Course: CS522 - Software Quality Assurance and Test Automation
Faculty: Prof. Henry Chang

Project: JukeBox + Junit Test Suite

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Introduction

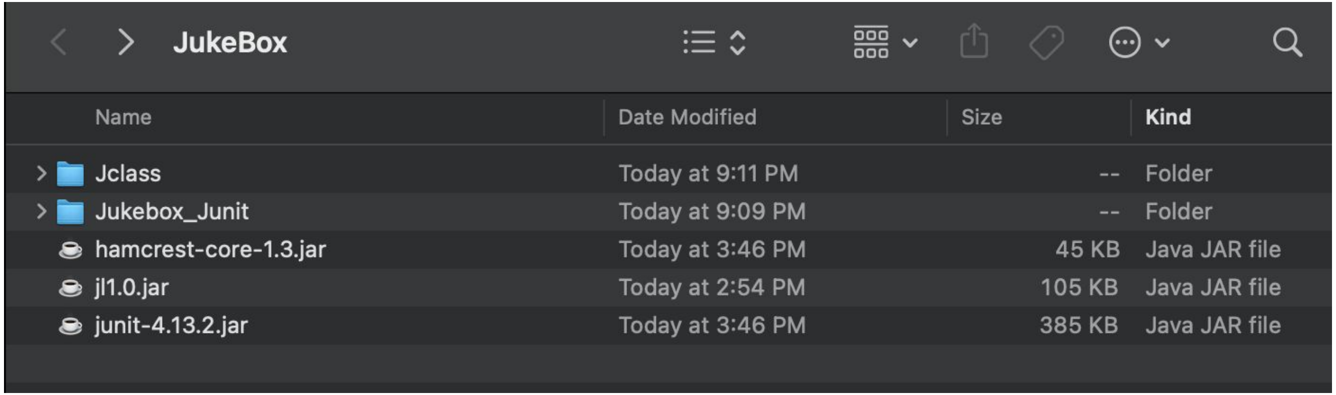
- Software Testing can be started from the Requirements Gathering phase and continued till the deployment of the software.
- For Software Quality Assurance and Test Automation one should have basic understanding of below SDLC and programming language.
- QA includes activities that ensure the implementation of processes, procedures and standards in context to verification of developed software and intended requirements.
- It is a subset of Software Test Life Cycle (STLC).

About JUnit

- JUnit is a unit testing framework for Java programming language. JUnit has been important in the development of test-driven development, and is one of a family of unit testing frameworks collectively known as xUnit, that originated with JUnit.
- Besides manual testing, JUnit is preferred equally for automation testing on the projects.
- Download the .jar files. Go to https://github.com/junit-team/junit/wiki/Download-and-Install and click the link for junit.jar. Find the row for the latest stable release then under the downloads column click 'jar' link. This will download a file junit-4.13.2.jar. Repeat this again and download the latest stable release for hamcrest: download hamcrest-core-1.3.jar

JUnit Jar Files

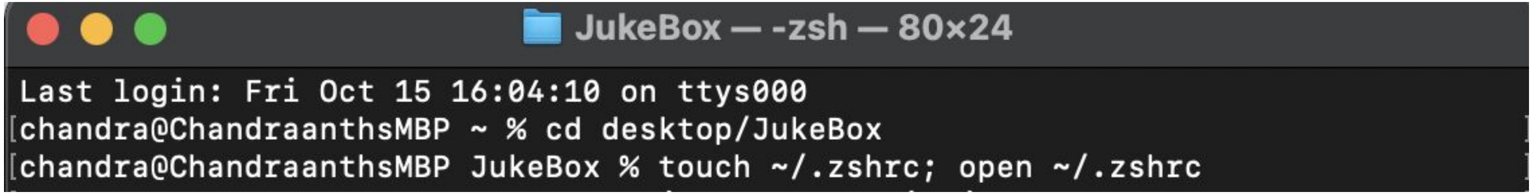
- Download the .jar files. Go to https://github.com/junit-team/junit/wiki/Download-and-Install and click the link for junit.jar. Find the row for the latest stable release then under the downloads column click 'jar' link. This will download a file junit-4.13.2.jar. Repeat this again and download the latest stable release for hamcrest: download hamcrest-core-1.3.jar
- We need to create a folder JukeBox and put the .jars downloaded into this folder.



