

# **MINI PROJECT REPORT**

**BACHELOR OF ENGINEERING (COMPUTER ENGINEERING)**

**SUBMITTED BY**

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SAVITRIBAI PHULE PUNE UNIVERSITY  
[2021 - 22]**



Progressive Education Society's Modern College of Engineering  
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## CERTIFICATE

This is to certify that the following students of Final Year Computer Engineering of PES's, Modern College of Engineering have successfully completed the Laboratory Practice II (Mini Project) under the guidance of Mr. Anand Deshmukh.

The Group Members are :

Shantanu Mangle	41242
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This is in partial fulfillment of the award of the degree Bachelor of Computer Engineering of Savitribai Phule Pune University.

Date:

Internal Guide  
Mr. Anand Deshmukh

(Prof. Dr. Mrs. S. A. Itkar)  
Head Department of Computer Engineering

External  
Examiner

**Title:**

Create a small application by selecting relevant system environment/ platform and programming languages. Narrate concise Test Plan consisting features to be tested and bug taxonomy. Prepare Test Cases inclusive of Test Procedures for identified Test Scenarios. Perform selective Black-box and White-box testing covering Unit and Integration test by using suitable Testing tools. Prepare Test Reports based on Test Pass/Fail Criteria and judge the acceptance of application developed.

**Problem Definition:**

Perform Desktop Application testing using Automation Tool like JUnit  
generate Test Report by Using tool like Apache Maven

**Objective:**

We are going to learn how to Prepare Test Cases inclusive of Test Procedures for identified Test Scenarios. Perform selective Black-box and White-box testing covering Unit and Integration test by using suitable Testing tools. also Prepare Test Reports based on Test Pass/Fail Criteria

**Prerequisite:**

Knowledge of Core Java, Basic Concepts of Unit Testing, Test Cases Writing using Junit etc.

**Software Requirements:**

JDK 1.8

Eclipse java photon-R version

TestNG

**Hardware requirements:**

PIV, 2GB RAM, 500 GB HDD, Lenovo A13-4089Model.

**Outcome:**

You are able to understand Unit and Integration testing with Tool with Test Report.

## **Theory:**

### **Unit Testing:**

Unit Testing of software applications is done during the development (coding) of an application. The objective of Unit Testing is to isolate a section of code and verify its correctness. In procedural programming a unit may be an individual function or procedure.

The goal of Unit Testing is to isolate each part of the program and show that the individual parts are correct. Unit Testing is usually performed by the developer.

### **Unit Testing Tools:**

Few examples of Unit testing tools :

1. Jtest
2. Junit
3. Nunit
4. JMockit
5. EMMA
6. PHPUnit

### **Junit:**

JUnit is a framework for implementing testing in Java. It provides a simple way to explicitly test specific areas of a Java program, it is extensible and can be employed to test a hierarchy of program code either singularly or as multiple units.

Using a testing framework is beneficial because it forces you to explicitly declare the expected results of specific program execution routes. When debugging it is possible to write a test which expresses the result you are trying to achieve and then debug until the test comes out positive. By having a set of tests that test all the core components of the project it is possible to modify specific areas of the project and immediately see the effect the modifications have on the other areas by the results of the test, hence, side-effects can be quickly realized.

JUnit promotes the idea of first testing then coding, in that it is possible to setup test data for a unit which defines what the expected output is and then code until the tests pass. It is believed by some that this practice of "test a little, code a little, test a little, code a little..." increases programmer productivity and stability of program code whilst reducing programmer stress and the time spent debugging.

JUnit is a simple open-source Java testing framework used to write and run repeatable automated tests. It is an instance of the xUnit architecture for unit testing framework. Eclipse supports creating test cases and running test suites, so it is easy to use for your Java applications.

JUnit features include:

- Assertions for testing expected results
- Test fixtures for sharing common test data
- Test suites for easily organizing and running tests
- Graphical and textual test runners

## **Application Description:**

### **Tools used in construction of application**

1. Java Script
2. MySQL
3. PHP
4. Swing
5. Apache

Our application name is Car Rental Management System. The application can be used to rent or manage cars in inventory.

Application has four main functions:

1. Add car
2. Customer
3. Rent Car
4. Return car

1. Add car:

In add car function the rental store owners can add the cars. These cars can be rented out to customers. While adding car the store owner has to fill all detail of their car.

2. Customer:

For renting a car one needs the account. In customer function new customer can create their accounts. They must have to fill their all-needed information.

