NEW HORIZON
COLLEGE OF ENGINEERING
Autonomous College, Affiliated to VTU | Approved by AICTE New Delhi & UGC
Accredited by NAAC with 'A' Grade & Accredited by NBA

PRACTICAL RECORD BOOK

Name	ANIKET KUMAR YADAV				
USN	1NH18CS022	**Year**	2021 - 2022		
Program	B.E. in CSE	**Semester**	7	**Section**	A
Course	SOFTWARE TESTING LAB	**Course Code**	20CSL75A		

NEW HORIZON COLLEGE OF ENGINEERING

INSTITUTE VISION AND MISSION

VISION

To emerge as an institute of eminence in the fields of engineering, technology and management in serving the industry and the nation by empowering students with a high degree of technical, managerial and practical competence.

MISSION

- To strengthen the theoretical, practical and ethical dimensions of the learning process by fostering a culture of research and innovation among faculty members and students.
- To encourage long-term interaction between the academia and industry through the involvement of the industry in the design of the curriculum and its hands-on implementation.
- To strengthen and mould students in professional, ethical, social and environmental dimensions by encouraging participation in co-curricular and extracurricular activities.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VISION

To emerge as a department of eminence in Computer Science and Engineering in serving the Information Technology Industry and the nation by empowering students with a high degree of technical and practical competence.

MISSION

To strengthen the theoretical and practical aspects of the learning process by strongly encouraging a culture of research, innovation and hands-on learning in Computer Science and Engineering

To encourage long-term interaction between the department and the IT industry, through the involvement of the IT industry in the design of the curriculum and its hands-on implementation

To widen the awareness of students in professional, ethical, social and environmental dimensions by encouraging their participation in co-curricular and extracurricular activities

QUALITY POLICY

To provide services of the highest quality both curricular and co-curricular, so that our students can integrate their skills and serve the industry and society equally well at the global level.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

Engineering Graduates will be able to:
PEO1: Develop Proficiency as computer scientists with an ability to solve a wide range of computational problems in industry, government, or other work environments.
PEO2: Attain the ability to adapt quickly to new environments and technologies, assimilate new information, and work in multi-disciplinary areas with a strong focus on innovation and entrepreneurship.

PEO3: Possess the ability to think logically and the capacity to understand technical problems with computational systems.

PEO4: Possess the ability to collaborate as team members and team leaders to facilitate cutting-edge technical solutions for computing systems and thereby providing improved functionality.

PROGRAM SPECIFIC OUTCOMES (PSOs)

Engineering Graduates will be able to:
PSO1: Ability to design, develop, implement computer programs and use knowledge in various domains to identify research gaps and hence to provide solution to new ideas and innovations.
PSO2: Work with and communicate effectively with professionals in various fields and pursue lifelong professional development in computing.

NEW HORIZON
COLLEGE OF ENGINEERING
Autonomous College, Affiliated to VTU | Approved by AICTE New Delhi & UGC
Accredited by NAAC with 'A' Grade & Accredited by NBA

Laboratory Certificate

This is to certify that

*Mr. ....***ANIKET KUMAR YADAV***.........*

has satisfactorily completed the experiments prescribed by

New Horizon College of Engineering, Bangalore Affiliated to

Visvesvaraya Technological University

in ... **Software Testing***... Laboratory Course for the......***7th***....semester of*

Computer Science and Engineering Program.

Academic Year: 2021 to 2022 (ODD Semester)

Marks Obtained
Max. Marks

Student Name: ANIKET KUMARYADAV

USN: 1NH18CS022

Sem/Sec: 7 - A

Course Code: 20CSL75A

Signature of Student

Signature of the Faculty In-charge

Head of the Department

NEW HORIZON COLLEGE OF ENGINEERING

Autonomous College, Affiliated to VTU | Approved by AICTE New Delhi & UGC
Accredited by NAAC with 'A' Grade & Accredited by NBA

LABORATORY PERFORMANCE EVALUATION SHEET

Name of Student: ANIKET KUMAR YADAV
USN: 1NH18CS022
Lab Course: SOFTWARE TESTING LAB
Course Code: 20CSL75A
Sem/Sec: 7 - A
Session: ODD Sem 2021-22

CIE - PART A - Record and Performance (Max Marks: 10)

SN	Date of Evaluation	Name of Experiment/ Program	1	2	3	4	Total	Faculty Signature
Write test cases for the following scenarios								
1.	7/10/21	ATM System						
2.	21/10/21	The Triangle Problem						
Demonstrate Black box testing techniques using open-source testing tool - JUnit								
3.	28/10/21	Boundary Value Analysis (BVA) for the NextDate Function						
4.	11/11/21	Equivalence Class Partitioning for the NextDate Function						
Demonstrate White box testing techniques using open-source testing tool - EclEmma								
5.	18/11/21	The Triangle Problem						
6.	18/11/21	The NextDate Function						
Demonstration of Selenium IDE & Webdriver for conducting test on websites								
7.	02/12/21	Using Selenium IDE to conduct a test for any web site						
8.	02/12/21	Using Selenium Web driver, automate any web page using Java Script						

SN	Date of Evaluation	Name of Experiment / Program	1	2	3	4	Total	Faculty Signature
9.	09/12/21	List the total number of objects present on a web page						
10.	09/12/21	Demonstrate URL and title check point						
11.	23/12/21	Demonstrate selecting and deselecting option from multi select dropdown						
12.	30/12/21	Demonstrate Synchronization.						

1. **Conduction of Experiment/ Writing the Program: 3 Marks**
2. **Specimen Calculation / Execution: 3 Marks**
3. **Result and Record Writing: 4 Marks**

NEW HORIZON
COLLEGE OF ENGINEERING
Autonomous College, Affiliated to VTU | Approved by AICTE New Delhi & UGC
Accredited by NAAC with 'A' Grade & Accredited by NBA

CIE - PART B - Lab Test (Max Marks: 50)

	Date of Lab Test	Procedure and Write Up (15 Marks)	Conduction and Results (25 Marks)	Viva Voce (10 Marks)	Total (50 Marks)
Test 1	**25/11/21**				
Test 2	**6/1/22**				

CIE - Marks Obtained

CIE-Part A Record and Performance (10 Marks)	CIE-Part B Lab Test (Scaled to 15 Marks)	Total (25 Marks)	Faculty Signature

Exp. No. : 1

Date :

ATM SYSTEM

Consider any ATM system, design and develop a program in a language of your choice for the same. Create the test cases for the following scenarios:

i) Unsuccessful operation due to enter wrong PIN number 3 times.

ii) Unsuccessful operation due to invalid account type.

iii) Successful selection of amount to be withdrawn.

iv) Expected message due to amount to withdraw is greater than possible balance

IMPLEMENTATION:

```
import java.util.*;

public class Atm_ST {
	public static void main(String args[]){
			Scanner sc=new Scanner(System.in);
			int balance=10000, pin=1234, time=0, amount;
			boolean deposit=true, flag=true, act=true;

			System.out.println("Welcome to The Himalayan Bank.\n");

			while(flag==true){
			System.out.println("Enter Pin Number: ");
			int userpin=sc.nextInt();

			if(userpin==pin){

			    while(act==true){
			System.out.println("Enter the Account type: \n1-Savings\n2-Current\n");
			int actype=sc.nextInt();

			if(actype!=1 && actype!=2)
				{System.out.println("Invalid Account Type");
				System.out.println("Do you want to try again? 1-Yes  2-No");
				int c=sc.nextInt();
				if(c==1) act=true;
				else act=false;
				}
			else{
			System.out.println("Press 1 for Withdrawal\nPress 2 for Deposition");
			int x=sc.nextInt();
			while(x==1){
				System.out.println("Enter the amount to be withdrawn.  ");
				amount=sc.nextInt();
				if(amount>balance)
					{
				     System.out.println("Account balance is           lesser than
			    withdrawal amount.");
					System.out.println("Do you want to try again? 1-Yes  2-No");
					int ch=sc.nextInt();
					if(ch==1) x=1;
					else x=0;
```

```
                        System.out.println("\n");
                        }
                else {
                        System.out.println("Transaction is successful.");
                      System.out.println("Available balance is: "+(balance-
                    amount)+"\n\n");
                        x=0;
                        act=false;
                }
        }
        if(x==2){
                System.out.println("Kindly place the amount in the ATM.");
                if(deposit==true) System.out.println("Transaction is successful.");
                else System.out.println("Transaction is unsuccessful.");
                act=false;
        }}
        flag=false;
        }
            }
        else{
                if(time<3)System.out.println("Invalid pin. Please enter correct
                pin.\n\n");
                if(time==3) flag=false;
                time++;
        }
        }
    }
}
```

TEST CASES:

Example:

TEST CASE 1: Unsuccessful operation due to enter wrong PIN number 3 times.

Project Information		Test Information			
Project Name:	ATM	Test Name:		Invalid PIN Number	
Project ID:	ATM_01	Original Author:		ANIKET	
Test Objective:	This test case is to verify the functionality with invalid pin number				
Step No.	**Test Case Description**	**Test Data**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	Insert valid card in the insertion point of ATM	Valid ATM card	ATM should display language page with following objects English, Kannada, Hindi	Pass	
2	Select the preferred language	language	ATM should display the PIN number entry screen in selected language	Pass	
3	Enter the invalid pin number	Invalid PIN number	ATM does not validate PIN and prompts customer to reenter PIN.	Pass	
4	Reenter incorrect PIN	Invalid PIN number	ATM does not validate PIN and prompts customer to reenter PIN	Pass	

5	Reenter incorrect PIN	Invalid PIN number	ATM does not validate PIN	Pass	

TEST CASE 2: Unsuccessful operation due to invalid account type.

Project Information		Test Information			
Project Name:	ATM	Test Name:		INVALID ACC TYPE	
Project ID:	ATM_02	Original Author:		ANIKET	
Test Objective:	To verify unsuccessful operation due to invalid account type.				
Step No.	**Test Case Description**	**Test Data**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	Insert valid card	Valid card	Enter PIN	Pass	
2	Enter the PIN no.	Valid PIN	Select account type	Pass	
3	Enter Invalid account type	Invalid entered	Invalid account type entered	Pass	

TEST CASE 3: Successful selection of amount to be withdrawn operation.

Project Information		Test Information			
Project Name:	ATM	Test Name:		Valid withdrawn.	
Project ID:	ATM_03	Original Author:		ANIKET	
Test Objective:	To verify successful selection of withdrawn amount.				
Step No.	**Test Case Description**	**Test Data**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	Insert valid card in the insertion point of ATM	Valid ATM card	ATM should display language page with following objects English, Kannada, Hindi	Pass	
2	Enter valid PIN	Valid PIN	Select account type	Pass	
3	Select savings account	Savings account	Choose. 1.balance 2.withdraw 3.deposit 4.exit	Pass	
4	Select withdrawal	Withdraw	Enter amount.	Pass	

5	Enter valid amount	Valid amount	Amount withdrawn.	pass	

TEST CASE 4: Expected message due to amount to withdraw is greater than possible balance.

Project Information		Test Information			
Project Name:	ATM	Test Name:		WITHDRAWN AMOUNT GREATER	
Project ID:	ATM_04	Original Author:		ANIKET	
Test Objective:	TO VERIFY SELECTED MESSAGE AS AMOUNT IS GREATER THAN AVAILABLE BALANCE.				
Step No.	**Test Case Description**	**Test Data**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	Valid card	Insert valid card	Enter PIN	Pass	
2	Valid PIN, savings account	Enter valid PIN and select savings account	1.balance 2.withdraw 3.deposit 4.exit	Pass	
3	withdrawn	Enter withdrawal amount	Enter amount to be withdrawn	Pass	
4	Invalid withdrawn amount	Amount entered is greater than balance.	Amount entered is invalid.	pass	

TEST CASE 5: Machine is accepting ATM card

Project Information		Test Information			
Project Name:	ATM	Test Name:		ATM card accepted.	
Project ID:	ATM_05	Original Author:		ANIKET	
Test Objective:	To verify the machine is accepting card.				
Step No.	**Test Case Description**	**Test Data**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	Insert valid card in the insertion point of ATM	Valid ATM card	Enter the PIN no.	Pass	

TEST CASE 6: Machine is rejecting expired card.

Project Information		Test Information	
Project Name:	ATM	Test Name:	Reject expired.
Project ID:	ATM_06	Original Author:	ANIKET

Test Objective:	To verify the rejecting expired ATM card.				
Step No.	**Test Case Description**	**Test Data**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	Insert expired card	Expired card	Invalid card	Pass	

TEST CASE 7: Successful entry of PIN no.

Project Information		**Test Information**			
Project Name:	ATM	Test Name:	Valid withdrawn.		
Project ID:	ATM_07	Original Author:	ANIKET		
Test Objective:	To verify successful entry of PIN				
Step No.	**Test Case Description**	**Test Data**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	Insert valid card in the insertion point of ATM	Valid ATM card	Enter PIN.	Pass	
2	Enter valid PIN	Valid PIN	Select account type	Pass	

TEST CASE 8: Successful selection of language.

Project Information		**Test Information**			
Project Name:	ATM	Test Name:	Successful language selection.		
Project ID:	ATM_08	Original Author:	ANIKET		
Test Objective:	To verify the functionality with invalid pin number				
Step No.	**Test Case Description**	**Test Data**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	Insert valid card in the insertion point of ATM	Valid ATM card	Enter PIN.	Pass	
2	Enter valid PIN	Valid PIN	ATM should display language page with following objects English, Kannada, Hindi	Pass	

3	Enter language	Valid language.	Select amount.	Pass	

TEST CASE 9: Successful selection of account type.

Project Information		Test Information			
Project Name:	ATM	Test Name:	Successful account selection.		
Project ID:	ATM_09	Original Author:	ANIKET		
Test Objective:	Successful selection of account type.				
Step No.	**Test Case Description**	**Test Data**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	Insert valid card in the insertion point of ATM	Valid ATM card	ATM should display language page with following objects English, Kannada, Hindi	Pass	
2	Enter valid PIN	Valid PIN	Select account type	Pass	
3	Select savings account	Valid account	Account selected	Pass	

TEST CASE 10: Selected message due to amount greater than day limit.

Project Information		Test Information			
Project Name:	ATM	Test Name:	Display message.		
Project ID:	ATM_10	Original Author:	ANIKET		
Test Objective:	To verify successful selected message as amount greater than day limit.				
Step No.	**Test Case Description**	**Test Data**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	Identify expected message	Enter amount above limit	Withdrawal limit exceeded.	Pass	

TEST CASE 11: unsuccessful withdraw operation due to lack of money.

Project Information		Test Information	
Project Name:	ATM	Test Name:	Unsuccessful withdraw.
Project ID:	ATM_11	Original Author:	ANIKET
Test Objective:	To verify unsuccessful withdraw operation due to lack of money.		

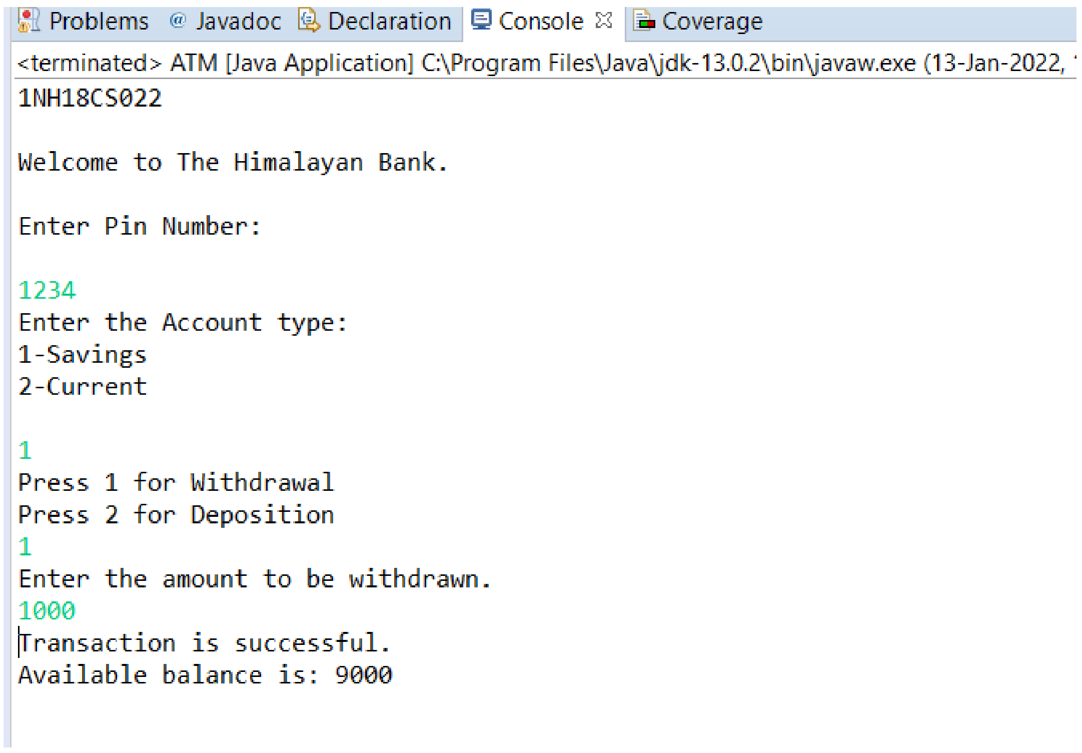
Step No.	Test Case Description	Test Data	Expected Result	Status (Pass/Fail)	Remarks
1	Unsuccessful withdraw operation	Invalid withdraw amount.	ATM doesn't support this withdrawal and balance is displayed.	Pass	

TEST CASE 12: unsuccessful withdraw operation due to click cancel after insert card.