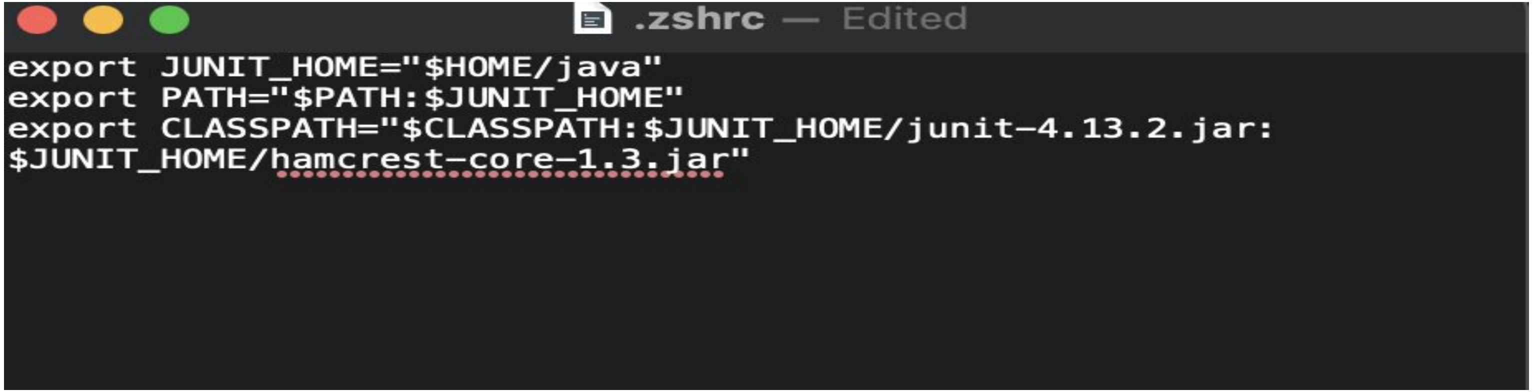
Name	Date Modified	Size	Kind
Jclass	Today at 9:11 PM	--	Folder
Jukebox_Junit	Today at 9:09 PM	--	Folder
hamcrest-core-1.3.jar	Today at 3:46 PM	45 KB	Java JAR file
jl1.0.jar	Today at 2:54 PM	105 KB	Java JAR file
junit-4.13.2.jar	Today at 3:46 PM	385 KB	Java JAR file

JUnit Jar Files

- Edit your classpath. We now need to edit our .zshrc file to add these files to our classpath



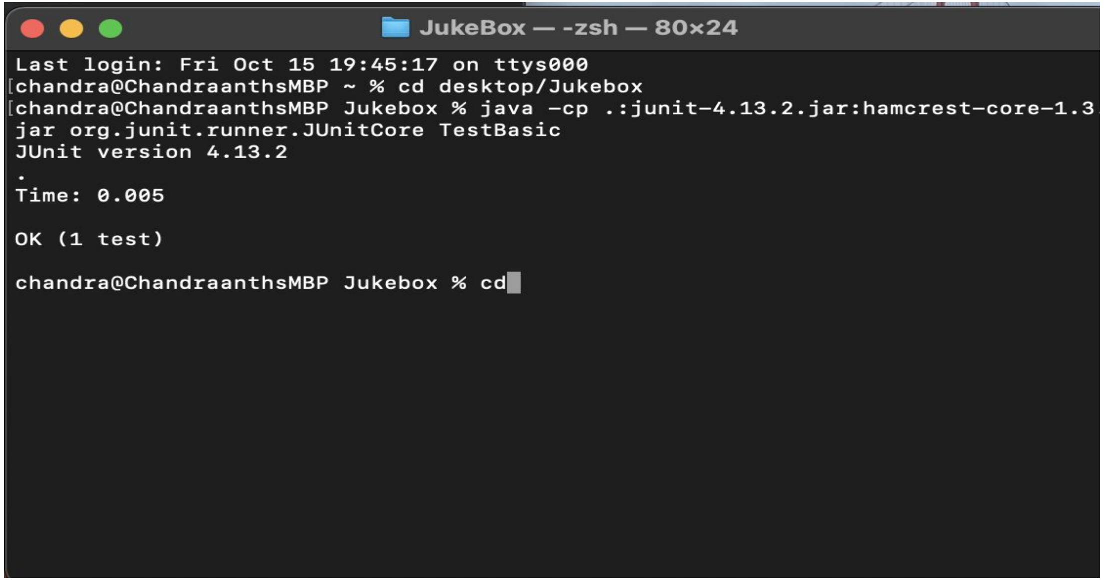
```
Last login: Fri Oct 15 16:04:10 on ttys000
[chandra@ChandraanthsMBP ~ % cd desktop/JukeBox
[chandra@ChandraanthsMBP JukeBox % touch ~/.zshrc; open ~/.zshrc
```



```
export JUNIT_HOME="$HOME/java"
export PATH="$PATH:$JUNIT_HOME"
export CLASSPATH="$CLASSPATH:$JUNIT_HOME/junit-4.13.2.jar:
$JUNIT_HOME/hamcrest-core-1.3.jar"
```