3. Rent car:

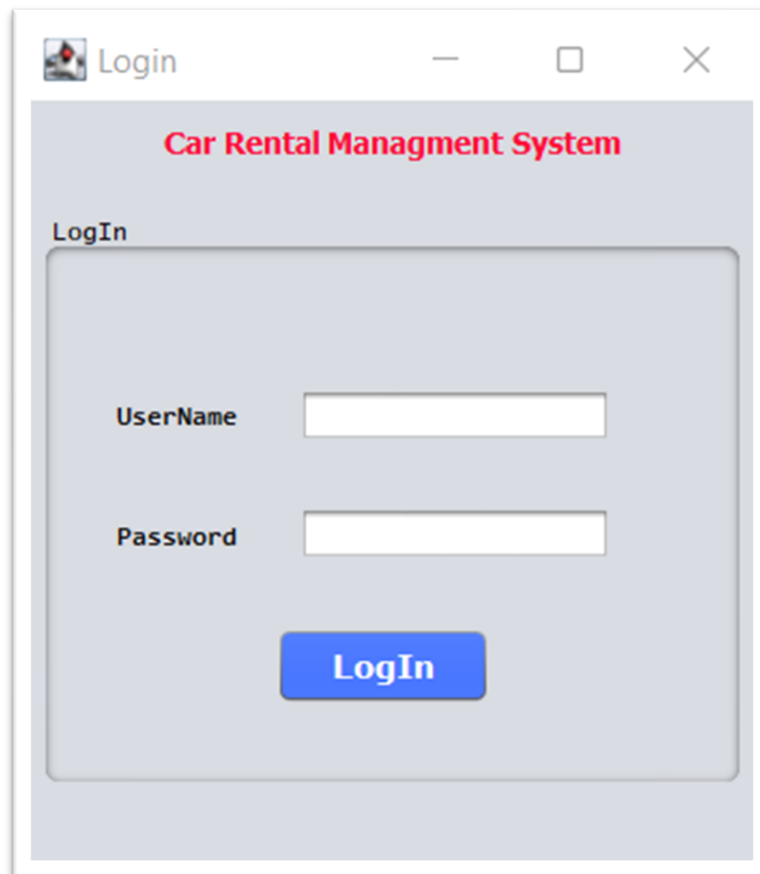
In rent car function store owner can rent car to a customer. For renting the car store owner must create customer's account. While renting a car customer must have to specify renting date and turning back date of car.

4. Return car:

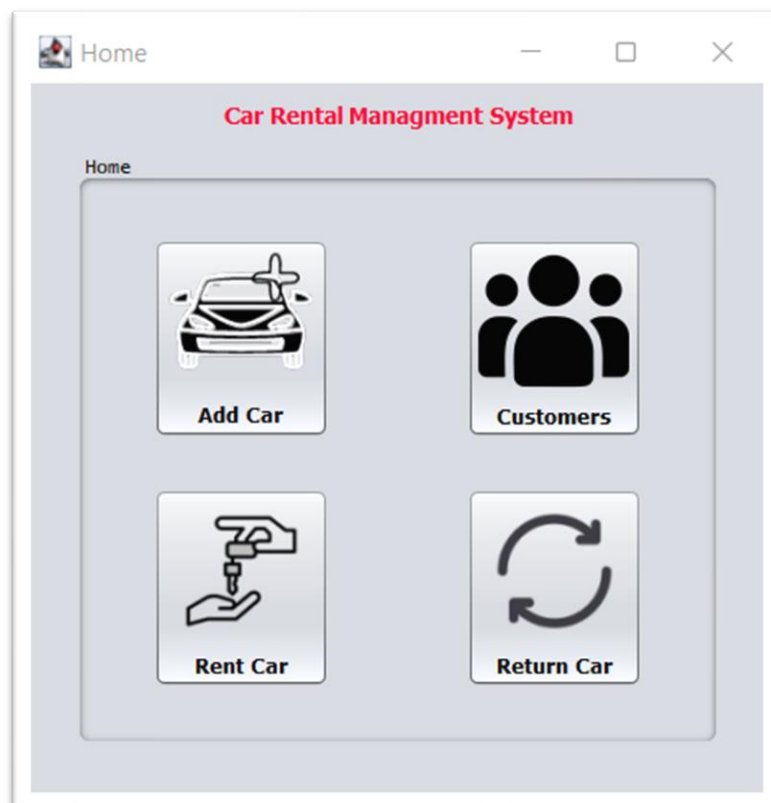
After renting the car when customer needs to return the car, store owner can use this function. At the time of returning, store owner has to provide car id. If customer is late for returning the car also must have to pay late fee.