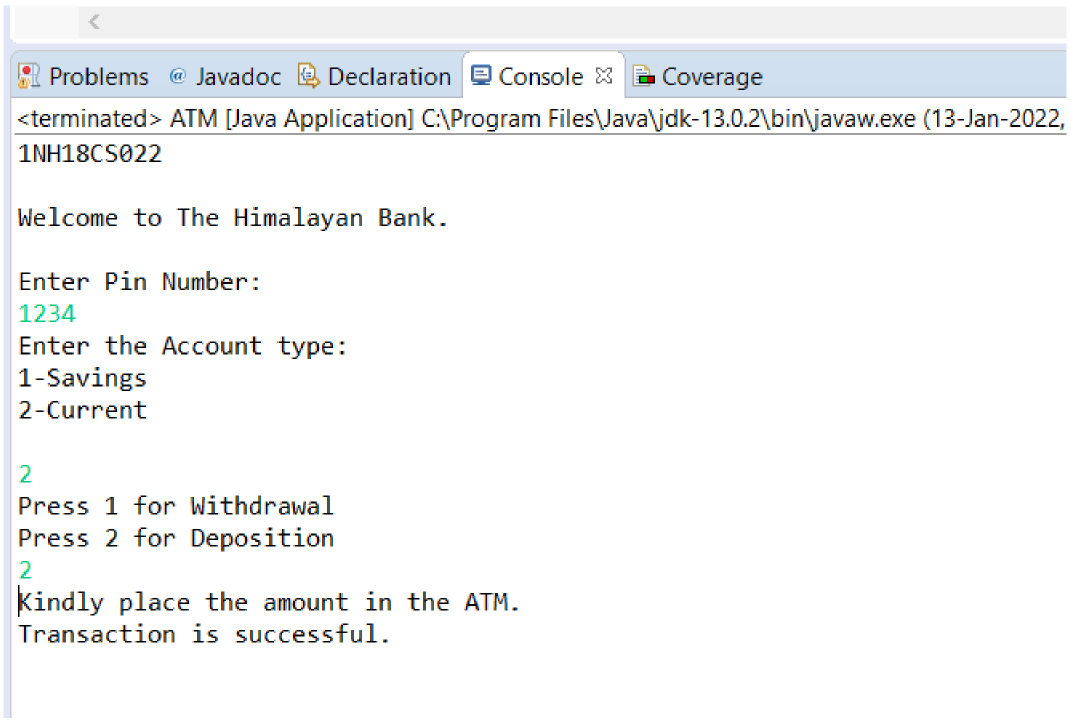
Project Information		Test Information	
Project Name:	ATM	Test Name:	Cancel operation.
Project ID:	ATM_12	Original Author:	ANIKET
Test Objective:	To verify unsuccessful withdraw operation due to click cancel after insert card.		

Step No.	Test Case Description	Test Data	Expected Result	Status (Pass/Fail)	Remarks
1	Unsuccessful withdraw operation	Click on cancel after card insertion.	Displaying relevant option message.	Pass	

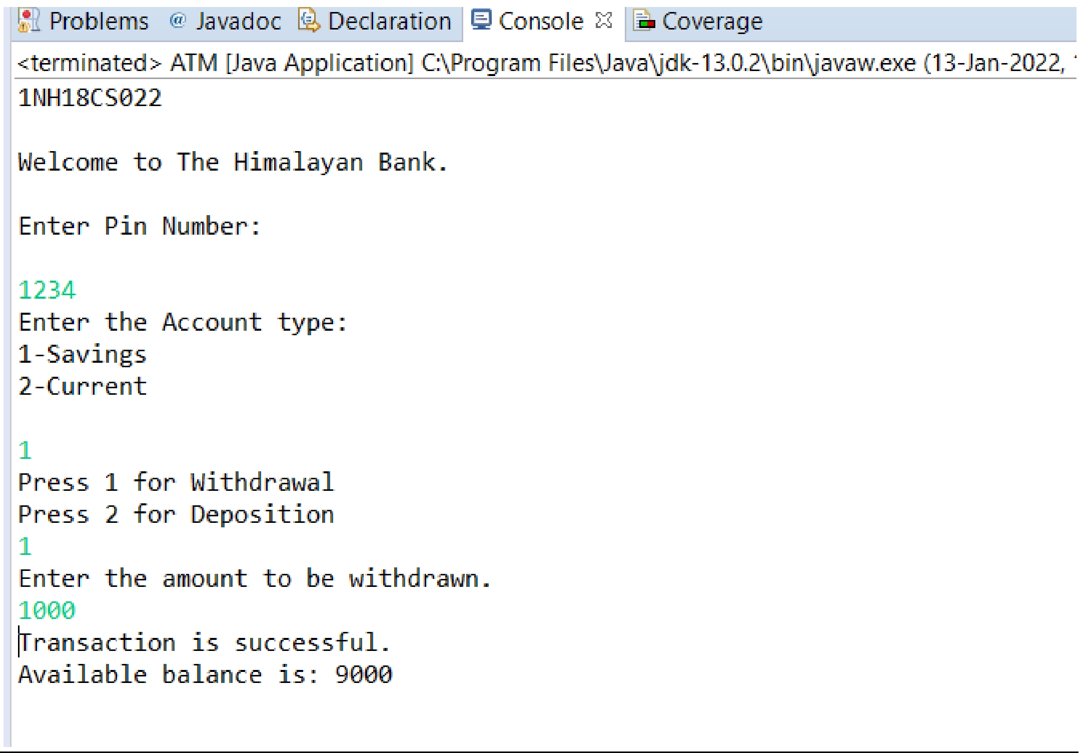
EXECUTION



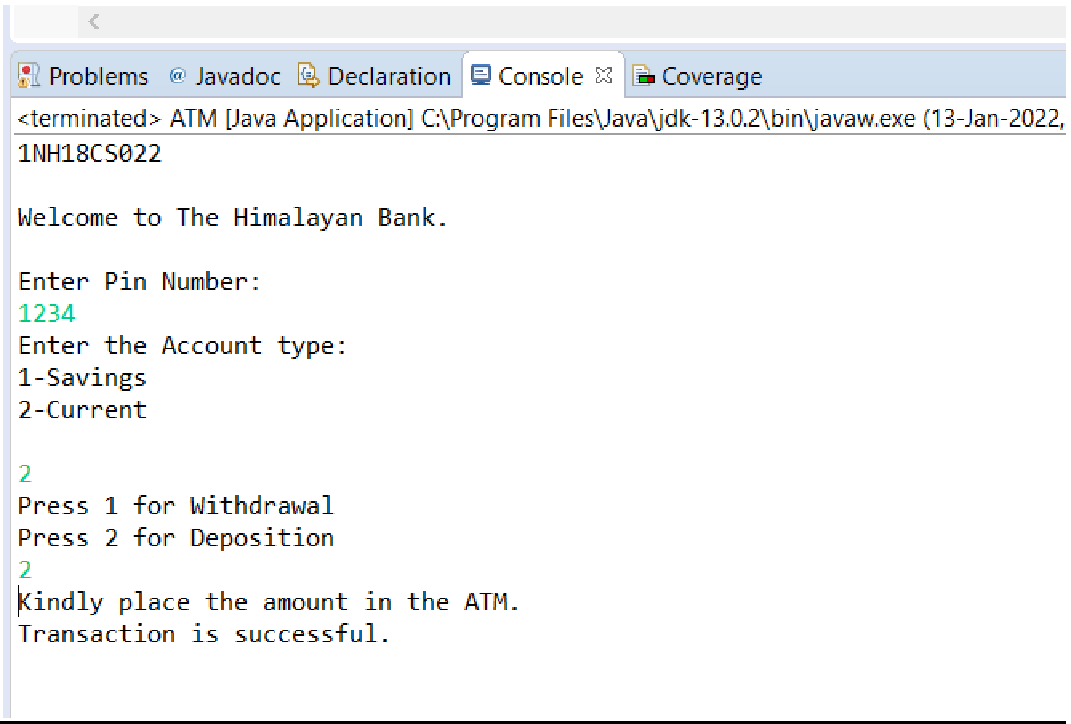
```
<terminated> ATM [Java Application] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (13-Jan-2022,
1NH18CS022

Welcome to The Himalayan Bank.

Enter Pin Number:

1234
Enter the Account type:
1-Savings
2-Current

1
Press 1 for Withdrawal
Press 2 for Deposition
1
Enter the amount to be withdrawn.
1000
Transaction is successful.
Available balance is: 9000
```



```
<terminated> ATM [Java Application] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (13-Jan-2022,
1NH18CS022

Welcome to The Himalayan Bank.

Enter Pin Number:
1234
Enter the Account type:
1-Savings
2-Current

2
Press 1 for Withdrawal
Press 2 for Deposition
2
Kindly place the amount in the ATM.
Transaction is successful.
```



```
<terminated> ATM [Java Application] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (13-Jan-2022,
1NH18CS022

Welcome to The Himalayan Bank.

Enter Pin Number:

1234
Enter the Account type:
1-Savings
2-Current

1
Press 1 for Withdrawal
Press 2 for Deposition
1
Enter the amount to be withdrawn.
1000
Transaction is successful.
Available balance is: 9000
```



```
<terminated> ATM [Java Application] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (13-Jan-2022,
1NH18CS022

Welcome to The Himalayan Bank.

Enter Pin Number:
1234
Enter the Account type:
1-Savings
2-Current

2
Press 1 for Withdrawal
Press 2 for Deposition
2
Kindly place the amount in the ATM.
Transaction is successful.
```

RESULT & DISCUSSION

Test Report:

1. Number of Test Cases Executed :
2. Number of Test Cases Passed :
3. Number of Test Cases Failed :

Exp. No. : 2

Date :

TRIANGLE PROBLEM

Design and develop a program in a language of your choice to solve the triangle problem defined as follows: Accept three integers which are supposed to be the three sides of triangle and determine if the three values represent an equilateral triangle, isosceles triangle, scalene triangle, or they do not form a triangle at all. Create the test cases for the following scenarios:

i) Represents not a triangle
ii) Represents a valid scalene triangle
iii) Represents a valid equilateral triangle
iv) Represents a valid isosceles triangle

Execute the test cases manually and discuss the result.

IMPLEMENTATION

```java
import java.util.Scanner;
public class triangle {
	public static void main(String[] args){
		Scanner s=new Scanner(System.in);
		int O=1;
		do{
			System.out.println("Enter 3 inputs which are the sides of a triangle");
			int a=s.nextInt();
			int b=s.nextInt();
			int c=s.nextInt();
			if(a<=200 && b<=200 && c<=200 && a>=1 && b>=1 && c>=1)
			{
				if(a<b+c && b<a+c && c<a+b){

				if(a==b && b==c)
				{
					System.out.println("It is an equilateral triangle\n");
				}
				else if(a==b||b==c||c==a)
				{
					System.out.println("It is an isoceles triangle\n");

				}
				else
				{
					System.out.println("It is a scalene triangle\n");
				}
			}
			else
				System.out.println("It is not a triangle\n");
			}
		else
			System.out.println("Invalid input\nEnter sides within the range 1-
200\n");
		System.out.println("1. To enter input\n 2.to exit\nEnter your choice ");
		O=s.nextInt();
	}while(O!=2);
	s.close();
}
}
```

TEST CASES

Example:

TEST CASE 1: Represents not a triangle

Project Information		Test Information			
Project Name:	TRIANGLE	Test Name:	NOT A TRIANGLE		
Project ID:	TRI_01	Original Author:	ANIKET		
Test Objective:	TO VERIFY THAT IT IS NOT A TRIANGLE				
Step No.	**Test Case Description**	**Test Data A B C**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	Not a triangle	1 2 3	Not a traingle	Pass	
2	Not a triangle	2 2 4	Not a traingle	Pass	
3	Not a triangle	3 3 6	Not a traingle	Pass	
4	Not a triangle	4 8 4	Not a traingle	Pass	
5	Not a triangle	5 6 11	Not a traingle	Pass	

TEST CASE 2: Represents a valid Equilateral triangle

Project Information		Test Information			
Project Name:	TRIANGLE	Test Name:	EQUILATERAL TRIANGLE		
Project ID:	TRI_02	Original Author:	ANIKET		
Test Objective:	TO VERIFY IT IS A EQUILATERAL TRIANGLE				
Step No.	**Test Case Description**	**Test Data A B C**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	It is a equilateral triangle	100 100 100	Equilateral triangle	Pass	
2	It is a equilateral triangle	1 1 1	Equilateral triangle	Pass	
3	It is a equilateral triangle	10 10 10	Equilateral triangle	Pass	
4	It is a equilateral triangle	50 50 50	Equilateral triangle	Pass	
5	It is a equilateral triangle	110 110 110	Equilateral triangle	Pass	

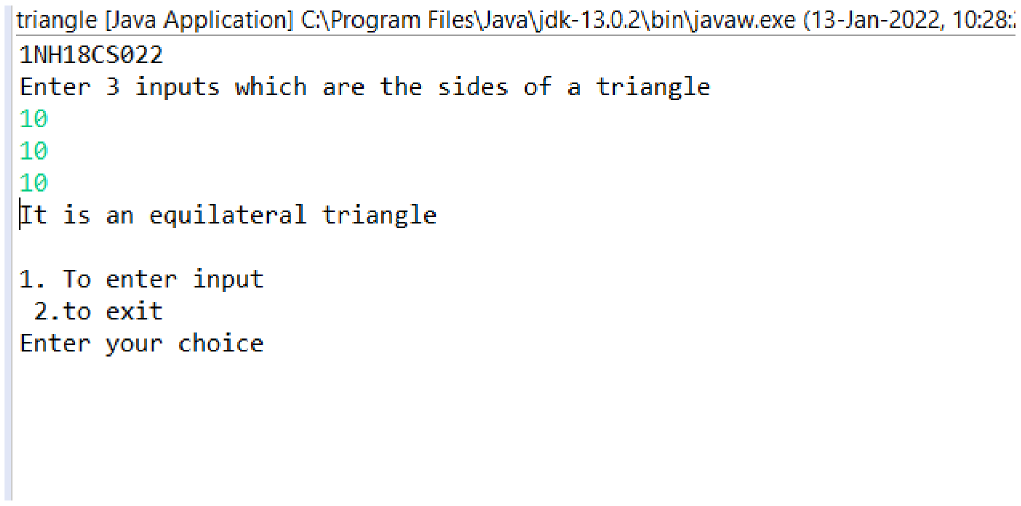
TEST CASE 3: Represents a valid Scalene triangle

Project Information		Test Information			
Project Name:	TRIANGLE	Test Name:		SCALENE TRIANGLE	
Project ID:	TRI_03	Original Author:		ANIKET	
Test Objective:	TO VERIFY SCALENE TRIANGLE				
Step No.	**Test Case Description**	**Test Data A B C**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	It is a scalene triangle	4 5 6	Scalene triangle.	Pass	
2	It is a scalene triangle	5 6 7	Scalene triangle.	Pass	
3	It is a scalene triangle	10 11 12	Scalene triangle.	Pass	
4	It is a scalene triangle	100 110 120	Scalene triangle.	Pass	
5	It is a scalene triangle	14 15 16	Scalene triangle.	Pass	

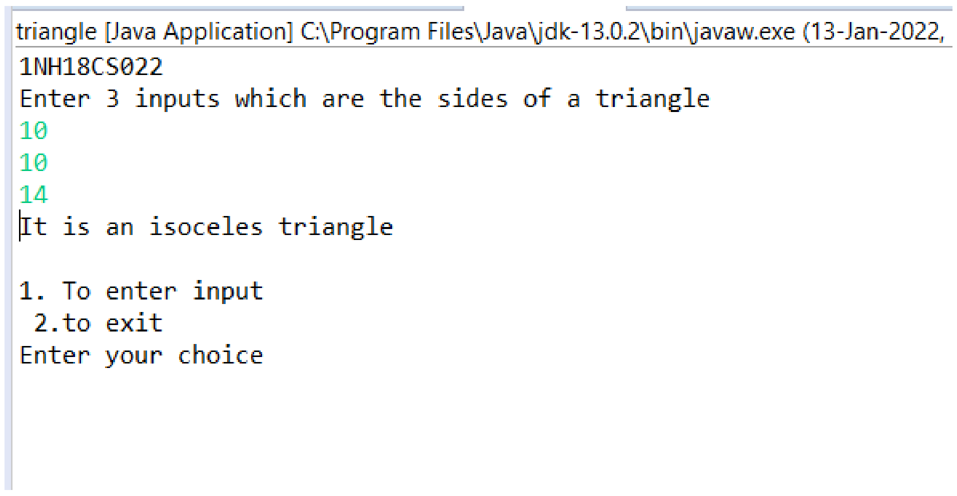
TEST CASE 4: Represents a valid isosceles triangle

Project Information		Test Information			
Project Name:	TRIANGLE	Test Name:		ISOSCELES TRIANGLE	
Project ID:	TRI_04	Original Author:		ANIKET	
Test Objective:	TO VERIFY ISOSCELES TRIANGLE.				
Step No.	**Test Case Description**	**Test Data A B C**	**Expected Result**	**Status (Pass/Fail)**	**Remarks**
1	It is a isosceles	4 6 6	Isosceles triangle	Pass	
2	It is a isosceles	4 4 6	Isosceles triangle	Pass	
3	It is a isosceles	5 6 6	Isosceles triangle	Pass	
4	It is a isosceles	10 15 10	Isosceles triangle	Pass	
5	It is a isosceles	100 50 100	Isosceles triangle	Pass	