Test JUnit

- Test it works. Restart your terminal. Run echo $CLASSPATH, there should be no errors that complain that files are unable to be found. Now create a test file with a trivial test case. In your java folder, create a file called TestBasic.java with:



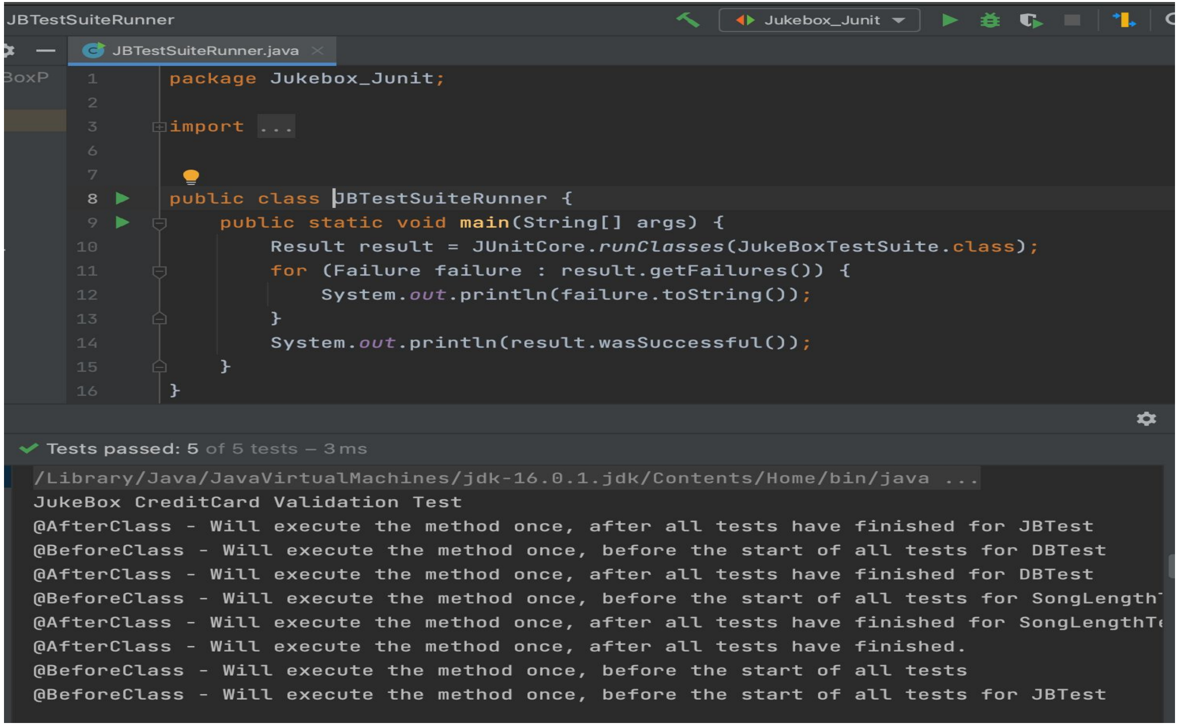
```
Last login: Fri Oct 15 19:45:17 on ttys000
[chandra@ChandraanthsMBP ~ % cd desktop/Jukebox
[chandra@ChandraanthsMBP Jukebox % java -cp .:junit-4.13.2.jar:hamcrest-core-1.3.
jar org.junit.runner.JUnitCore TestBasic
JUnit version 4.13.2
.
Time: 0.005

OK (1 test)

chandra@ChandraanthsMBP Jukebox % cd
```