## Sample Screenshots of Application:

### 1. Login Page:



### 2. Home Page:



### 3. Add Customer Page:

Customers

Manage Cars

Rent Car

Return Car

Logout

Customer

Customer ID1009Customer Name

MobileEmail

AddressAdd

Customer Id	Name	Mobile	Email	Address
1001	Kirito	9876543210	kirito@gmail.com	BTM Layout, Bangalore
1002	Asuna	1234567890	asuna@gmail.com	Tavarekere , Bangalor...
1003	Naruto	7894563210	naruto@gmail.com	Marathalli, Bangalore ...
1004	Praveen	8553400662	praveen@gmail.com	BTM layout
1005	Akash	789456123	as@gmail.com	dsfcsdf
1006	Chinmay	7028258752	chinmay@test.com	PCMC
1007	Pratik	7984568514	pratik@test.com	Gujrat
1008	Gaurav	4852158962	gaurav@test.com	Nashik

### 4. Return Page:

Return Car

Manage Cars

Customers

Rent Car

Logout

Rent Car

Car ID

Customer Id

Due Date

Days Late

Fine

Return

## Output Logs of Sample Tests:

### 1. Login Test:

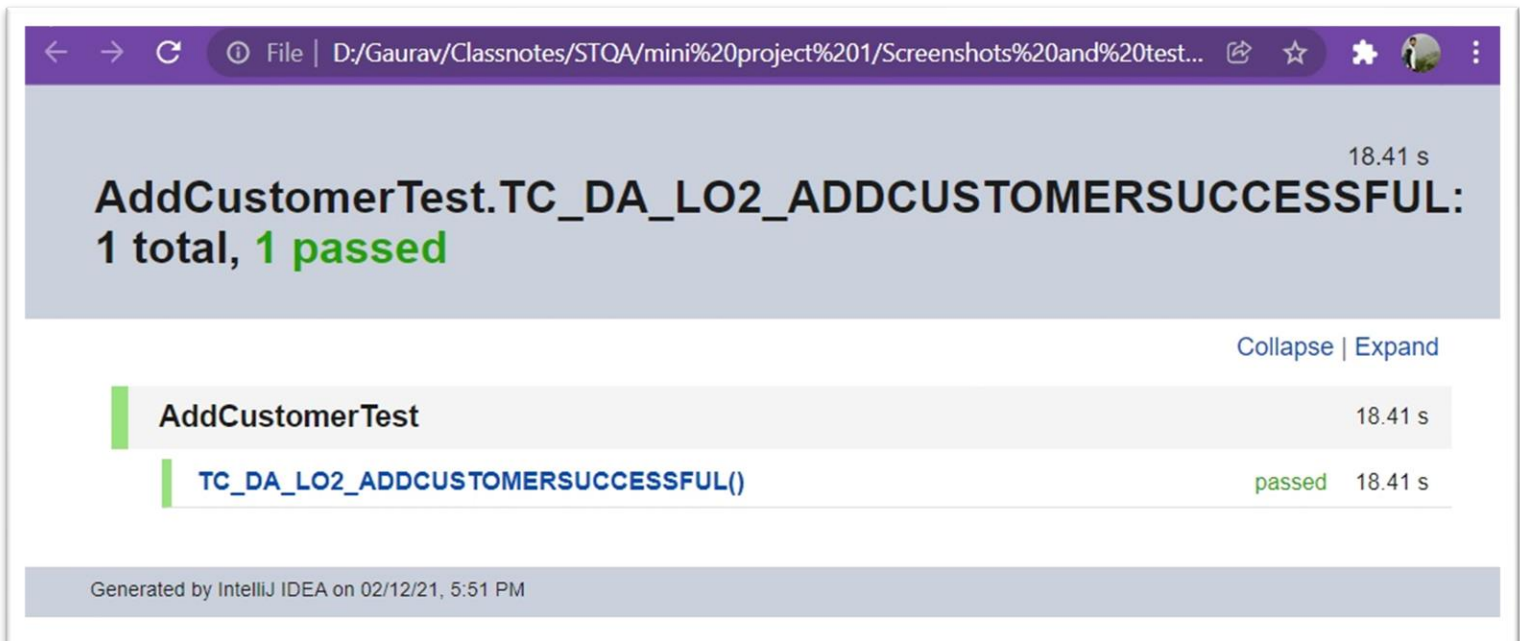


The screenshot shows the IntelliJ IDEA interface with a test run summary for 'LoginTest'. The top bar indicates the file path: 'D:/Gaurav/Classnotes/STQA/mini%20project%201/Screenshots%20and%20test...'. The main summary shows 'LoginTest.TC\_DA\_LO5\_CORRECTLOGIN: 1 total, 1 passed' with a duration of '6.15 s'. Below this, a table lists the test results:

Test Name	Duration
LoginTest	6.15 s
TC_DA_LO5_CORRECTLOGIN()	passed 6.15 s

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### 2. Add Customer :



The screenshot shows the IntelliJ IDEA interface with a test run summary for 'AddCustomerTest'. The top bar indicates the file path: 'D:/Gaurav/Classnotes/STQA/mini%20project%201/Screenshots%20and%20test...'. The main summary shows 'AddCustomerTest.TC\_DA\_LO2\_ADDCUSTOMERSUCCESSFUL: 1 total, 1 passed' with a duration of '18.41 s'. Below this, a table lists the test results:

Test Name	Duration
AddCustomerTest	18.41 s
TC_DA_LO2_ADDCUSTOMERSUCCESSFUL()	passed 18.41 s

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### 3. Return Car Test:

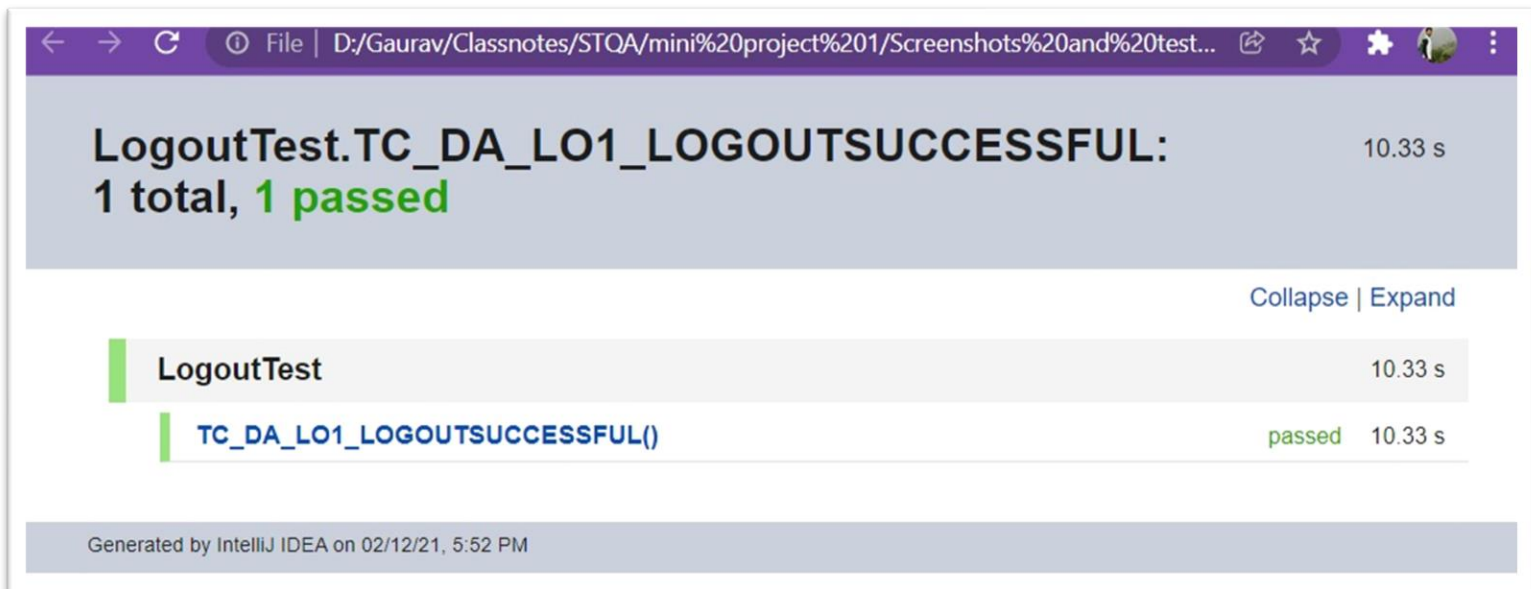


This screenshot shows the test results for the `ReturnCarTest` in IntelliJ IDEA. The top bar indicates the file path: `D:/Gaurav/Classnotes/STQA/mini%20project%201/Screenshots%20and%20test...`. The main header displays **ReturnCarTest.TC\_DA\_REC1\_RETURNCAR:** with a duration of **20.58 s** and a summary of **1 total, 1 passed**. Below this, a table lists the test details:

Collapse   Expand	
<b>ReturnCarTest</b>	20.58 s
<b>TC_DA_REC1_RETURNCAR()</b>	passed 20.58 s

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### 4. Log Out Test:



This screenshot shows the test results for the `LogoutTest` in IntelliJ IDEA. The top bar indicates the file path: `D:/Gaurav/Classnotes/STQA/mini%20project%201/Screenshots%20and%20test...`. The main header displays **LogoutTest.TC\_DA\_LO1\_LOGOUTSUCCESSFUL:** with a duration of **10.33 s** and a summary of **1 total, 1 passed**. Below this, a table lists the test details:

Collapse   Expand	
<b>LogoutTest</b>	10.33 s
<b>TC_DA_LO1_LOGOUTSUCCESSFUL()</b>	passed 10.33 s

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**Conclusion:**

In this way we performed automation testing using Junit on a self-developed application and verified that no bugs or defects were found.