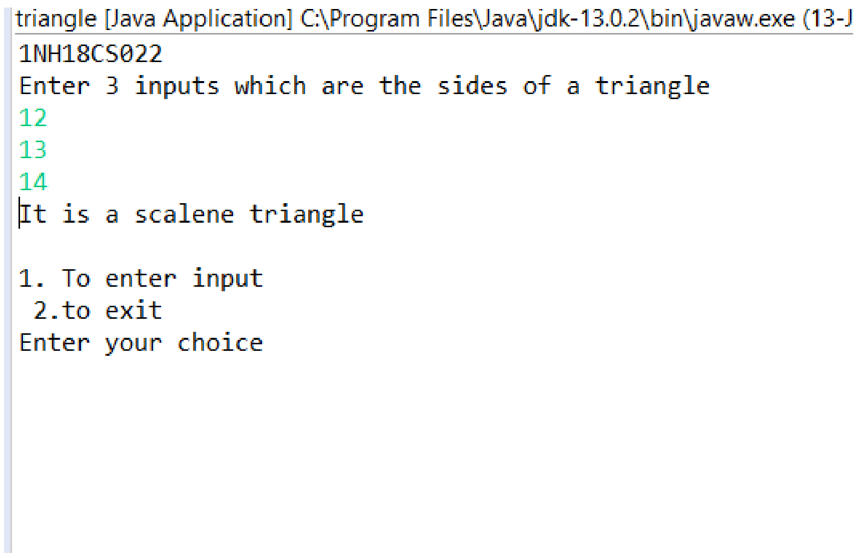
EXECUTION



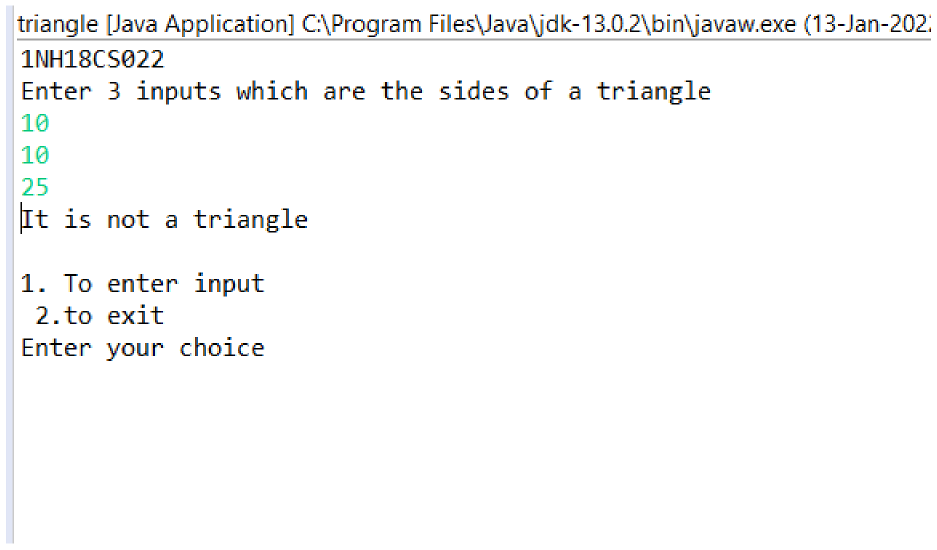
```
triangle [Java Application] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (13-Jan-2022, 10:28:
1NH18CS022
Enter 3 inputs which are the sides of a triangle
10
10
10
It is an equilateral triangle

1. To enter input
 2.to exit
Enter your choice
```



```
triangle [Java Application] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (13-Jan-2022,
1NH18CS022
Enter 3 inputs which are the sides of a triangle
10
10
14
It is an isoceles triangle

1. To enter input
 2.to exit
Enter your choice
```



```
triangle [Java Application] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (13-J
1NH18CS022
Enter 3 inputs which are the sides of a triangle
12
13
14
It is a scalene triangle

1. To enter input
 2.to exit
Enter your choice
```



```
triangle [Java Application] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (13-Jan-202
1NH18CS022
Enter 3 inputs which are the sides of a triangle
10
10
25
It is not a triangle

1. To enter input
 2.to exit
Enter your choice
```

RESULT & DISCUSSION

Test Report:

1. Number of Test Cases Executed :
2. Number of Test Cases Passed :
3. Number of Test Cases Failed :

Exp. No. : 3

Date :

BOUNDARY VALUE ANALYSIS (BVA) FOR NEXTDATE FUNCTION

Design, develop, code and run the program in any suitable language to implement the NextDate function. Analyse it from the perspective boundary value testing. Create different test cases based on the following variants, execute the test cases by using Junit and discuss the test results.

i) Normal Boundary Value Testing
ii) Robust Boundary Value Testing
iii) Worst-Case Boundary Value Testing
iv) Robust Worst-Case Boundary Value Testing

IMPLEMENTATION

JAVA CODE

```
import java.util.*;
public class Next {

	public  String nextd(int day,int month, int year) {

		if((month>12)||((year<1812)||(year>2020))||(day>31))
		{
			return("Enter valid dates");
		}
		else
		{
			if((day==31 && month%2!=1 && month<8)||(day==31 && month>7 && 
month%2==1))
			{
				return("Enter valid dates");
			}
			else
			{

				if((month%2==1)||((month>7)&&(month%2==0)))
				{
					if(day==31)
					{
						if(month==12){
							day=1;
							month=1;
							year+=1;
						}
						else
						{
						day=1;
						month+=1;
						}
					}
					else
					{
						day+=1;
					}
				}
```

```
                        else
                        {
                                if(month==2 && day==28)
                                {
                                        if((year%4==0 && year%100!=0)||(year%400==0))
                                        {
                                                day+=1;
                                        }
                                        else
                                        {
                                                month+=1;
                                                day=1;
                                        }
                                }
                                else if(day==30)
                                {
                                        if(month==12){
                                                day=1;
                                                month=1;
                                                year+=1;
                                        }
                                        else
                                        {
                                        day=1;
                                        month+=1;
                                        }
                                }
                                else
                                {
                                        day+=1;
                                }
                        }
                }
        }
        return(day+"/"+month+"/"+year);

    }

}
```

Junit Code

*Normal BVA

```
import static org.junit.Assert.*;
import org.junit.Test;
public class Normalbva {
        @Test
        public void test1()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(12,3,1812),"13/3/1812");
        }
        @Test
        public void test2()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(30,3,1813),"31/3/1813");
        }
```

```
@Test
	public void test3()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(31,12,1912),"1/1/1913");
	}

	@Test
	public void test4()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(12,3,2019),"13/3/2019");
	}
	@Test
	public void test5()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(12,3,2020),"13/3/2020");
	}
	@Test
	public void test6()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(15,1,2020),"16/1/2020");
	}
	@Test
	public void test7()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(15,2,2020),"16/2/2020");
	}
	@Test
	public void test8()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(15,11,2020),"16/11/2020");
	}
	@Test
	public void test9()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(15,12,2020),"16/12/2020");
	}
	@Test
	public void test10()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(15,6,2020),"16/6/2020");
	}
	@Test
	public void test11()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(1,6,2020),"2/6/2020");
	}
	@Test
	public void test12()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(2,6,2020),"3/6/2020");
	}
	@Test
	public void test13()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(15,6,2020),"16/6/2020");
	}

	@Test
	public void test14()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(30,6,2020),"1/7/2020");
	}
	@Test
	public void test15()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(31,3,2020),"1/4/2020");
	}

}
```

*<u>Robust BVA</u>

```
import static org.junit.Assert.*;
import org.junit.Test;
public class robustbva {

	@Test
	public void test()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(25,3,2019),"26/3/2019");
	}

	@Test
	public void test1()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(12,3,1950),"13/3/1950");
	}
	@Test
	public void test3()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(31,12,1915),"1/1/1916");
	}

	@Test
	public void test6()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(12,3,1915),"13/3/1915");
	}

	@Test
	public void test4()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(32,3,1914),"Enter valid dates");
	}
	@Test
	public void test5()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(12,13,2021),"Enter valid dates");
	}


	@Test
	public void test7()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(12,3,2020),"13/3/2020");
	}

}
```

*<u>Worst-case BVA</u>

```
import static org.junit.Assert.*;
import org.junit.Test;
public class worstcase {

	@Test
	public void test()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(25,3,2012),"26/3/2012");
	}

	@Test
	public void test1()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(12,3,1925),"13/3/1925");
	}
	@Test
	public void test2()
	{
```

```
                Next d1 = new Next();
                assertEquals(d1.nextd(30,3,1950),"31/3/1950");
        }
        @Test
        public void test3()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(31,12,2010),"1/1/2011");
        }
        public void test4()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(31,12,2010),"1/1/2010");
        }
        public void test5()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(31,12,2010),"1/1/2010");
        }

        @Test
        public void test6()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(12,3,1915),"13/3/1915");
        }
        @Test
        public void test7()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(12,3,1920),"13/3/1920");
        }
        @Test
        public void test8()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(31,12,2009),"1/1/2010");
        }
        @Test
        public void test9()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(31,12,2000),"1/1/2001");
        }


}
```

*<u>Robust worst-case BVA</u>

```
import static org.junit.Assert.*;

import org.junit.Test;

public class robustworstcase {

	@Test
	public void test()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(25,3,2012),"26/3/2012");
	}

	@Test
	public void test1()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(12,3,1925),"13/3/1925");
	}
	@Test
	public void test2()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(30,3,1950),"31/3/1950");
	}
	@Test
	public void test3()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(31,12,2010),"1/1/2011");
	}
	public void test4()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(31,12,2010),"1/1/2010");
	}
	public void test5()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(31,12,2010),"1/1/2010");
	}

	@Test
	public void test6()
	{
		Next d1 = new Next();
		assertEquals(d1.nextd(12,3,1915),"13/3/1915");
	}
	@Test
	public void test7()
	{
		Next d1 = new Next();
```

```
                assertEquals(d1.nextd(12,3,1920),"13/3/1920");
        }
        @Test
        public void test8()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(31,12,2009),"1/1/2010");
        }
        @Test
        public void test9()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(31,12,2000),"1/1/2001");
        }
        public void test12()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(31,12,2019),"1/1/2020");
        }
        @Test
        public void test13()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(31,12,1999),"1/1/2000");
        }
        @Test
        public void test10()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(32,3,1914),"Enter valid dates");
        }
        @Test
        public void test11()
        {
                Next d1 = new Next();
                assertEquals(d1.nextd(12,13,2021),"Enter valid dates");
        }


}
```

TEST CASES

Test Case Name: Equivalence Class testing for next problem
Test Data: Enter the 3 Integer Value (m, d and y)
Pre-condition: month {1<=m<=12}, day {1<=d<=31}, year {1812<=y<=2012} Test Objective: To find the next date to the given valid date.

i) TEST CASES FOR NORMAL BOUNDARY VALUE TESTING

Project Information	Test Information

Project Name:	NEXTDATE	Project Name:	NEXT DATE
Project ID:	NEXTDATE_01	Original Author:	ANIKET
Test Objective:	Find out the next date for a given date (Normal BVA)		

Test Case ID	Test Case Description	Test Data			Expected Result	Status (Pass/ Fail)	Remark
		a	b	c			
NXTDATE2b _n1	Enter the nominal values for m& d, y changes	6	15	181 2	Message must be displayed as "16.6.1812"	Pass	
NXTDATE2b _n2	Enter the nominal values for m& d, y changes	6	15	181 3	Message must be displayed as "16.6.1813"	Pass	
NXTDATE2b _n3	Enter the nominal values for m& d, y changes	6	15	191 2	Message must be displayed as "16.6.1912"	Pass	
NXTDATE2b _n4	Enter the nominal values for m& d, y changes	6	15	201 1	Message must be displayed as "16.6.2011"	Pass	
NXTDATE2b _n5	Enter the nominal values for m& d, y changes	6	15	201 2	Message must be displayed as "16.6.2012"	Pass	
NXTDATE2b _n6	Enter the nominal values for m& y, dchanges	6	1	191 2	Message must be displayed as "2.6.1912"	Pass	
NXTDATE2b _n7	Enter the nominal values for m& y, dchanges	6	2	191 2	Message must be displayed as "3.6.1912"	Pass	
NXTDATE2b _n8	Enter the nominal values for m& y, dchanges	6	30	191 2	Message must be displayed as "1.7.1912"	Pass	
NXTDATE2b _n9	Enter the nominal values for m& y, dchanges	6	31	191 2	Message must be displayed as "Invalid values"	Pass	
NXTDATE2b _n10	Enter the nominal values for m changes, d,&y	1	15	191 2	Message must be displayed as "16.1.1912"	Pass	

NXTDATE2b _n11	Enter the nominal values for m changes, d,&y	2	15	191 2	Message must be displayed as “16.2.1912”	Pass	
NXTDATE2b _n12	Enter the nominal values for m changes, d,&y	11	15	191 2	Message must be displayed as “16.11.1912”	Pass	
NXTDATE2b _n13	Enter the nominal values for m changes, d,&y	12	15	191 2	Message must be displayed as “16.12.2012”	Pass	

ii) TEST CASES FOR ROBUST BOUNDARY VALUE TESTING

Project Information					Test Information		
Project Name:	NEXTDATE				Project Name:	NEXT DATE	
Project ID:	NEXTDATE_02				Original Author:	ANIKET	
Test Objective:	Find out the next date for a given date (ROUST BVA)						
Test Case ID	Test Case Description	Test Data			Expected Result	Status (Pass/ Fail)	Remark
		a	b	c			
NXTDATE2b _n1	Enter the nominal values for m& d, y changes	6	15	1812	Message must be displayed as “16.6.1812”	Pass	
NXTDATE2b _n2	Enter the nominal values for m& d, y changes	6	15	1813	Message must be displayed as “16.6.1813”	Pass	
NXTDATE2b _n3	Enter the nominal values for m& d, y changes	6	15	1912	Message must be displayed as “16.6.1912”	Pass	
NXTDATE2b _n4	Enter the nominal values for m& d, y changes	6	15	2011	Message must be displayed as “16.6.2011”	Pass	
NXTDATE2b _n5	Enter the nominal values for m& d, y changes	6	15	2012	Message must be displayed as “16.6.2012”	Pass	
NXTDATE2b _n6	Enter the nominal values for m& y, dchanges	6	1	1912	Message must be displayed as “2.6.1912”	Pass	

NXTDATE2b _n7	Enter the nominal values for m& y, dchanges	6	2	1912	Message must be displayed as "3.6.1912"	Pass	
NXTDATE2b _n8	Enter the nominal values for m& y, dchanges	6	30	1912	Message must be displayed as "1.7.1912"	Pass	
NXTDATE2b _n9	Enter the nominal values for m& y, dchanges	6	31	1912	Message must be displayed as "Invalid values"	Pass	
NXTDATE2b _n10	Enter the nominal values for m changes, d,&y	1	15	1912	Message must be displayed as "16.1.1912"	Pass	
NXTDATE2b _n11	Enter the nominal values for m changes, d,&y	2	15	1912	Message must be displayed as "16.2.1912"	Pass	
NXTDATE2b _n12	Enter the nominal values for m changes, d,&y	11	15	1912	Message must be displayed as "16.11.1912"	Pass	
NXTDATE2b _n13	Enter the nominal values for m changes, d,&y	12	15	1912	Message must be displayed as "16.12.2012"	Pass	
NXTDATE2b _n14	Enter the nominal values for m changes, d,&y	6	15	1811		Pass	
NXTDATE2b _n15	Enter the nominal values for m changes, d,&y	6	15	2013		Pass	
NXTDATE2b _n16	Enter the nominal values for m changes, d,&y	6	0	1912		Pass	
NXTDATE2b _n17	Enter the nominal values for m changes, d,&y	6	32	1912		Pass	
NXTDATE2b _n18	Enter the nominal values for m changes, d,&y	0	15	1912		Pass	

NXTDATE2b _n19		13	15	1912			

iii) TEST CASES FOR WORST-CASE BOUNDAR VALUE TESTING

Project Information					Test Information		
Project Name:	NEXTDATE				Project Name:	NEXT DATE	
Project ID:	NEXTDATE_03				Original Author:	ANIKET	
Test Objective:	Find out the next date for a given date (ROUST BVA)						
Test Case ID	Test Case Description	Test Data			Expected Result	Status (Pass/ Fail)	Remark
		a	b	c			
NXTDATE2b _n1	Enter the nominal values for m& d, y changes	1	1	1811	Message must be displayed as "16.6.1812"	Pass	
NXTDATE2b _n1	Enter the nominal values for m& d, y changes	1	1	1812	Message must be displayed as "16.6.1812"	Pass	
NXTDATE2b _n2	Enter the nominal values for m& d, y changes	1	1	1813	Message must be displayed as "16.6.1813"	Pass	
NXTDATE2b _n3	Enter the nominal values for m& d, y changes	1	1	1912	Message must be displayed as "16.6.1912"	Pass	
NXTDATE2b _n4	Enter the nominal values for m& d, y changes	1	1	2011	Message must be displayed as "16.6.2011"	Pass	
NXTDATE2b _n5	Enter the nominal values for m& d, y changes	1	1	2012	Message must be displayed as "16.6.2012"	Pass	
NXTDATE2b _n5	Enter the nominal values for m& d, y changes	1	1	2013	Message must be displayed as "16.6.2012"	Pass	
NXTDATE2b _n5	Enter the nominal values for m& d, y changes	1	2	1811	Message must be displayed as "16.6.2012"	Pass	

NXTDATE2b _n6	Enter the nominal values for m& y, dchanges	1	2	1812	Message must be displayed as "2.6.1912"	Pass	
NXTDATE2b _n7	Enter the nominal values for m& y, dchanges	1	2	1813	Message must be displayed as "3.6.1912"	Pass	
NXTDATE2b _n8	Enter the nominal values for m& y, dchanges	1	2	1912	Message must be displayed as "1.7.1912"	Pass	
NXTDATE2b _n9	Enter the nominal values for m& y, dchanges	1	2	2011	Message must be displayed as "Invalid values"	Pass	
NXTDATE2b _n10	Enter the nominal values for m changes, d,&y	1	2	2012	Message must be displayed as "16.1.1912"	Pass	
NXTDATE2b _n10	Enter the nominal values for m changes, d,&y	1	2	2013	Message must be displayed as "16.1.1912"	Pass	
NXTDATE2b _n11	Enter the nominal values for m changes, d,&y	1	15	1811	Message must be displayed as "16.2.1912"	Pass	
NXTDATE2b _n11	Enter the nominal values for m changes, d,&y	1	15	1812	Message must be displayed as "16.2.1912"	Pass	
NXTDATE2b _n12	Enter the nominal values for m changes, d,&y	1	15	1813	Message must be displayed as "16.11.1912"	Pass	
NXTDATE2b _n13	Enter the nominal values for m changes, d,&y	1	15	1912	Message must be displayed as "16.12.2012"	Pass	
NXTDATE2b _n14	Enter the nominal values for m changes, d,&y	1	15	2011		Pass	
NXTDATE2b _n15	Enter the nominal values for m changes, d,&y	1	15	2012		Pass	