JukeBox Files

- Place files in Jukebox_Junit
- SongTest.java
- Song.java
- JukeBoxTestSuite.java
- JukeBoxTest.java
- Jukebox.java
- JBTestSuiteRunner.java
- DatabaseTest.java
- Database.java
- Cricket.mp3
- Kannala.mp3



```java
package Jukebox_Junit;

import ...


public class JBTestSuiteRunner {
    public static void main(String[] args) {
        Result result = JUnitCore.runClasses(JukeBoxTestSuite.class);
        for (Failure failure : result.getFailures()) {
            System.out.println(failure.toString());
        }
        System.out.println(result.wasSuccessful());
    }
}
```

✓ Tests passed: 5 of 5 tests – 3 ms

```
/Library/Java/JavaVirtualMachines/jdk-16.0.1.jdk/Contents/Home/bin/java ...
JukeBox CreditCard Validation Test
@AfterClass - Will execute the method once, after all tests have finished for JBTest
@BeforeClass - Will execute the method once, before the start of all tests for DBTest
@AfterClass - Will execute the method once, after all tests have finished for DBTest
@BeforeClass - Will execute the method once, before the start of all tests for SongLength
@AfterClass - Will execute the method once, after all tests have finished for SongLengthTe
@AfterClass - Will execute the method once, after all tests have finished.
@BeforeClass - Will execute the method once, before the start of all tests
@BeforeClass - Will execute the method once, before the start of all tests for JBTest
```

