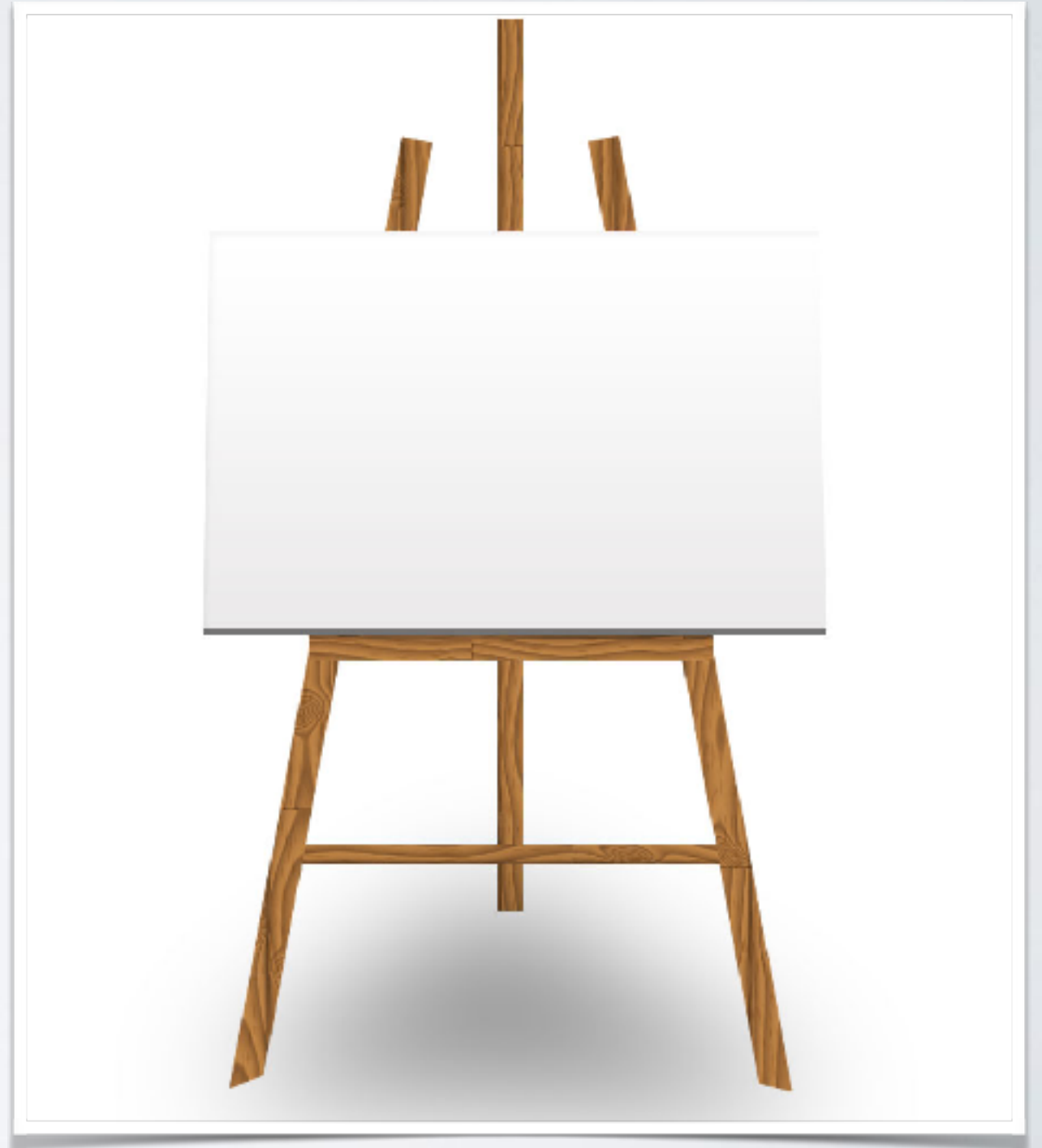


VIEW

- A View occupies a rectangular area on the screen and is responsible for drawing and event handling.

CANVAS

- A place to paint on



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