NXTDATE2b _n15	Enter the nominal values for m changes, d,&y	1	15	2013		Pass	
NXTDATE2b _n16	Enter the nominal values for m changes, d,&y	1	30	1811		Pass	
NXTDATE2b _n16	Enter the nominal values for m changes, d,&y	1	30	1812		Pass	
NXTDATE2b _n17	Enter the nominal values for m changes, d,&y	1	30	1813		Pass	
NXTDATE2b _n18	Enter the nominal values for m changes, d,&y	1	30	1912		Pass	
NXTDATE2b _n19		1	30	2011		Pass	
NXTDATE2b _n18	Enter the nominal values for m changes, d,&y	1	30	2012		Pass	
NXTDATE2b _n18	Enter the nominal values for m changes, d,&y	1	30	2013		Pass	

iv) TEST CASES FOR ROBUST WORST-CASE BOUNDARY VALUE TESTING

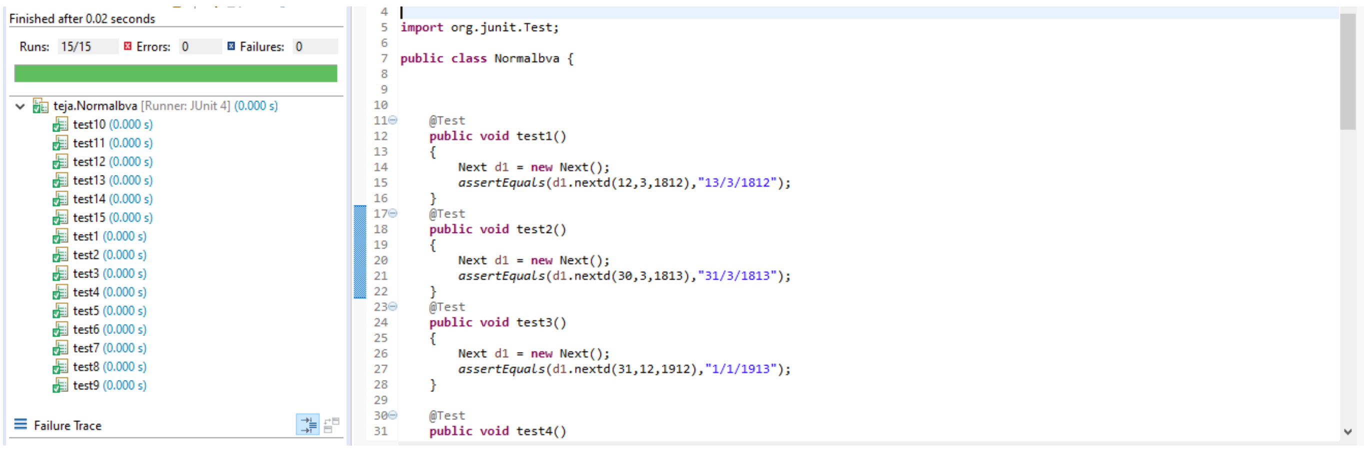
Project Information		Test Information	
Project Name:	NEXTDATE	Project Name:	NEXT DATE
Project ID:	NEXTDATE_03	Original Author:	ANIKET
Test Objective:	Find out the next date for a given date (ROUST BVA)		

Test Case ID	Test Case Description	Test Data			Expected Result	Status (Pass/ Fail)	Remark
		a	b	c			
NXTDATE2b _n1	Enter the nominal values for m& d, y changes	1	1	1812	Message must be displayed as “16.6.1812”	Pass	

NXTDATE2b _n2	Enter the nominal values for m& d, y changes	1	1	1813	Message must be displayed as "16.6.1813"	Pass	
NXTDATE2b _n3	Enter the nominal values for m& d, y changes	1	1	1912	Message must be displayed as "16.6.1912"	Pass	
NXTDATE2b _n4	Enter the nominal values for m& d, y changes	1	1	2011	Message must be displayed as "16.6.2011"	Pass	
NXTDATE2b _n5	Enter the nominal values for m& d, y changes	1	1	2012	Message must be displayed as "16.6.2012"	Pass	
NXTDATE2b _n6	Enter the nominal values for m& y, dchanges	1	2	1812	Message must be displayed as "2.6.1912"	Pass	
NXTDATE2b _n7	Enter the nominal values for m& y, dchanges	1	2	1813	Message must be displayed as "3.6.1912"	Pass	
NXTDATE2b _n8	Enter the nominal values for m& y, dchanges	1	2	1912	Message must be displayed as "1.7.1912"	Pass	
NXTDATE2b _n9	Enter the nominal values for m& y, dchanges	1	2	2011	Message must be displayed as "Invalid values"	Pass	
NXTDATE2b _n10	Enter the nominal values for m changes, d,&y	1	2	2012	Message must be displayed as "16.1.1912"	Pass	
NXTDATE2b _n11	Enter the nominal values for m changes, d,&y	1	15	1812	Message must be displayed as "16.2.1912"	Pass	
NXTDATE2b _n12	Enter the nominal values for m changes, d,&y	1	15	1813	Message must be displayed as "16.11.1912"	Pass	
NXTDATE2b _n13	Enter the nominal values for m changes, d,&y	1	15	1912	Message must be displayed as "16.12.2012"	Pass	

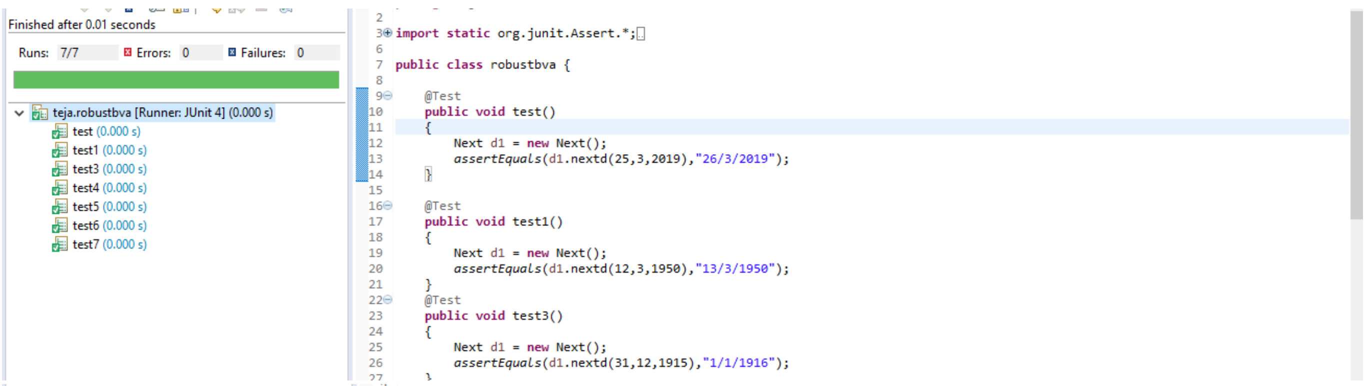
NXTDATE2b _n14	Enter the nominal values for m changes, d,&y	1	15	2011		Pass	
NXTDATE2b _n15	Enter the nominal values for m changes, d,&y	1	15	2012		Pass	
NXTDATE2b _n16	Enter the nominal values for m changes, d,&y	1	30	1812		Pass	
NXTDATE2b _n17	Enter the nominal values for m changes, d,&y	1	30	1813		Pass	
NXTDATE2b _n18	Enter the nominal values for m changes, d,&y	1	30	1912		Pass	
NXTDATE2b _n19		1	30	2011		Pass	

EXECUTION



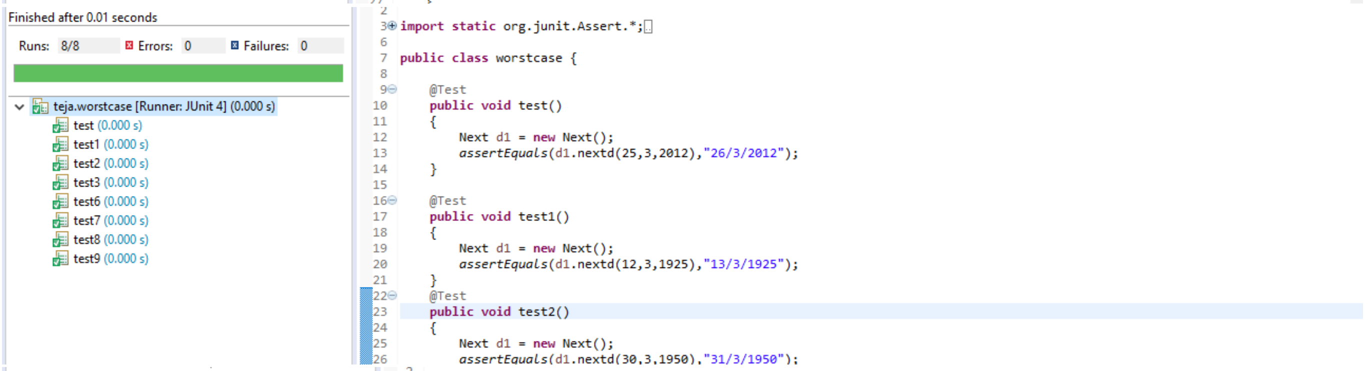
```
Finished after 0.02 seconds
Runs: 15/15   Errors: 0   Failures: 0

teja.Normalbva [Runner: JUnit 4] (0.000 s)
    test10 (0.000 s)
    test11 (0.000 s)
    test12 (0.000 s)
    test13 (0.000 s)
    test14 (0.000 s)
    test15 (0.000 s)
    test1 (0.000 s)
    test2 (0.000 s)
    test3 (0.000 s)
    test4 (0.000 s)
    test5 (0.000 s)
    test6 (0.000 s)
    test7 (0.000 s)
    test8 (0.000 s)
    test9 (0.000 s)

Failure Trace
```

```java

import org.junit.Test;

public class Normalbva {



    @Test
    public void test1()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(12,3,1812),"13/3/1812");
    }
    @Test
    public void test2()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(30,3,1813),"31/3/1813");
    }
    @Test
    public void test3()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(31,12,1912),"1/1/1913");
    }

    @Test
    public void test4()
```



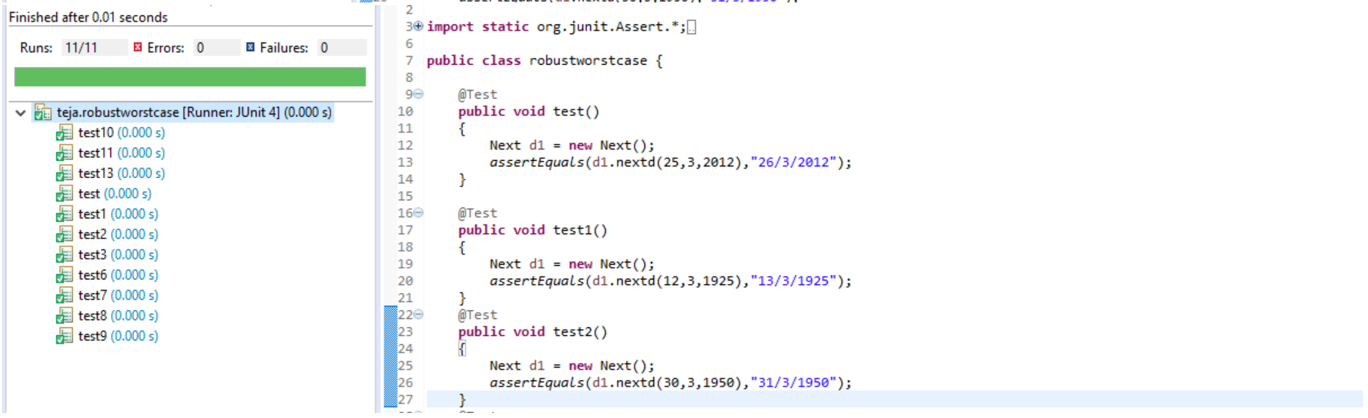
```
Finished after 0.01 seconds
Runs: 7/7    Errors: 0    Failures: 0

teja.robustbva [Runner: JUnit 4] (0.000 s)
    test (0.000 s)
    test1 (0.000 s)
    test3 (0.000 s)
    test4 (0.000 s)
    test5 (0.000 s)
    test6 (0.000 s)
    test7 (0.000 s)
```

```java
import static org.junit.Assert.*;

public class robustbva {

    @Test
    public void test()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(25,3,2019),"26/3/2019");
    }

    @Test
    public void test1()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(12,3,1950),"13/3/1950");
    }
    @Test
    public void test3()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(31,12,1915),"1/1/1916");
```



```
Finished after 0.01 seconds
Runs: 8/8    Errors: 0    Failures: 0

teja.worstcase [Runner: JUnit 4] (0.000 s)
    test (0.000 s)
    test1 (0.000 s)
    test2 (0.000 s)
    test3 (0.000 s)
    test6 (0.000 s)
    test7 (0.000 s)
    test8 (0.000 s)
    test9 (0.000 s)
```

```java
import static org.junit.Assert.*;

public class worstcase {

    @Test
    public void test()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(25,3,2012),"26/3/2012");
    }

    @Test
    public void test1()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(12,3,1925),"13/3/1925");
    }
    @Test
    public void test2()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(30,3,1950),"31/3/1950");
```



```
Finished after 0.01 seconds
Runs: 11/11    Errors: 0    Failures: 0

teja.robustworstcase [Runner: JUnit 4] (0.000 s)
    test10 (0.000 s)
    test11 (0.000 s)
    test13 (0.000 s)
    test (0.000 s)
    test1 (0.000 s)
    test2 (0.000 s)
    test3 (0.000 s)
    test6 (0.000 s)
    test7 (0.000 s)
    test8 (0.000 s)
    test9 (0.000 s)
```

```java
import static org.junit.Assert.*;

public class robustworstcase {

    @Test
    public void test()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(25,3,2012),"26/3/2012");
    }

    @Test
    public void test1()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(12,3,1925),"13/3/1925");
    }
    @Test
    public void test2()
    {
        Next d1 = new Next();
        assertEquals(d1.nextd(30,3,1950),"31/3/1950");
    }
```

RESULT & DISCUSSION

Test Report:

1. Number of Test Cases Executed :
2. Number of Test Cases Passed :
3. Number of Test Cases Failed :

Exp. No. : 4

Date :

EQUIVALENCE CLASS PARTITIONING (ECP) FOR NEXTDATE FUNCTION

Design, develop, code and run the program in any suitable language to implement the NextDate function. Analyse it from the perspective equivalence class testing. Create different test cases, execute these test cases by using JUnit and discuss the test results.

i) Weak Normal Equivalence Class Testing
ii) Strong Normal Equivalence Class Testing
iii) Weak Robust Equivalence Class Testing
iv) Strong Robust Equivalence Class Testing

IMPLEMENTATION

*JAVA CODE

```
package nd2;

//import java.util.Scanner;

public class nextdate
{
	public static String next(int d, int m, int y, int cc)
	{
		if(d==cc)
		{
			d=1;
			if(m==12)
			{
				y++;
				m=1;
			}
			else
			{
				m++;
			}
		}
		else
		{
			d++;
		}

		return(String.valueOf(d)+"/"+String.valueOf(m)+"/"+String.valueOf(y));
	}
	public String nextday(int d, int m, int y)
	{
		if(d>=1 && d<=31 && m>=1 && m<=12 && y>=1812 && y<=2012)
		{
			switch(m)
			{
			case 1:
			case 3:return(next(d,m,y,31));
			case 5:return(next(d,m,y,31));
			case 7:return(next(d,m,y,31));
```

```
                    case 8:return(next(d,m,y,31));
                    case 10:return(next(d,m,y,31));
                    case 12: return(next(d,m,y,31));
                    case 4: return(next(d,m,y,30));
                    case 6: return(next(d,m,y,30));
                    case 9: return(next(d,m,y,30));
                    case 11: return(next(d,m,y,30));
                    default: return(next(d,m,y,((y%4==0 && y%100!=0) || y%400==0)?29:28));
                    }
             }
             return "Invalid Values";
      }

}
```

***Junit code**

```
package nd2;

import static org.junit.Assert.*;

import org.junit.Test;

public class equind2pgm {

	//weak and strong normal test case
	@Test

	public void test_1()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(15,6,1912),"16/6/1912");
	}

	@Test
	public void test_2()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(10,6,1912),"11/6/1912");
	}
	@Test
	public void test_3()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(10,6,1900),"11/6/1900");
	}

	@Test
	public void test_4()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(10,5,1912),"11/5/1912");
	}

	@Test
	public void test_5()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(20,10,2010),"21/10/2010");
	}

	//weak robust test cases

	@Test
	public void test3()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(-1,10,1912),"Invalid Values");
	}

	@Test
	public void test31()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(12,7,1912),"13/7/1912");
	}
	@Test
	public void test32()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(12,8,1912),"13/8/1912");
	}
	@Test
	public void test33()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(12,4,1912),"13/4/1912");
	}
	@Test
	public void test34()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(12,9,1912),"13/9/1912");
	}
	@Test
	public void test35()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(12,1,1912),"13/1/1912");
	}
	@Test
	public void test36()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(12,2,1912),"13/2/1912");
	}
	@Test
	public void test37()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(12,3,1912),"13/3/1912");
	}
	@Test
	public void test30()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(10,3,1912),"11/3/1912");
	}
	@Test
	public void test4()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(15,13,1912),"Invalid Values");
	}
	@Test
	public void test5()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(1,6,2200),"Invalid Values");
	}
	@Test
	public void test6()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(32,6,1912),"Invalid Values");
	}
	@Test
	public void test7()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(15,6,1811),"Invalid Values");
	}
	@Test
	public void test8()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(15,6,2013),"Invalid Values");
	}

	//strong robust test cases
	@Test
	public void test9()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(2,1,1912),"3/1/1912");
	}
	@Test
	public void test10()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(-1,3,1900),"Invalid Values");
	}
	@Test
	public void test11()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(15,0,1811),"Invalid Values");
	}
	@Test
	public void test12()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(33,12,1912),"Invalid Values");
	}
	@Test
	public void test13()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(15,-1,-1),"Invalid Values");
	}
	@Test
	public void test14()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(-1,6,-1),"Invalid Values");
	}
	@Test
	public void test15()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(-1,-1,-1),"Invalid Values");
	}
	@Test
	public void test16()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(31,12,2010),"1/1/2011");
	}
	@Test
	public void test17()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(30,11,2010),"1/12/2010");
	}

	//////leap
	@Test
	public void test18()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(3,2,2010),"4/2/2010");
	}

	@Test
	public void test19()
	{
		nextdate ob1=new nextdate();
		assertEquals(ob1.nextday(28,2,2010),"1/3/2010");
	}
```

```
        @Test
        public void test20()
        {
                nextdate ob1=new nextdate();
                assertEquals(ob1.nextday(20,2,2008),"21/2/2008");
        }
        @Test
        public void test21()
        {
                nextdate ob1=new nextdate();
                assertEquals(ob1.nextday(29,2,2000),"1/3/2000");
        }
        @Test

        public void test22()
        {
                nextdate ob1=new nextdate();
                assertEquals(ob1.nextday(28,2,1900),"1/3/1900");
        }

}
```

TEST CASES

Test Case Name: Equivalence Class testing for next problem
Test Data: Enter the 3 Integer Value (m, d and y)
Pre-condition: month{1<=m<=12}, day{1<=d<=31}, year{1812<=y<=2012}
Test Objective: To find the next date to the given valid date.