JukeBox +JUnit Test Commands for Terminal Execution

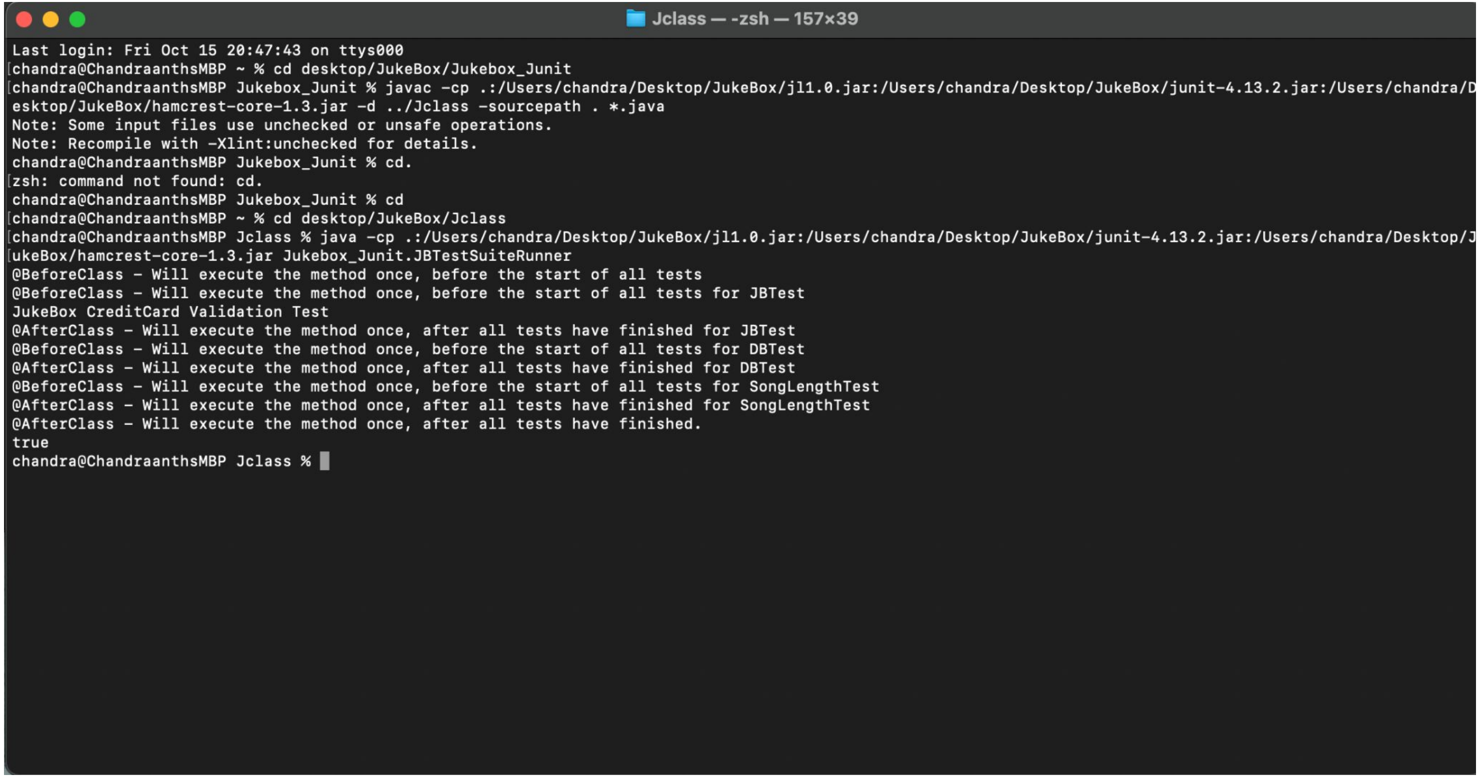
- To Compile Files :

```
javac -cp .:/Users/chandra/Desktop/JukeBox/jl1.0.jar:/Users/chandra/Desktop/JukeBox/junit-4.13.2.jar:/Users/chandra/Desktop/JukeBox/hamcrest-core-1.3.jar -d ../Jclass -sourcepath . *.java
```

- Before executing change the folder to class files
- To Execute Files :