I) TEST CASES FOR WEAK NORMAL EQUIVALENCE CLASS TESTING

Project Information					Test Information		
Project Name:	NEXTDATE				Project Name:	NEXTDATE	
Project ID:	NEXTDATE_01				Original Author:	ANIKET	
Test Objective:	Check if valid date input gives next date (Weak normal equivalence class testing)						
Test Case ID	Test Case Description	Test Data			Expected Result	Status (Pass/ Fail)	Remark
		d	m	y			
TEST2d_wn1	Enter the values for m, d, y arbitrarily chosen from equivalence class	15	3	2000	Message must be displayed as “15.6.2000”	Pass	
TEST2d_wn1	Enter the values for m, d, y arbitrarily chosen from equivalence class	15	4	**1912**	Message must be displayed as “15.6.2000”	Pass	

TEST2d_wn1	Enter the values for m, d, y arbitrarily chosen from equivalence class	16	4	1912	Message must be displayed as "15.6.2000"	Pass	
TEST2d_wn1	Enter the values for m, d, y arbitrarily chosen from equivalence class	15	3	1912	Message must be displayed as "15.6.2000"	Pass	
TEST2d_wn1	Enter the values for m, d, y arbitrarily chosen from equivalence class	10	11	1920	Message must be displayed as "15.6.2000"	Pass	

(ii) TEST CASES FOR STRONG NORMAL EQUIVALENCE CLASS TESTING

Project Information					Test Information		
Project Name:	NEXTDATE				Project Name:	NEXTDATE	
Project ID:	NEXTDATE_02				Original Author:	ANIKET	
Test Objective:	Check if valid date input gives next date (Strong normal equivalence class testing)						
Test Case ID	Test Case Description	Test Data			Expected Result	Status (Pass/ Fail)	Remark
		d	m	y			
TEST2d_sn1	Enter the values for m, d, y arbitrarily chosen from equivalence class	15	3	2000	Message must be displayed as "15.6.2000"	Pass	
TEST2d_sn1	Enter the values for m, d, y arbitrarily chosen from equivalence class	15	4	**1912**	Message must be displayed as "15.6.2000"	Pass	
TEST2d_sn1	Enter the values for m, d, y arbitrarily chosen from equivalence class	16	4	1912	Message must be displayed as "15.6.2000"	Pass	
TEST2d_sn1	Enter the values for m, d, y arbitrarily chosen from equivalence class	15	3	1912	Message must be displayed as "15.6.2000"	Pass	
TEST2d_sn1	Enter the values for m, d, y arbitrarily chosen from equivalence class	10	11	1920	Message must be displayed as "15.6.2000"	Pass	

(iii) TEST CASES FOR WEAK ROBUST EQUIVALENCE CLASS TESTING

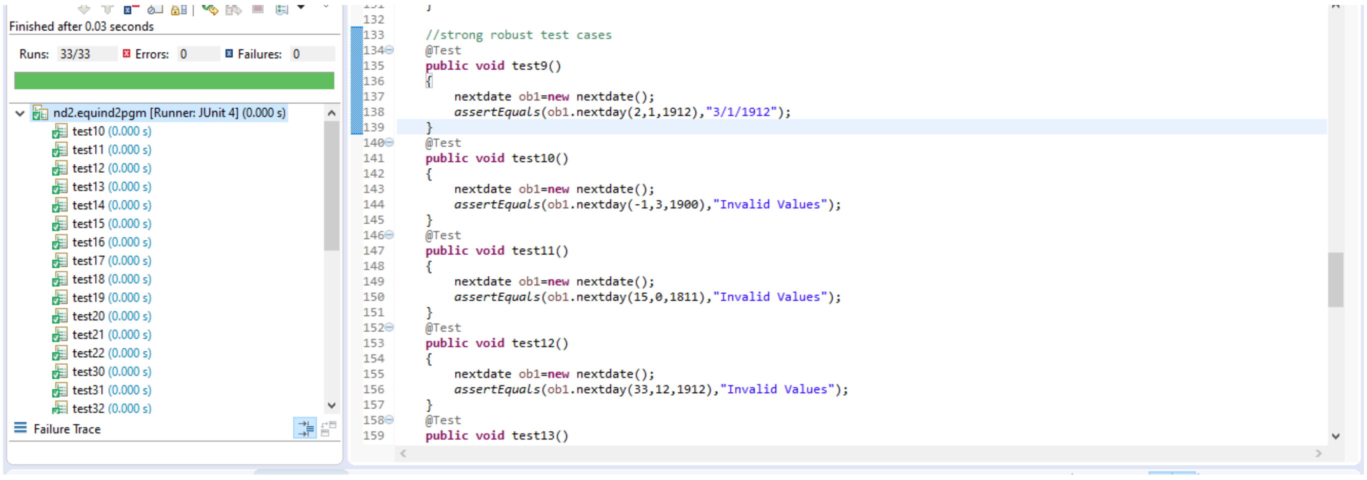
Project Information					Test Information		
Project Name:	NEXTDATE				Project Name:	NEXTDATE	
Project ID:	NEXTDATE_03				Original Author:	ANIKET	
Test Objective:	Check if valid date input gives next date (Robust equivalence class testing)						
Test Case ID	Test Case Description	Test Data			Expected Result	Status (Pass/ Fail)	Remark
		d	m	y			

TEST2d_wr1	Enter the values for m, d, y arbitrarily chosen from equivalence class	15	3	2000	Message must be displayed as "15.6.2000"	Pass	
TEST2d_wr1	Enter the values for m, d, y arbitrarily chosen from equivalence class	15	4	**1912**	Message must be displayed as "15.6.2000"	Pass	
TEST2d_wr1	Enter the values for m, d, y arbitrarily chosen from equivalence class	16	4	1912	Message must be displayed as "15.6.2000"	Pass	
TEST2d_wr1	Enter the values for m, d, y arbitrarily chosen from equivalence class	15	3	1912	Message must be displayed as "15.6.2000"	Pass	
TEST2d_wr1	Enter the values for m, d, y arbitrarily chosen from equivalence class	10	11	1920	Message must be displayed as "15.6.2000"	Pass	

(iv) TEST CASES FOR STRONG ROBUST EQUIVALENCE CLASS TESTING

Project Information					Test Information		
Project Name:	NEXTDATE				Project Name:		NEXTDATE
Project ID:	NEXTDATE_03				Original Author:		ANIKET
Test Objective:	Check if valid date input gives next date (Robust equivalence class testing)						
Test Case ID	**Test Case Description**	**Test Data**			**Expected Result**	**Status (Pass/ Fail)**	**Remark**
		d	**m**	**y**			
TEST2d_sr1	Enter the values for m, d, y arbitrarily chosen from equivalence class	-1	15	1912	Message must be displayed as "15.6.2000"	Pass	
TEST2d_sr1	Enter the values for m, d, y arbitrarily chosen from equivalence class	6	-1	**1810**	Message must be displayed as "15.6.2000"	Pass	
TEST2d_sr1	Enter the values for m, d, y arbitrarily chosen from equivalence class	32	10	1810	Message must be displayed as "15.6.2000"	Pass	
TEST2d_sr1	Enter the values for m, d, y arbitrarily chosen from equivalence class	1	2	1912	Message must be displayed as "15.6.2000"	Pass	
TEST2d_sr1	Enter the values for m, d, y arbitrarily chosen from equivalence class	5	6	2000	Message must be displayed as "15.6.2000"	Pass	

EXECUTION



```
Finished after 0.03 seconds
Runs: 33/33    Errors: 0    Failures: 0

nd2.equind2pgm [Runner: JUnit 4] (0.000 s)
    test10 (0.000 s)
    test11 (0.000 s)
    test12 (0.000 s)
    test13 (0.000 s)
    test14 (0.000 s)
    test15 (0.000 s)
    test16 (0.000 s)
    test17 (0.000 s)
    test18 (0.000 s)
    test19 (0.000 s)
    test20 (0.000 s)
    test21 (0.000 s)
    test22 (0.000 s)
    test30 (0.000 s)
    test31 (0.000 s)
    test32 (0.000 s)
Failure Trace
```

```java
    }

    //strong robust test cases
    @Test
    public void test9()
    {
        nextdate ob1=new nextdate();
        assertEquals(ob1.nextday(2,1,1912),"3/1/1912");
    }
    @Test
    public void test10()
    {
        nextdate ob1=new nextdate();
        assertEquals(ob1.nextday(-1,3,1900),"Invalid Values");
    }
    @Test
    public void test11()
    {
        nextdate ob1=new nextdate();
        assertEquals(ob1.nextday(15,0,1811),"Invalid Values");
    }
    @Test
    public void test12()
    {
        nextdate ob1=new nextdate();
        assertEquals(ob1.nextday(33,12,1912),"Invalid Values");
    }
    @Test
    public void test13()
```

RESULT & DISCUSSION

Test Report:

1. Number of Test Cases Executed :
2. Number of Test Cases Passed :
3. Number of Test Cases Failed :

Exp. No. : 5

Date :

DEMONSTRATION OF WHITE BOX TESTING TECHNIQUE USING ECLEMMA

Demonstrate white box testing techniques using open-source testing tool JUnit and ECLEMMA. Implement and execute test cases for achieving full statement coverage, decision/branch coverage and condition coverage for the triangle problem.

IMPLEMENTATION

*JAVA CODE

```
package cs067;


public class triangle {
	public String op(int a,int b,int c)
	{
		if(a>=1 && a<=200 && b>=1 && b<=200 && c>=1 && c<=200)
		{
			if(a+b>c && b+c>a && c+a>b)
			{
				if(a==b && b==c)
				{
					return "Equilateral Triangle";
				}
				else if(a==b||b==c)
				{
					return "Isosceles Triangle";
				}
				else
				{
					return "Scalen Triangle";
				}
			}
			else
			{
				return "Not a Triangle";
			}
		}
		else
		{
			return "Invalid";
		}
	}
}
```

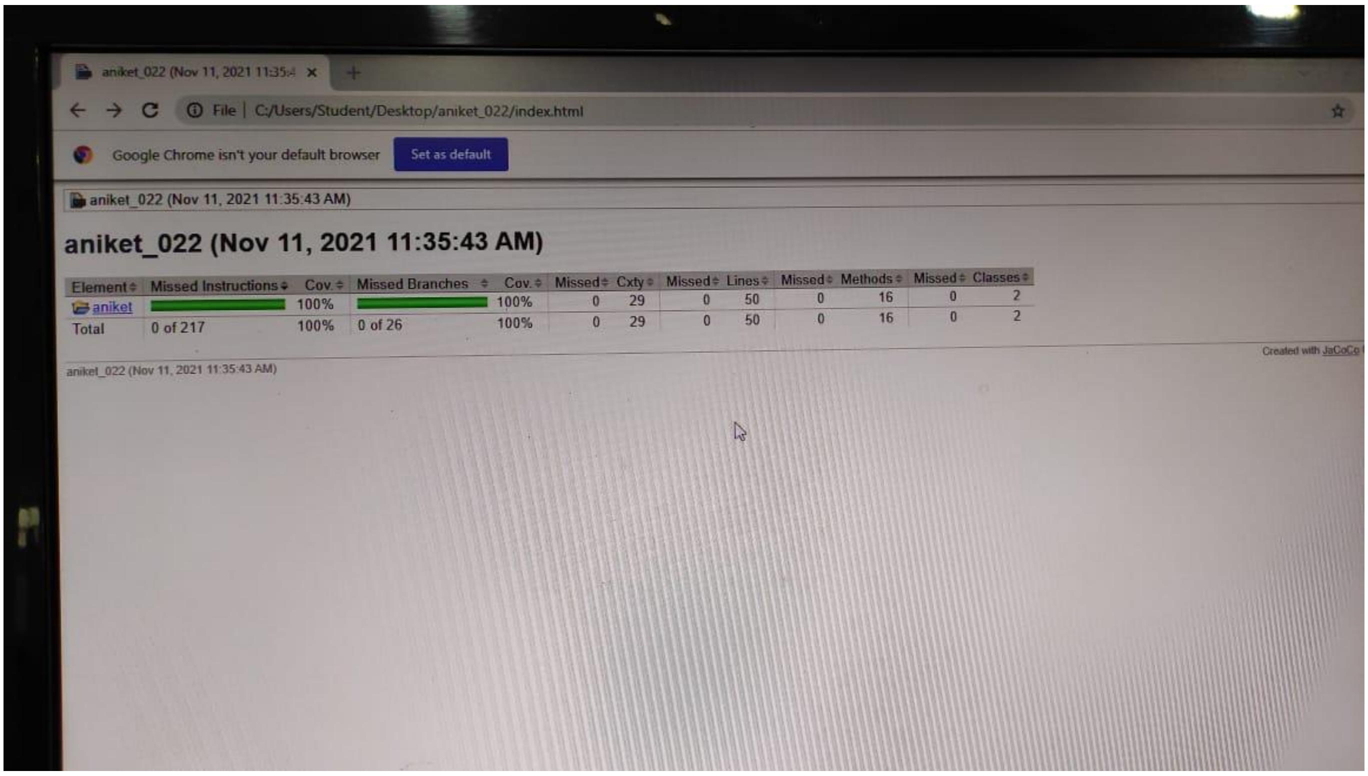
*Junit code

```
package cs067;
import static org.junit.Assert.*;
import org.junit.Test;
import cs067.triangle;


public class triangleTest {
	@Test
	public void test() {
		triangle t1=new triangle();
		assertEquals(t1.op(1, 2, 3),"Not a Triangle");
	}
	@Test
	public void test12() {
		triangle t1=new triangle();
		assertEquals(t1.op(2, 1, 1),"Not a Triangle");
	}
	@Test
	public void test13() {
		triangle t1=new triangle();
		assertEquals(t1.op(2, 4, 2),"Not a Triangle");
	}


	@Test
	public void test1() {
		triangle t1=new triangle();
		assertEquals(t1.op(100, 100, 100),"Equilateral Triangle");
	}
	@Test
	public void test2() {
		triangle t1=new triangle();
		assertEquals(t1.op(4, 5, 6),"Scalen Triangle");
	}
	@Test
	public void test3() {
		triangle t1=new triangle();
		assertEquals(t1.op(4, 6, 6),"Isosceles Triangle");
	}
	@Test
	public void test4() {
		triangle t1=new triangle();
		assertEquals(t1.op(201, 201, 201),"Invalid");
	}
	@Test
	public void test5() {
		triangle t1=new triangle();
		assertEquals(t1.op(6, 6, 4),"Isosceles Triangle");
	}
	@Test
	public void test6() {
		triangle t1=new triangle();
		assertEquals(t1.op(4, 201, 7),"Invalid");
	}
	@Test
	public void test7() {
		triangle t1=new triangle();
		assertEquals(t1.op(4, 7, 201),"Invalid");
	}
	@Test
	public void test8() {
		triangle t1=new triangle();
		assertEquals(t1.op(0, 7, 201),"Invalid");
	}
	@Test
	public void test9() {
		triangle t1=new triangle();
		assertEquals(t1.op(7, 0, 201),"Invalid");
	}
```

```
        @Test
        public void test11() {
               triangle t1=new triangle();
               assertEquals(t1.op(7, 9, 0),"Invalid");
        }

}
```

EXECUTION

SAMPLE



aniket_022 (Nov 11, 2021 11:35:4

C:/Users/Student/Desktop/aniket_022/index.html

Google Chrome isn't your default browser

aniket_022 (Nov 11, 2021 11:35:43 AM)

aniket_022 (Nov 11, 2021 11:35:43 AM)

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
aniket	🟩	100%	🟩	100%	0	29	0	50	0	16	0	2
Total	0 of 217	100%	0 of 26	100%	0	29	0	50	0	16	0	2

aniket_022 (Nov 11, 2021 11:35:43 AM)

Created with JaCoCo

TEST CASES FOR TRIANGLE PROGRAM

Project Information		Test Information						
Project Name:	TRIANGLE	Project Name:				TRIANGLE		
Project ID:	TRIANGLE_01	Original Author:						
Test Objective:	Check whether given value for a equilateral, isosceles, Scalene triangle or can't from a triangle							
Test Case ID	**Test Case Description**	**Test Data**			**Expected Result**	**Status (Pass/ Fail)**	**Remark**	
		a	**b**	**c**				
TEST2c_1	Enter the values for a, b, c arbitrarily chosen from equivalenceclass	5	5	5	Message must be displayed as “the triangle is Equilateral”	Pass		

TEST2c_2	Enter the values for a, b, c arbitrarily chosen from equivalenceclass	2	2	3	Message must be displayed as “the triangle is Isosceles”	Pass	
TEST2c_3	Enter the values for a, b, c arbitrarily chosen from equivalenceclass	3	4	5	Message must be displayed as “the triangle is Scalene”	Pass	
TEST2c_4	Enter the values for a, b, c arbitrarily chosen from equivalenceclass	4	1	3	Message must be displayed as “Not a Triangle”	Pass	

RESULT & DISCUSSION

Thus, the above programs are written and executed using JUnit and ECLEMMA, and 100% coverage is achieved.

Exp. No. : 6

Date :

DEMONSTRATION OF WHITE BOX TESTING TECHNIQUE USING ECLEMMA

Demonstrate white box testing techniques using open-source testing tool JUnit and ECLEMMA. Implement and execute test cases for achieving full statement coverage, decision/branch coverage and condition coverage for the NextDate problem.

IMPLEMENTATION

*JAVA CODE

```
public class nextdate {

	public static String next(int d,int m,int  y,int cc){
		if(d==cc){
			d=1;
			if(m==12){
				y++;
				m=1;
			}
			else{
				m++;
			}
		}
		else {
			d++;
		}

		return(String.valueOf(d)+"/"+String.valueOf(m)+"/"+String.valueOf(y));
	}
	public String nextday(int d,int m,int y){
		if(d>=1 && d<=31 && m>=1 && m<=12 && y>=1812 && y<=2012){
			switch(m){
			case 1:
			case 3:
			case 5:
			case 8:
			case 10:
			case 12:return(next(d,m,y,31));
			case 4:
			case 6:
			case 9:
			case 11:return(next(d,m,y,30));
			default:return(next(d,m,y,((y%4==0 && y%100!=0) || y%400==0)?29:28));
			}
		}
		return "Invalid inputs";
	}

}
```

*<u>**Junit Code**</u>

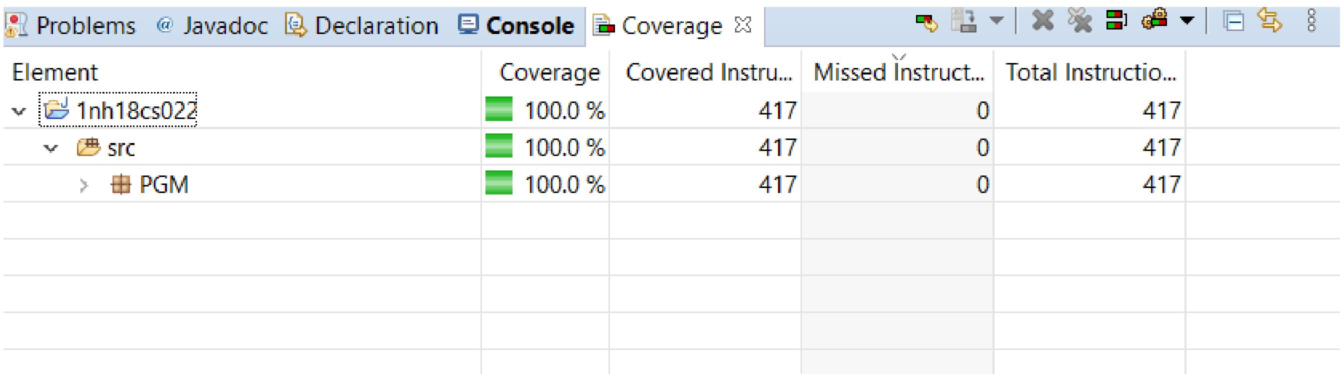
```
import static org.junit.Assert.*;
import org.junit.Test;



public class test {

	//weak and strong normal test cases
		@Test
		public void test1()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(15,3,1912),"16/3/1912");
		}
		@Test
		public void test2()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(15,4,1912),"16/4/1912");
		}
		@Test
		public void test3()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(16,4,1912),"17/4/1912");
		}
		@Test
		public void test4()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(15,3,1912),"16/3/1912");
		}
		@Test
		public void test5()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(10,11,1920),"11/11/1920");
		}

		@Test
		public void test6()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(13,15,1912),"Invalid inputs");
		}
		@Test
		public void test7()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(32,1,1813),"Invalid inputs");
		}
		@Test
		public void test8()
```

```
{
        nextdate d1 = new nextdate();
        assertEquals(d1.nextday(7,1,1810),"Invalid inputs");
}

@Test
public void test9()
{
        nextdate d1 = new nextdate();
        assertEquals(d1.nextday(7,10,1912),"8/10/1912");
}
@Test
public void test10()
{
        nextdate d1 = new nextdate();
        assertEquals(d1.nextday(6,11,2011),"7/11/2011");
}
@Test
public void test11()
{
        nextdate d1 = new nextdate();
        assertEquals(d1.nextday(18,8,2012),"19/8/2012");
}


@Test
public void test12()
{
        nextdate d1 = new nextdate();
        assertEquals(d1.nextday(-1,15,1912),"Invalid inputs");
}
@Test
public void test13()
{
        nextdate d1 = new nextdate();
        assertEquals(d1.nextday(6,-1,1810),"Invalid inputs");
}
@Test
public void test14()
{
        nextdate d1 = new nextdate();
        assertEquals(d1.nextday(32,10,1811),"Invalid inputs");
}
@Test
public void test15()
{
        nextdate d1 = new nextdate();
        assertEquals(d1.nextday(1,2,1912),"2/2/1912");
}
@Test
public void test16()
{
        nextdate d1 = new nextdate();
        assertEquals(d1.nextday(5,6,2000),"6/6/2000");
```

```
		}
		@Test
		public void test17()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(21,6,2000),"22/6/2000");
		}
		@Test
		public void test18()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(-1,-1,-1),"Invalid inputs");
		}
		@Test
		public void test19()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(31,1,2001),"1/2/2001");
		}
		@Test
		public void test20()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(31,12,2001),"1/1/2002");
		}
		@Test
		public void test21()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(0,0,2013),"Invalid inputs");

	}
		@Test
		public void test22()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(28,2,2011),"1/3/2011");
		}
		@Test
		public void test23()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(28,13,2012),"Invalid inputs");
		}
		@Test
		public void test24()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(28,2,2012),"29/2/2012");
		}
		@Test
		public void test25()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(28,2,2000),"29/2/2000");
		}
		@Test
		public void test26()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(31,1,1812),"1/2/1812");
		}
		@Test
		public void test27()
		{
			nextdate d1 = new nextdate();
			assertEquals(d1.nextday(31,12,2012),"1/1/2013");
		}

}
```

EXECUTION

SAMPLE



Element	Coverage	Covered Instru...	Missed Instruct...	Total Instructio...
1nh18cs022	🟩 100.0 %	417	0	417
src	🟩 100.0 %	417	0	417
PGM	🟩 100.0 %	417	0	417

RESULT & DISCUSSION /*MUST BE HAND WRITTEN*/

Thus, the above programs are written and executed using JUnit and ECLEMMA, and 100% coverage is achieved.

Exp. No. : 7

Date :

DEMONSTRATION OF SELENIUM IDE FOR CONDUCTING TEST ON WEBSITE(S)

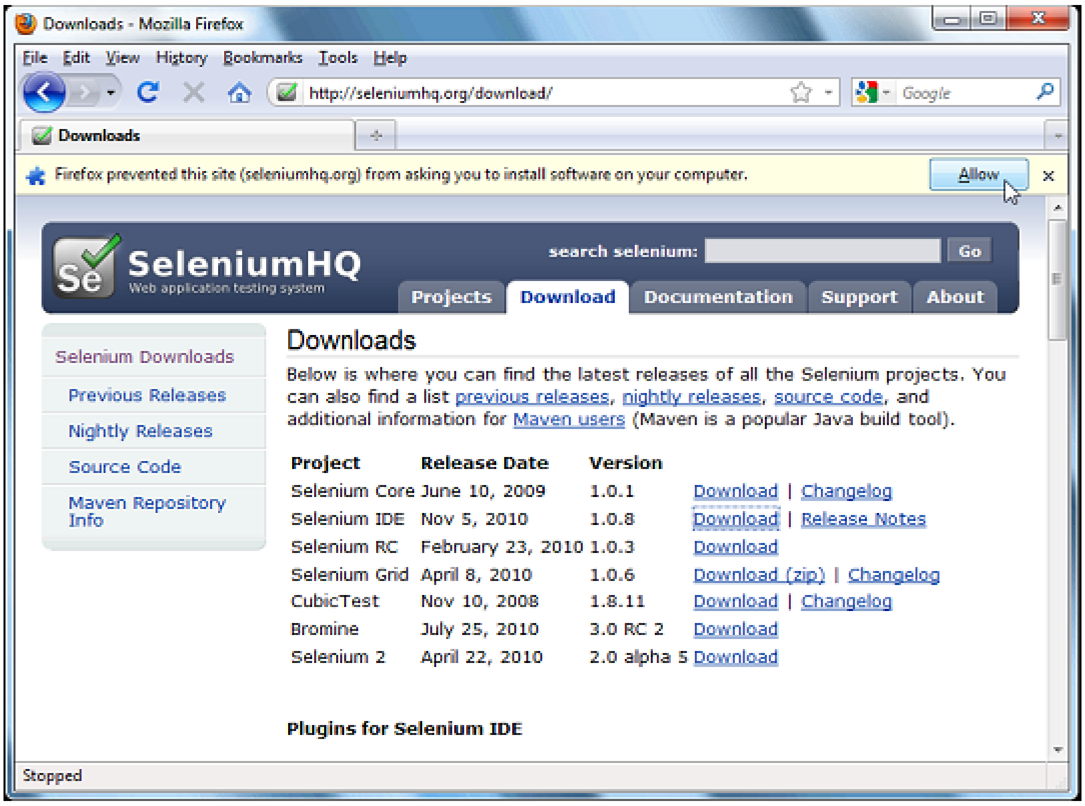
Designing Test Cases using Selenium IDE.

IMPLEMENTATION

Installing Selenium IDE

Step 1: Using Firefox, first, download the IDE from the SeleniumHQ downloads page.

Step 2: Firefox will protect you from installing add-ons from unfamiliar locations, so you will need to click 'Allow' to proceed with the installation, as shown in the following screenshot.



Firefox prevented this site (seleniumhq.org) from asking you to install software on your computer.

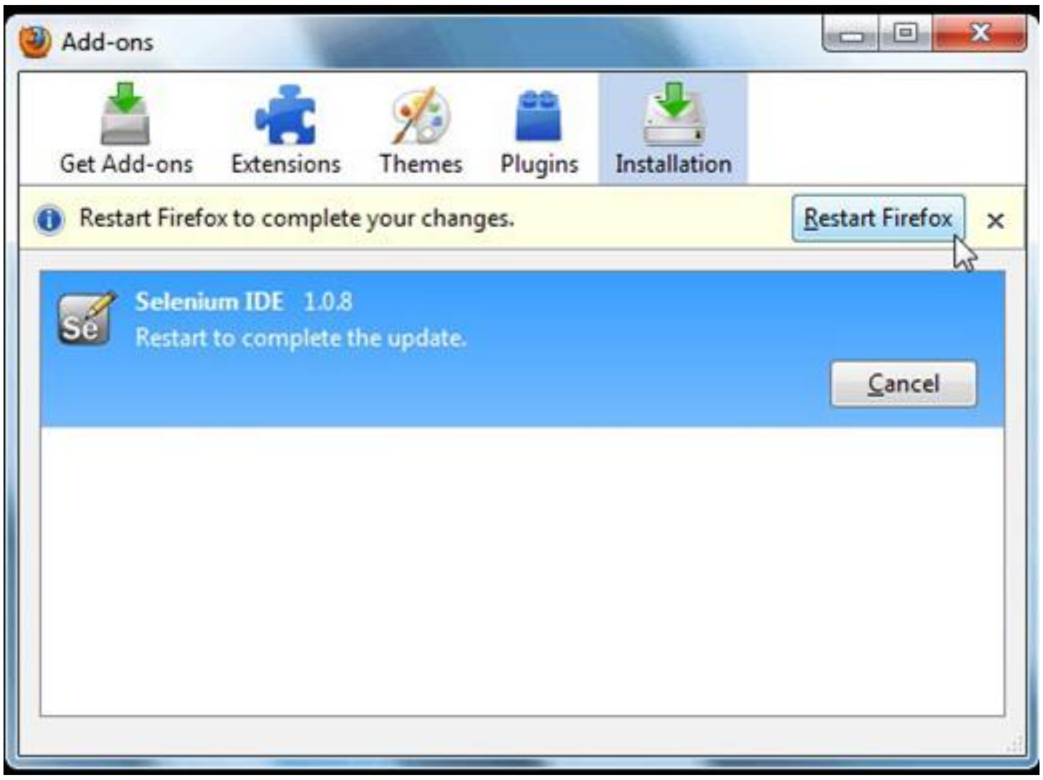
Downloads

Below is where you can find the latest releases of all the Selenium projects. You can also find a list previous releases, nightly releases, source code, and additional information for Maven users (Maven is a popular Java build tool).

Project	Release Date	Version	
Selenium Core	June 10, 2009	1.0.1	Download | Changelog
Selenium IDE	Nov 5, 2010	1.0.8	Download | Release Notes
Selenium RC	February 23, 2010	1.0.3	Download
Selenium Grid	April 8, 2010	1.0.6	Download (zip) | Changelog
CubicTest	Nov 10, 2008	1.8.11	Download | Changelog
Bromine	July 25, 2010	3.0 RC 2	Download
Selenium 2	April 22, 2010	2.0 alpha 5	Download

Plugins for Selenium IDE

Step 3: Select Install Now. The Firefox Add-ons window pops up, first showing a progress bar, and when the download is complete, displays the following.



Restart Firefox to complete your changes.

Selenium IDE 1.0.8
Restart to complete the update.

Step 4: Restart Firefox. After Firefox reboots you will find the Selenium-IDE listed under the Firefox Tools menu.

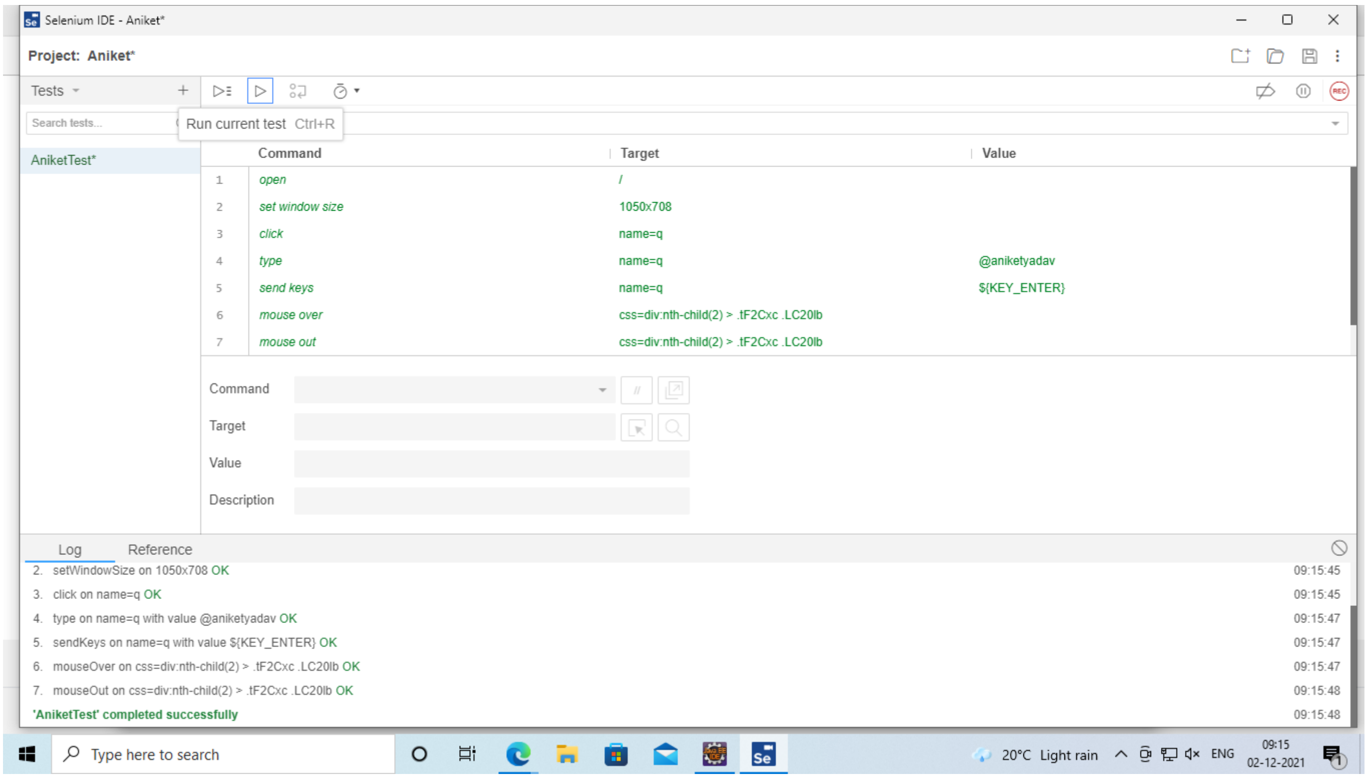
TEST CASES

TC'S #1: Manual Steps:

- Open (Example: Type www.google.com)
- Type "Software Te sting" in the Google Search Input Box
- Click outside on an empty spot
- Click Search Button
- Verify the Text Present as "Software Testing"
- Assert the Title as "Software Testing"
- Save the test case with .HTML Extension.

EXECUTION

SAMPLE:



	Command	Target	Value
1	open	/	
2	set window size	1050x708	
3	click	name=q	
4	type	name=q	@aniketyadav
5	send keys	name=q	${KEY_ENTER}
6	mouse over	css=div:nth-child(2) > .tF2Cxc .LC20lb	
7	mouse out	css=div:nth-child(2) > .tF2Cxc .LC20lb	

Command	
Target	
Value	
Description	

```
2.  setWindowSize on 1050x708 OK                                  09:15:45
3.  click on name=q OK                                            09:15:45
4.  type on name=q with value @aniketyadav OK                     09:15:47
5.  sendKeys on name=q with value ${KEY_ENTER} OK                 09:15:47
6.  mouseOver on css=div:nth-child(2) > .tF2Cxc .LC20lb OK        09:15:47
7.  mouseOut on css=div:nth-child(2) > .tF2Cxc .LC20lb OK         09:15:48
'AniketTest' completed successfully                               09:15:48
```

RESULT:

Thus, the demonstration of Selenium IDE for conducting test on a website is done successfully.