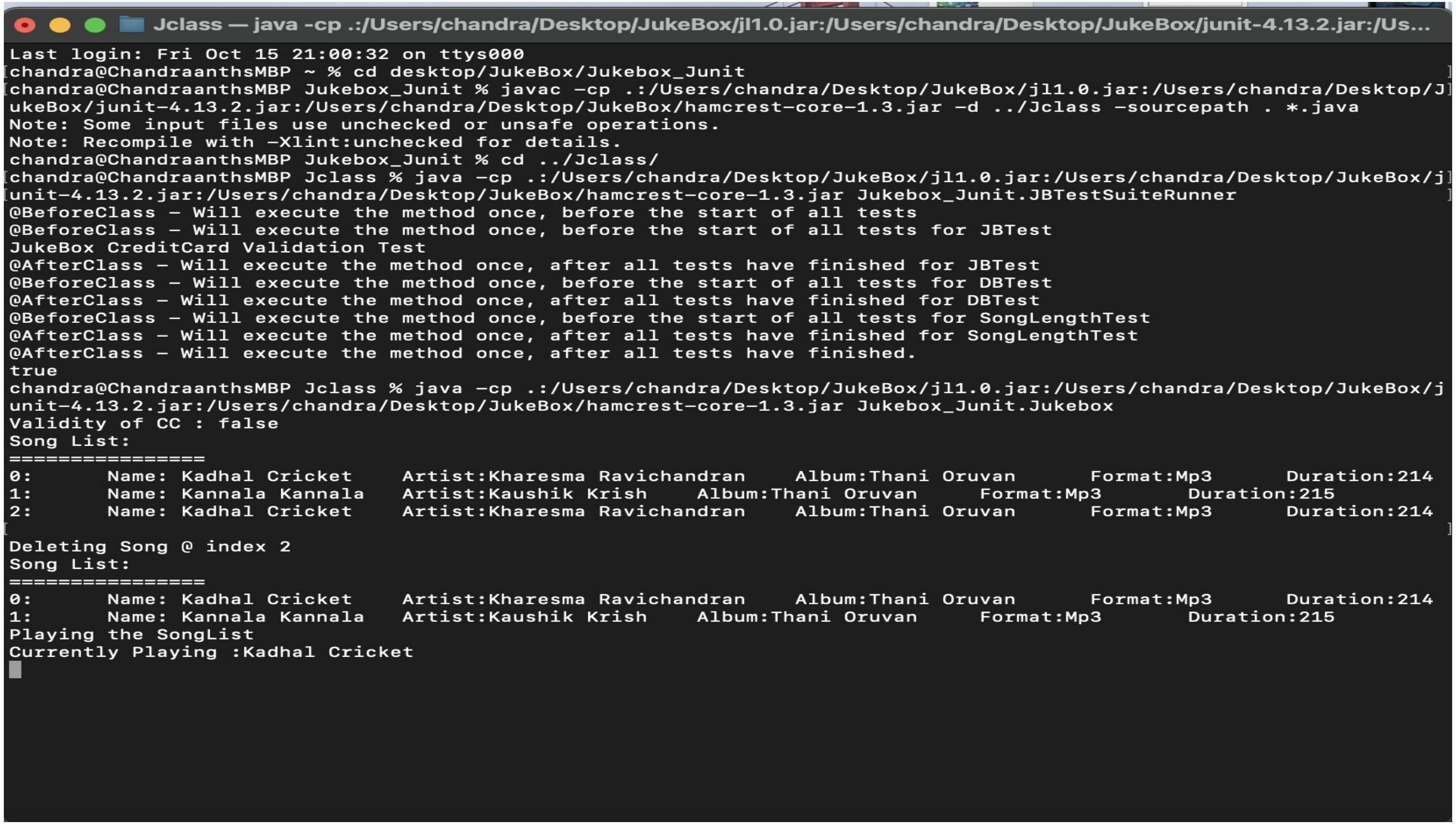
```
java -cp .:/Users/chandra/Desktop/JukeBox/jl1.0.jar:/Users/chandra/Desktop/JukeBox/junit-4.13.2.jar:/Users/chandra/Desktop/JukeBox/hamcrest-core-1.3.jar Jukebox_Junit.JBTestSuiteRunner
```

JukeBox +JUnit Test Files Terminal Execution



```
Last login: Fri Oct 15 20:47:43 on ttys000
[chandra@ChandraanthsMBP ~ % cd desktop/JukeBox/Jukebox_Junit
[chandra@ChandraanthsMBP Jukebox_Junit % javac -cp .:/Users/chandra/Desktop/JukeBox/jl1.0.jar:/Users/chandra/Desktop/JukeBox/junit-4.13.2.jar:/Users/chandra/D
esktop/JukeBox/hamcrest-core-1.3.jar -d ../Jclass -sourcepath . *.java
Note: Some input files use unchecked or unsafe operations.
Note: Recompile with -Xlint:unchecked for details.
chandra@ChandraanthsMBP Jukebox_Junit % cd.
[zsh: command not found: cd.
chandra@ChandraanthsMBP Jukebox_Junit % cd
[chandra@ChandraanthsMBP ~ % cd desktop/JukeBox/Jclass
[chandra@ChandraanthsMBP Jclass % java -cp .:/Users/chandra/Desktop/JukeBox/jl1.0.jar:/Users/chandra/Desktop/JukeBox/junit-4.13.2.jar:/Users/chandra/Desktop/J
[ukeBox/hamcrest-core-1.3.jar Jukebox_Junit.JBTestSuiteRunner
@BeforeClass - Will execute the method once, before the start of all tests
@BeforeClass - Will execute the method once, before the start of all tests for JBTest
JukeBox CreditCard Validation Test
@AfterClass - Will execute the method once, after all tests have finished for JBTest
@BeforeClass - Will execute the method once, before the start of all tests for DBTest
@AfterClass - Will execute the method once, after all tests have finished for DBTest
@BeforeClass - Will execute the method once, before the start of all tests for SongLengthTest
@AfterClass - Will execute the method once, after all tests have finished for SongLengthTest
@AfterClass - Will execute the method once, after all tests have finished.
true
chandra@ChandraanthsMBP Jclass %
```