Exp. No. : 8

Date :

DEMONSTRATION OF SELENIUM WEBDRIVER FOR CONDUCTING TEST ON WEBSITE(S)

Write an automated selenium script to login into a web page by using Selenium Web driver, automate any website using Java Script.

IMPLEMENTATION

INSTALLATION

Step 1: Download the Selenium Server Standalone as follows:
https://www.seleniumhq.org/download/ → Latest Release: ChromeDriver 2.43 → Selenium Server Standalone.

Step 2: Download Selenium Web Driver from https://www.seleniumhq.org/download/ → Third Party Browser Drivers not developed by seleniumhq → Google Chrome Driver

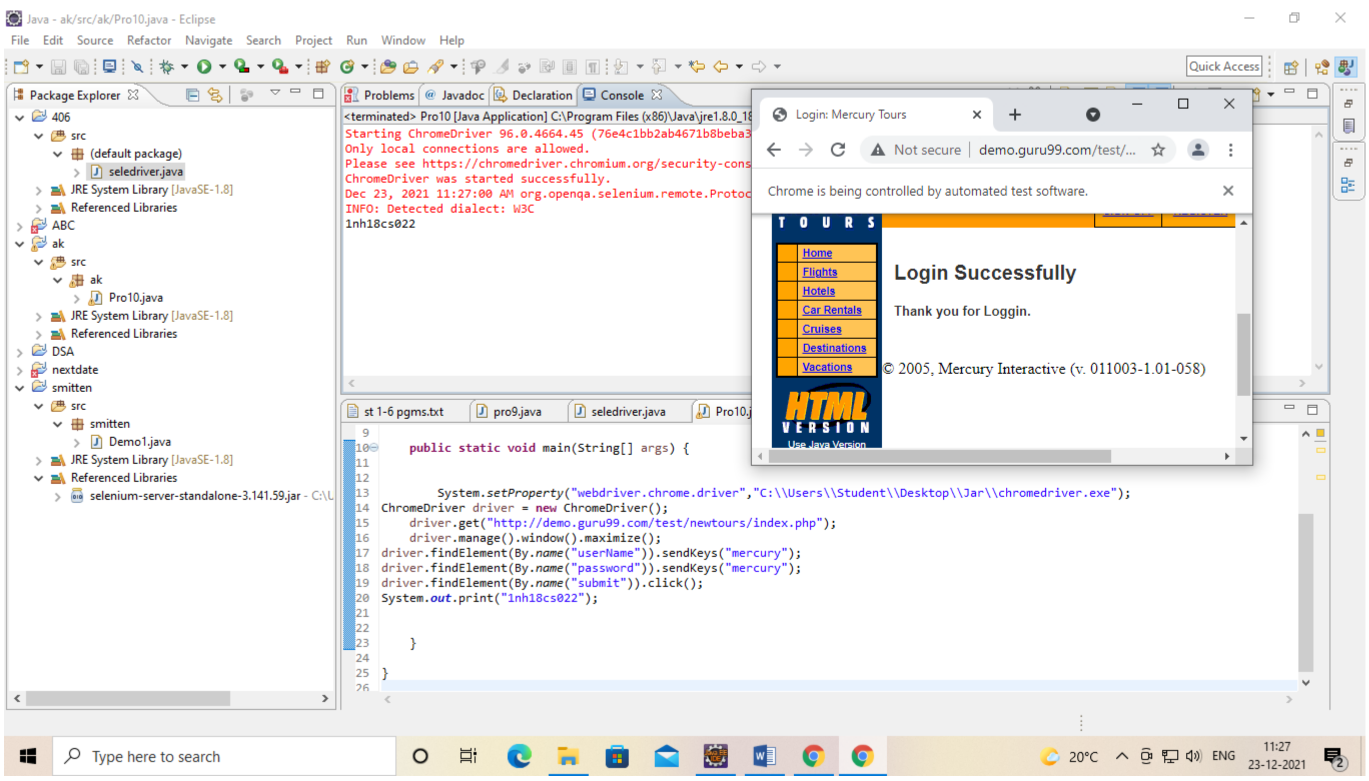
Step 3: Extract the jar file of Selenium Server Standalone and add it to the project (eclipse) created as follows: Right Click on the Project → Build Path → Configure Build Path → Library (tab) → Add External Jar → Add the Selenium Server Standalone jar.

JAVA SCRIPT

```
import org.openqa.selenium.By;
import org.openqa.selenium.chrome.ChromeDriver;

public class Demo1 {
                public static void main(String[] args)
{
                        System.setProperty("webdriver.chrome.driver",
                        C:\\Users\\User\\Downloads\\chromedriver.exe");
                        ChromeDriver driver = new ChromeDriver();
                        driver.get("http://www.newtours.demoaut.com");
                        driver.manage().window().maximize();
                        driver.findElement(By.name("userName")).sendKeys("mercury");
                        driver.findElement(By.name("password")).sendKeys("mercury");
                        driver.findElement(By.name("login")).click();
                        }
                       }
```

EXECUTION

SAMPLE



```
<terminated> Pro10 [Java Application] C:\Program Files (x86)\Java\jre1.8.0_18
Starting ChromeDriver 96.0.4664.45 (76e4c1bb2ab4671b8beba3
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-cons
ChromeDriver was started successfully.
Dec 23, 2021 11:27:00 AM org.openqa.selenium.remote.Protoc
INFO: Detected dialect: W3C
1nh18cs022
```

```java
    public static void main(String[] args) {


        System.setProperty("webdriver.chrome.driver","C:\\Users\\Student\\Desktop\\Jar\\chromedriver.exe");
ChromeDriver driver = new ChromeDriver();
    driver.get("http://demo.guru99.com/test/newtours/index.php");
    driver.manage().window().maximize();
driver.findElement(By.name("userName")).sendKeys("mercury");
driver.findElement(By.name("password")).sendKeys("mercury");
driver.findElement(By.name("submit")).click();
System.out.print("1nh18cs022");


    }

}
```

Login Successfully

Thank you for Loggin.

© 2005, Mercury Interactive (v. 011003-1.01-058)

Java - ak/src/ak/Pro10.java - Eclipse
Login: Mercury Tours
Not secure | demo.guru99.com/test/...
Chrome is being controlled by automated test software.
Home
Flights
Hotels
Car Rentals
Cruises
Destinations
Vacations
HTML VERSION
Use Java Version

RESULT:

Thus, the above program is written and executed using selenium web driver.

Exp. No. : 9

Date :

DEMONSTRATION OF SELENIUM IDE & WEBDRIVER FOR CONDUCTING TEST ON WEBSITE(S)

Write a test program to list the total number of objects present on a web page

IMPLEMENTATION

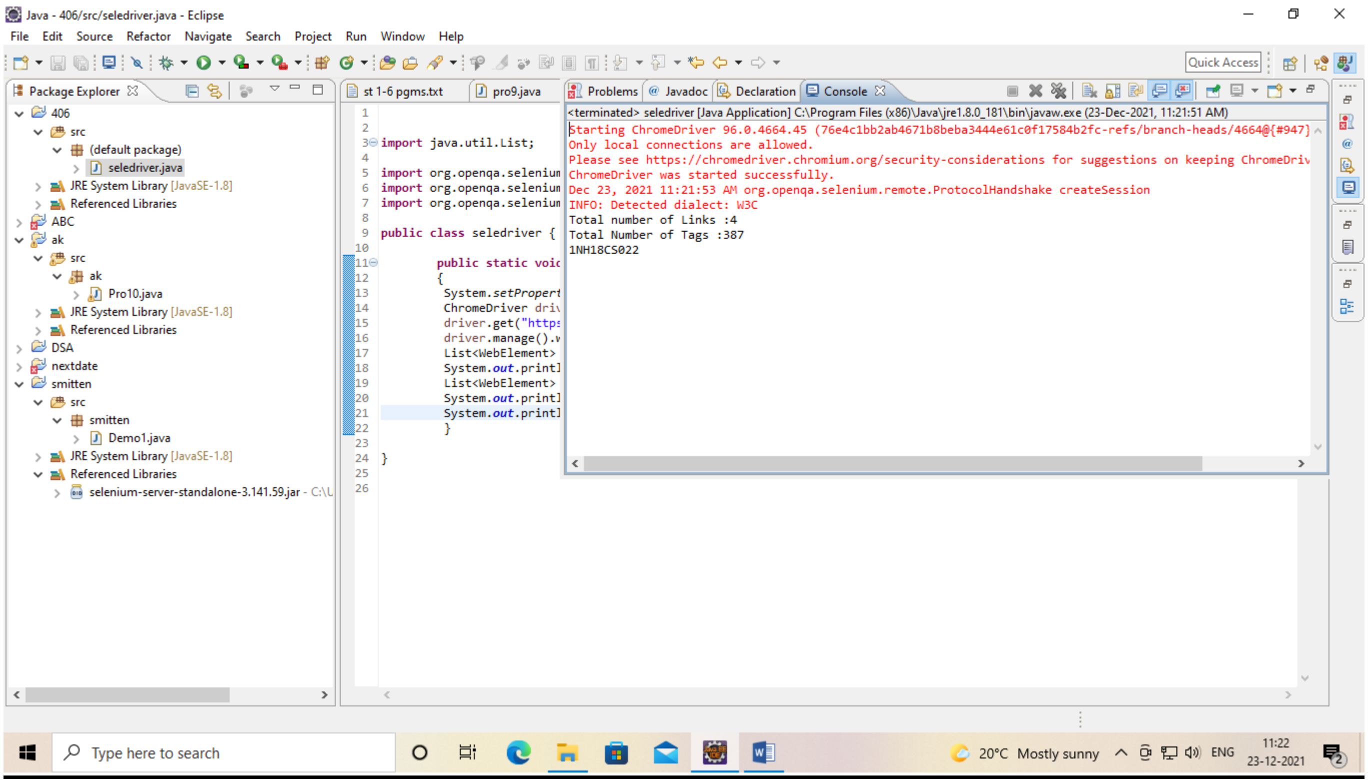
INSTALLATION

Step 1: Download the Selenium Server Standalone as follows:
https://www.seleniumhq.org/download/ → Latest Release: ChromeDriver 2.43 → Selenium Server Standalone.
Step 2: Download Selenium Web Driver from https://www.seleniumhq.org/download/ → Third Party Browser Drivers not developed by seleniumhq → Google Chrome Driver
Step 3: Extract the jar file of Selenium Server Standalone and add it to the project (eclipse) created as follows: Right Click on the Project → Build Path → Configure Build Path → Library (tab) → Add External Jar → Add the Selenium Server Standalone jar.

PROGRAM

```
package ex9;
import org.openqa.selenium.By;
import org.openqa.selenium.chrome.ChromeDriver;
import org.openqa.selenium.WebElement;
import java.util.List;

public class links {
public static void main(String[] args){
System.setProperty("webdriver.chrome.driver","C:\\Users\\Student\\Downloads\\chromedriver_win32
(1)\\chromedriver.exe");
ChromeDriver d=new ChromeDriver();
d.get("C:\\Users\\Student\\Desktop\\image.html");
List <WebElement> a=d.findElements(By.xpath("//select"));
int linkcount=a.size();
System.out.println("total no of links ="+linkcount);

List <WebElement> b=d.findElements(By.xpath("//*"));
int elements=b.size();
System.out.println("total no of elements ="+elements);

}

}
```

EXECUTION



```
import java.util.List;

import org.openqa.selenium
import org.openqa.selenium
import org.openqa.selenium

public class seledriver {

        public static voic
        {
         System.setPropert
         ChromeDriver driv
         driver.get("https
         driver.manage().v
         List<WebElement>
         System.out.printl
         List<WebElement>
         System.out.printl
         System.out.printl
         }

}
```

```
<terminated> seledriver [Java Application] C:\Program Files (x86)\Java\jre1.8.0_181\bin\javaw.exe (23-Dec-2021, 11:21:51 AM)
Starting ChromeDriver 96.0.4664.45 (76e4c1bb2ab4671b8beba3444e61c0f17584b2fc-refs/branch-heads/4664@{#947}
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriv
ChromeDriver was started successfully.
Dec 23, 2021 11:21:53 AM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Total number of Links :4
Total Number of Tags :387
1NH18CS022
```

RESULT

Thus, the above program is written and executed using selenium web driver.

Exp. No. : 10

Date :

DEMONSTRATION OF SELENIUM IDE & WEBDRIVER FOR CONDUCTING TEST ON WEBSITE(S)

Write a test program to demonstrate URL and title check point

IMPLEMENTATION

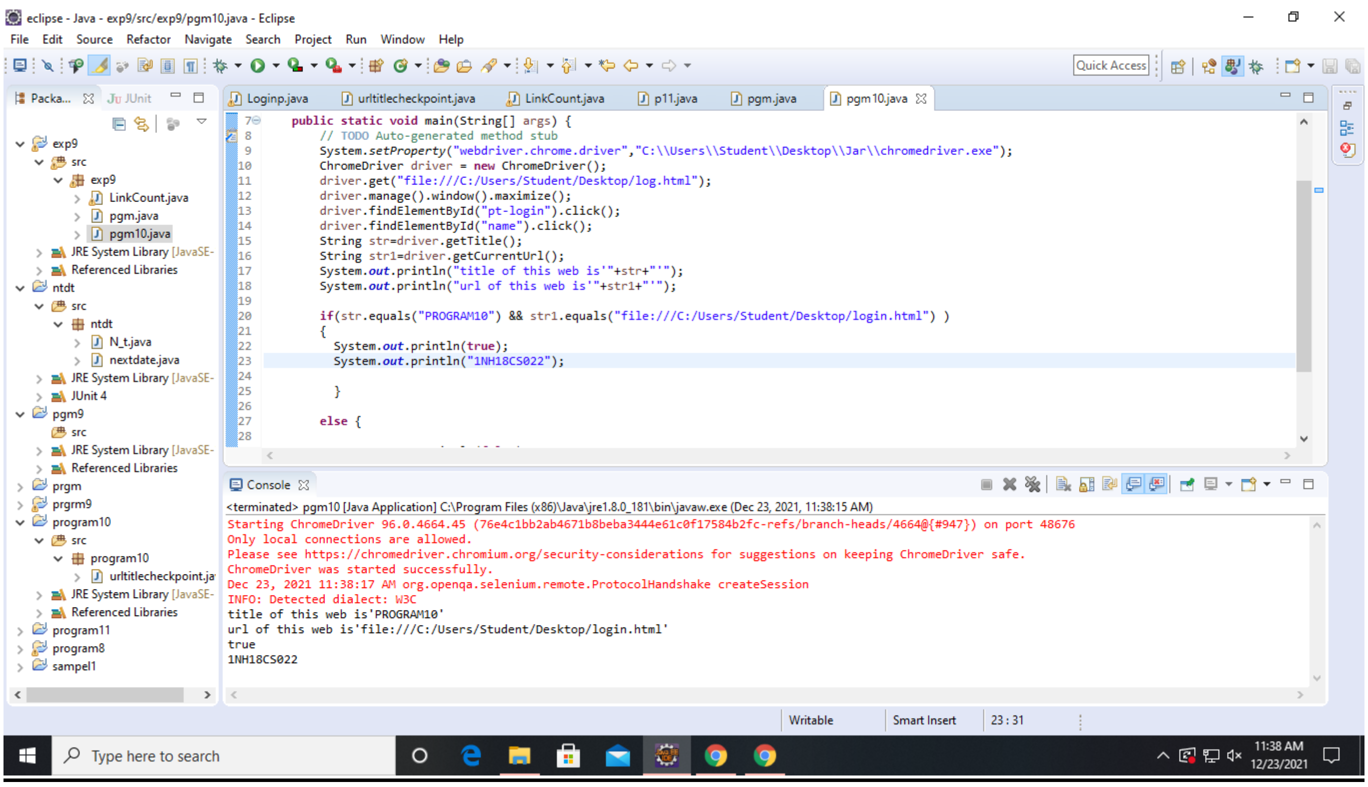
INSTALLATION

Step 1: Download the Selenium Server Standalone as follows:
https://www.seleniumhq.org/download/ → Latest Release: ChromeDriver 2.43 → Selenium Server Standalone.
Step 2: Download Selenium Web Driver from https://www.seleniumhq.org/download/ → Third Party Browser Drivers not developed by seleniumhq → Google Chrome Driver
Step 3: Extract the jar file of Selenium Server Standalone and add it to the project (eclipse) created as follows: Right Click on the Project → Build Path → Configure Build Path → Library (tab) → Add External Jar → Add the Selenium Server Standalone jar.

PROGRAM

```
package progten;
import org.openqa.selenium.chrome.ChromeDriver;
public class ANIKET_1NH18CS067{
public static void main(String[] args) {
System.setProperty("webdriver.chrome.driver","C:\\\\Users\\\\Student\\\\Desktop\\\\Jar\\\\chromedriver.ex
e");
ChromeDriver driver = new ChromeDriver();
driver.get("https://en.wikipedia.org/wiki/Wikipedia");
driver.manage().window().maximize();
driver.findElementById("pt-login").click();
String str=driver.getCurrentUrl();
System.out.println("Url of current webpage is '"+str+"'");
if(str.equals("https://en.wikipedia.org/w/index.php?title=Special:UserLogin&returnto=Wikipedia"))
System.out.println(true);
else
System.out.println(false);
ChromeDriver d = new ChromeDriver();
d.get("C:\\Users\\Student\\Desktop\\login.html");
d.manage().window().maximize();

String s=d.getTitle();
System.out.println("Title of current webpage is '"+s+"'");
if(s.equals("LOGIN"))
System.out.println(true);
else
System.out.println(false);
}
}
```

EXECUTION



```
    public static void main(String[] args) {
        // TODO Auto-generated method stub
        System.setProperty("webdriver.chrome.driver","C:\\Users\\Student\\Desktop\\Jar\\chromedriver.exe");
        ChromeDriver driver = new ChromeDriver();
        driver.get("file:///C:/Users/Student/Desktop/log.html");
        driver.manage().window().maximize();
        driver.findElementById("pt-login").click();
        driver.findElementById("name").click();
        String str=driver.getTitle();
        String str1=driver.getCurrentUrl();
        System.out.println("title of this web is'"+str+"'");
        System.out.println("url of this web is'"+str1+"'");

        if(str.equals("PROGRAM10") && str1.equals("file:///C:/Users/Student/Desktop/login.html") )
        {
          System.out.println(true);
          System.out.println("1NH18CS022");

          }

        else {
```

```
<terminated> pgm10 [Java Application] C:\Program Files (x86)\Java\jre1.8.0_181\bin\javaw.exe (Dec 23, 2021, 11:38:15 AM)
Starting ChromeDriver 96.0.4664.45 (76e4c1bb2ab4671b8beba3444e61c0f17584b2fc-refs/branch-heads/4664@{#947}) on port 48676
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriver safe.
ChromeDriver was started successfully.
Dec 23, 2021 11:38:17 AM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
title of this web is'PROGRAM10'
url of this web is'file:///C:/Users/Student/Desktop/login.html'
true
1NH18CS022
```

RESULT

Thus, the above program is written and executed using selenium web driver.

Exp. No. : 11

Date :

DEMONSTRATION OF SELENIUM IDE & WEBDRIVER FOR CONDUCTING TEST ON WEBSITE(S)

Write a test program to demonstrate selecting and deselecting option from multi select dropdown

IMPLEMENTATION

INSTALLATION

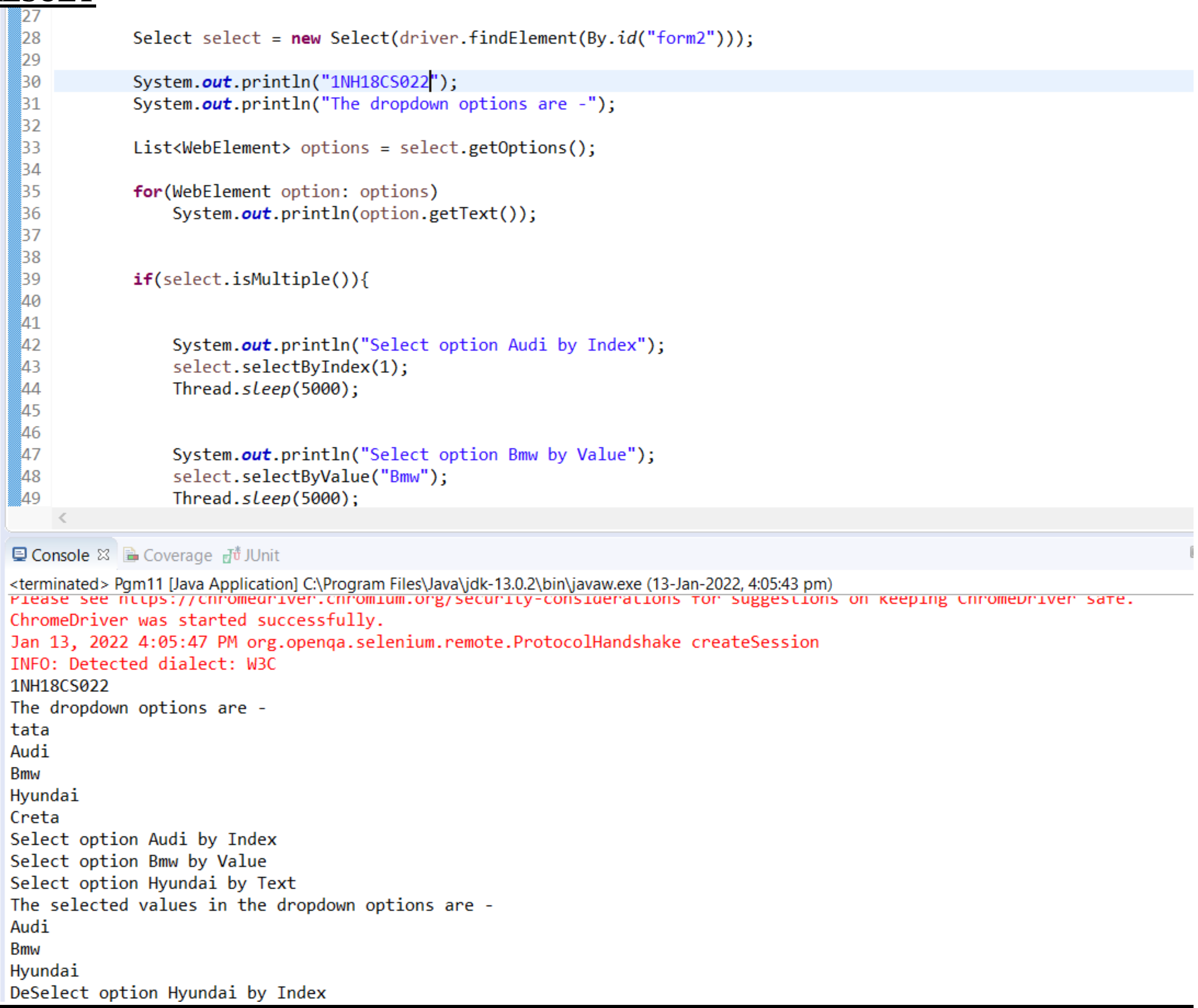
Step 1: Download the Selenium Server Standalone as follows:
https://www.seleniumhq.org/download/ → Latest Release: ChromeDriver 2.43 → Selenium Server Standalone.
Step 2: Download Selenium Web Driver from https://www.seleniumhq.org/download/ → Third Party Browser Drivers not developed by seleniumhq → Google Chrome Driver
Step 3: Extract the jar file of Selenium Server Standalone and add it to the project (eclipse) created as follows: Right Click on the Project → Build Path → Configure Build Path → Library (tab) → Add External Jar → Add the Selenium Server Standalone jar.

PROGRAM

```
package seledriver;

import java.util.List;

import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.chrome.ChromeDriver;
import org.openqa.selenium.support.ui.Select;

public class dropdown3 {

    public static void main(String[] args) throws InterruptedException {

            //pgm 11_Write a test program to demonstrate selecting and
            //deselecting option from multi select dropdown

        //Creating instance of Chrome driver
            System.setProperty("webdriver.chrome.driver",
                        "D:\\Software\\Eclipse&JAR\\Jar\\chromedriver_win32\\chromedriver.exe");
                WebDriver driver = new ChromeDriver();

        // Navigate to the URL
        driver.get("https://demoqa.com/select-menu");
                //driver.get("file:///D:/NHCE/academic%20files/Academic%20files%20ODD%2021-
22/ST/st%20lab/LAB-Checked/dropdown.html");
        //Maximizing window
        driver.manage().window().maximize();
```

```
//Selecting the multi-select element by locating its id
Select select = new Select(driver.findElement(By.id("cars")));

//Get the list of all the options
System.out.println("The dropdown options are -");

List<WebElement> options = select.getOptions();

for(WebElement option: options)
   System.out.println(option.getText());

//Using isMultiple() method to verify if the element is multi-select,
//if yes go onto next steps else exit
if(select.isMultiple()){

   //Selecting option as 'Opel'-- ByIndex
   System.out.println("Select option Opel by Index");
   select.selectByIndex(2);
   Thread.sleep(5000);

   //Selecting the option as 'Saab'-- ByValue
   System.out.println("Select option saab by Value");
   select.selectByValue("saab");
   Thread.sleep(5000);

   // Selecting the option by text
   System.out.println("Select option Audi by Text");
   select.selectByVisibleText("Audi");
   Thread.sleep(5000);

   //Get the list of selected options
   System.out.println("The selected values in the dropdown options are -");

   List<WebElement> selectedOptions = select.getAllSelectedOptions();

   for(WebElement selectedOption: selectedOptions)
      System.out.println(selectedOption.getText());


   // Deselect the value "Audi" by Index
   System.out.println("DeSelect option Audi by Index");
   select.deselectByIndex(3);
   Thread.sleep(10000);

   //Deselect the value "Opel" by visible text
   System.out.println("Select option Opel by Text");
   select.deselectByVisibleText("Opel");
   //Thread.sleep(10000);

   //Validate that both the values are deselected
   System.out.println("The selected values after deselect in the dropdown options are -");
   List<WebElement> selectedOptionsAfterDeselect = select.getAllSelectedOptions();
```

```
            for(WebElement selectedOptionAfterDeselect: selectedOptionsAfterDeselect)
               System.out.println(selectedOptionAfterDeselect.getText());

            //Step#8- Deselect all values
            select.deselectAll();
         }

         driver.quit();
      }

   }
```
RESULT



```
        Select select = new Select(driver.findElement(By.id("form2")));

        System.out.println("1NH18CS022");
        System.out.println("The dropdown options are -");

        List<WebElement> options = select.getOptions();

        for(WebElement option: options)
            System.out.println(option.getText());


        if(select.isMultiple()){


            System.out.println("Select option Audi by Index");
            select.selectByIndex(1);
            Thread.sleep(5000);


            System.out.println("Select option Bmw by Value");
            select.selectByValue("Bmw");
            Thread.sleep(5000);
```

Console Coverage JUnit

```
<terminated> Pgm11 [Java Application] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (13-Jan-2022, 4:05:43 pm)
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriver safe.
ChromeDriver was started successfully.
Jan 13, 2022 4:05:47 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
1NH18CS022
The dropdown options are -
tata
Audi
Bmw
Hyundai
Creta
Select option Audi by Index
Select option Bmw by Value
Select option Hyundai by Text
The selected values in the dropdown options are -
Audi
Bmw
Hyundai
DeSelect option Hyundai by Index
```

Exp. No. : 12

Date :

DEMONSTRATION OF SELENIUM IDE & WEBDRIVER FOR CONDUCTING TEST ON WEBSITE(S)

Write a test program to demonstrate Synchronization

IMPLEMENTATION

INSTALLATION

Step 1: Download the Selenium Server Standalone as follows:
https://www.seleniumhq.org/download/ → Latest Release: ChromeDriver 2.43 → Selenium Server Standalone.
Step 2: Download Selenium Web Driver from https://www.seleniumhq.org/download/ → Third Party Browser Drivers not developed by seleniumhq → Google Chrome Driver
Step 3: Extract the jar file of Selenium Server Standalone and add it to the project (eclipse) created as follows: Right Click on the Project → Build Path → Configure Build Path → Library (tab) → Add External Jar → Add the Selenium Server Standalone jar.

PROGRAM

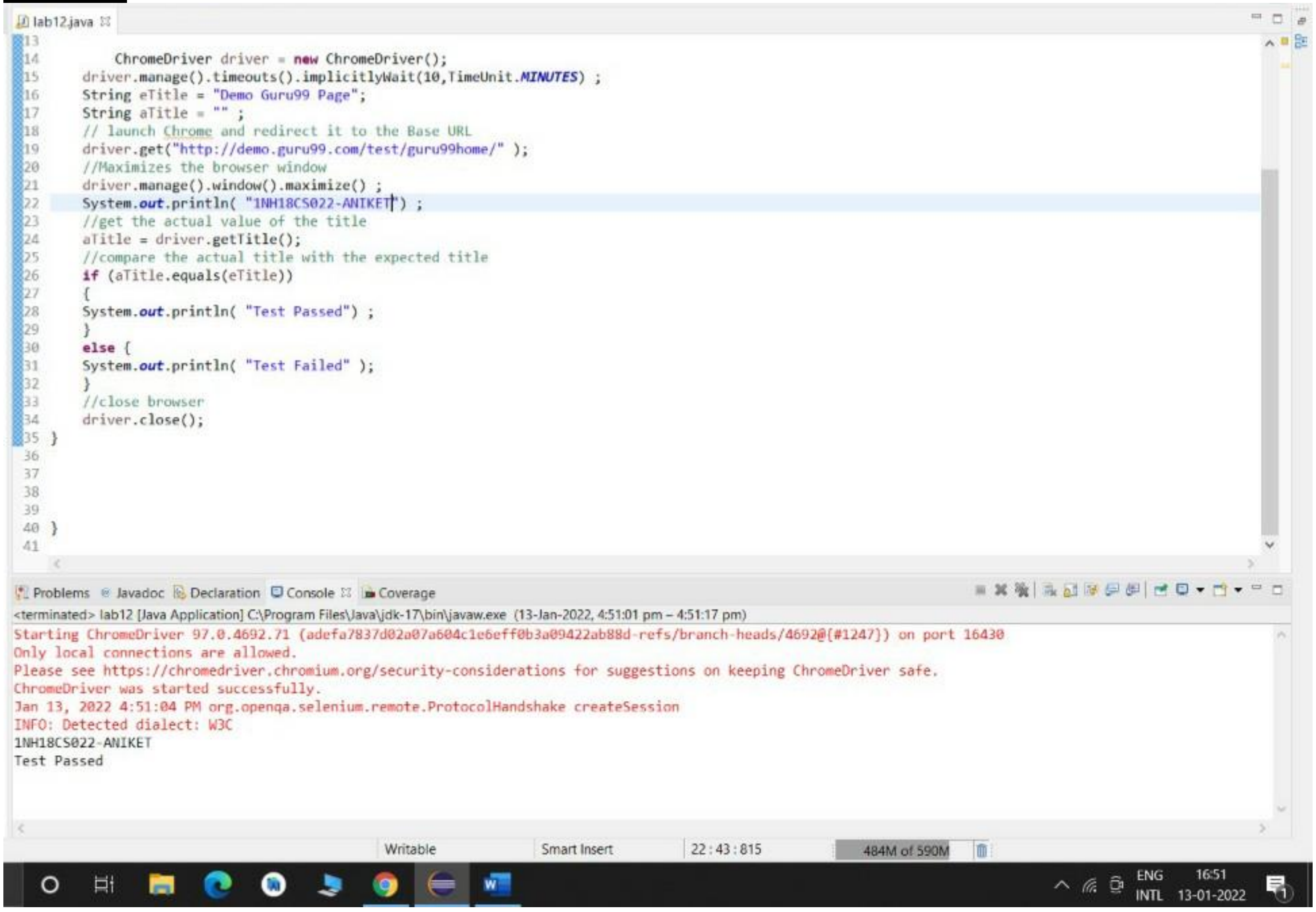
IMPLICIT

```
package seledriver;
import java.util.concurrent.TimeUnit;
import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.chrome.ChromeDriver;
//import org.testng.annotations.Test;
public class Implicit12_final {
	public static void main(String[] args) throws InterruptedException {
		System.setProperty ("webdriver.chrome.driver",
				"D:\\Software\\Eclipse&JAR\\Jar\\chromedriver_win32\\chromedriver.exe"
);
		ChromeDriver driver = new ChromeDriver();
	driver.manage().timeouts().implicitlyWait(10,TimeUnit.MINUTES) ;
	String eTitle = "Demo Guru99 Page";
	String aTitle = "" ;
	// launch Chrome and redirect it to the Base URL
	driver.get("http://demo.guru99.com/test/guru99home/" );
	//Maximizes the browser window
	driver.manage().window().maximize() ;
	//get the actual value of the title
	aTitle = driver.getTitle();
	//compare the actual title with the expected title
	if (aTitle.equals(eTitle))
	{
	System.out.println( "Test Passed") ;
	}
	else {
        System.out.println( "Test Failed" );
        }
        //close browser
        driver.close();
}
}
```

EXPLICIT

```
Package seledriver;

import java.util.List;
import java.util.concurrent.TimeUnit;
import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.chrome.ChromeDriver;
import org.openqa.selenium.support.ui.ExpectedConditions;
import org.openqa.selenium.support.ui.WebDriverWait;
public class Explicit12_final {
        public static void main(String[] args) throws InterruptedException {
        System.setProperty ("webdriver.chrome.driver",
                        "D:\\Software\\Eclipse&JAR\\Jar\\chromedriver_win32\\chromedriver.exe" );
        ChromeDriver driver = new ChromeDriver();
        WebDriverWait wait=new WebDriverWait(driver, 10);
        String eTitle = "Demo Guru99 Page";
        String aTitle = "" ;
        // launch Chrome and redirect it to the Base URL
        driver.get("http://demo.guru99.com/test/guru99home/" );
        //Maximizes the browser window
        driver.manage().window().maximize() ;
        //get the actual value of the title
        aTitle = driver.getTitle();
        //compare the actual title with the expected title
        if (aTitle.contentEquals(eTitle))
        {
        System.out.println( "Test Passed") ;
        }
        else {
        System.out.println( "Test Failed" );
        }
        //driver.close();
        WebElement        guru99=wait.until(ExpectedConditions.visibilityOfElementLocated(By.xpath(
"//a")));
        guru99.click();

        }

}
```

RESULT



lab12.java

```java
        ChromeDriver driver = new ChromeDriver();
    driver.manage().timeouts().implicitlyWait(10,TimeUnit.MINUTES) ;
    String eTitle = "Demo Guru99 Page";
    String aTitle = "" ;
    // launch Chrome and redirect it to the Base URL
    driver.get("http://demo.guru99.com/test/guru99home/" );
    //Maximizes the browser window
    driver.manage().window().maximize() ;
    System.out.println( "1NH18CS022-ANIKET") ;
    //get the actual value of the title
    aTitle = driver.getTitle();
    //compare the actual title with the expected title
    if (aTitle.equals(eTitle))
    {
    System.out.println( "Test Passed") ;
    }
    else {
    System.out.println( "Test Failed" );
    }
    //close browser
    driver.close();
 }




 }
```

```
<terminated> lab12 [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe  (13-Jan-2022, 4:51:01 pm – 4:51:17 pm)
Starting ChromeDriver 97.0.4692.71 (adefa7837d02a07a604c1e6eff0b3a09422ab88d-refs/branch-heads/4692@{#1247}) on port 16430
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriver safe.
ChromeDriver was started successfully.
Jan 13, 2022 4:51:04 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
1NH18CS022-ANIKET
Test Passed
```