JukeBox +JUnit Test Files Terminal Execution



Jclass — java -cp .:/Users/chandra/Desktop/JukeBox/jl1.0.jar:/Users/chandra/Desktop/JukeBox/junit-4.13.2.jar:/Us...

```
Last login: Fri Oct 15 21:00:32 on ttys000
chandra@ChandraanthsMBP ~ % cd desktop/JukeBox/Jukebox_Junit
chandra@ChandraanthsMBP Jukebox_Junit % javac -cp .:/Users/chandra/Desktop/JukeBox/jl1.0.jar:/Users/chandra/Desktop/J
ukeBox/junit-4.13.2.jar:/Users/chandra/Desktop/JukeBox/hamcrest-core-1.3.jar -d ../Jclass -sourcepath . *.java
Note: Some input files use unchecked or unsafe operations.
Note: Recompile with -Xlint:unchecked for details.
chandra@ChandraanthsMBP Jukebox_Junit % cd ../Jclass/
chandra@ChandraanthsMBP Jclass % java -cp .:/Users/chandra/Desktop/JukeBox/jl1.0.jar:/Users/chandra/Desktop/JukeBox/j
unit-4.13.2.jar:/Users/chandra/Desktop/JukeBox/hamcrest-core-1.3.jar Jukebox_Junit.JBTestSuiteRunner
@BeforeClass - Will execute the method once, before the start of all tests
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JukeBox CreditCard Validation Test
@AfterClass - Will execute the method once, after all tests have finished for JBTest
@BeforeClass - Will execute the method once, before the start of all tests for DBTest
@AfterClass - Will execute the method once, after all tests have finished for DBTest
@BeforeClass - Will execute the method once, before the start of all tests for SongLengthTest
@AfterClass - Will execute the method once, after all tests have finished for SongLengthTest
@AfterClass - Will execute the method once, after all tests have finished.
true
chandra@ChandraanthsMBP Jclass % java -cp .:/Users/chandra/Desktop/JukeBox/jl1.0.jar:/Users/chandra/Desktop/JukeBox/j
unit-4.13.2.jar:/Users/chandra/Desktop/JukeBox/hamcrest-core-1.3.jar Jukebox_Junit.Jukebox
Validity of CC : false
Song List:
================
0:      Name: Kadhal Cricket    Artist:Kharesma Ravichandran    Album:Thani Oruvan      Format:Mp3      Duration:214
1:      Name: Kannala Kannala   Artist:Kaushik Krish    Album:Thani Oruvan      Format:Mp3      Duration:215
2:      Name: Kadhal Cricket    Artist:Kharesma Ravichandran    Album:Thani Oruvan      Format:Mp3      Duration:214

Deleting Song @ index 2
Song List:
================
0:      Name: Kadhal Cricket    Artist:Kharesma Ravichandran    Album:Thani Oruvan      Format:Mp3      Duration:214
1:      Name: Kannala Kannala   Artist:Kaushik Krish    Album:Thani Oruvan      Format:Mp3      Duration:215
Playing the SongList
Currently Playing :Kadhal Cricket
```

Conclusion

- Hence the Jukebox tests run successfully in the command line/Mac Terminal and also the Jukebox.java been run in the command line and played the song.

References

- https://npu85.npu.edu/~henry/npu/classes/qa/junit_tutorialspoint/slide/index_slide.html
- https://npu85.npu.edu/~henry/npu/classes/qa/qa_tutorialspoint/slide/index_slide.html
- https://search.maven.org/search?q=g:junit%20AND%20a:junit
- https://npu85.npu.edu/~henry/npu/classes/advjava/junit/slide/annotation.html
- https://search.maven.org/artifact/org.hamcrest/hamcrest-core/1.3/jar

Google slides URL :

https://docs.google.com/presentation/d/1blafK_29UEf4pKtbOt371wbGL7RtBCVV5jRrXnRoRLs/edit?usp=sharing

GitHub:
https://github.com/HaripriyaReddy880/Software-Quality-Assurance-and-Test-Automation/tree/main/QA/Junit/JukeBox