Software Engineering

Experiment 9: Design test cases and generate test scripts in Selenium

Learning Objective: Students will able to create unit test cases

Tools: Selenium record and playback

Theory:

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test. Software testing also provides an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation.

Write a program to calculate the square of a number in the range 1-100

```
#include <stdio.h>
int main()
{
   int n, res;
   printf("Enter a number: ");
   scanf("%d", &n);
   if (n >= 1 && n <= 100)
   {
         res = n * n;
         printf("\n Square of %d is %d\n", n, res);
   }
   else if (n<= 0 || n > 100)
         printf("Beyond the range");
   return 0;
}
```

Sr.no	Input	Output
1	-2	Beyond the range
2	0	Beyond the range
3	1	Square of 1 is 1
4	100	Square of 100 is 10000
5	101	Beyond the range
6	4	Square of 4 is 16
7	62	Square of 62 is 3844

Test Cases

Test case 1: {I1 ,O1}
Test case 2 : {I2 ,O2}
Test case 3 : {I3, O3}
Test case 4 : {I4, O4}
Test case 5 : {I5, O5}
Test case 6 : {I6, O6}
Test case 7 : {I7, O7}

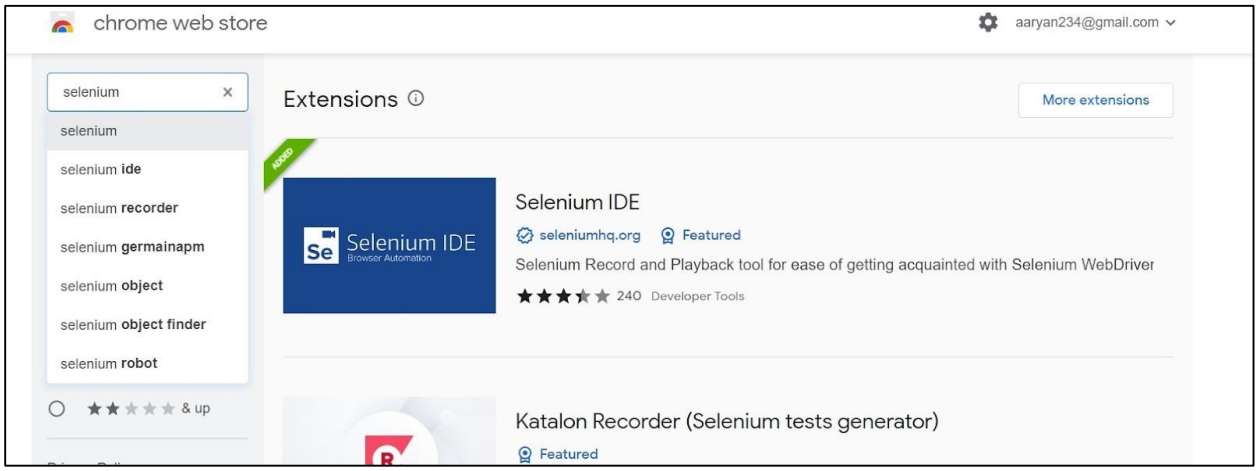
Black-box testing

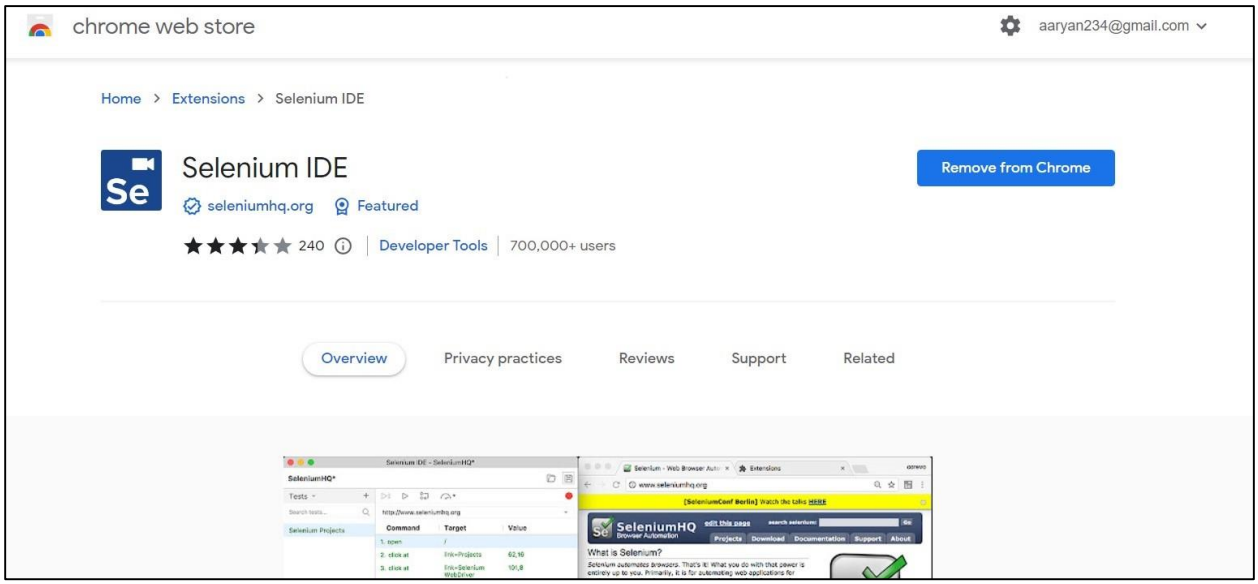
Knowing the specified function that a product has been designed to perform, test to see if that function is fully operational and error free. Includes tests that are conducted at the software interface. Not concerned with internal logical structure of the software

It uncovers

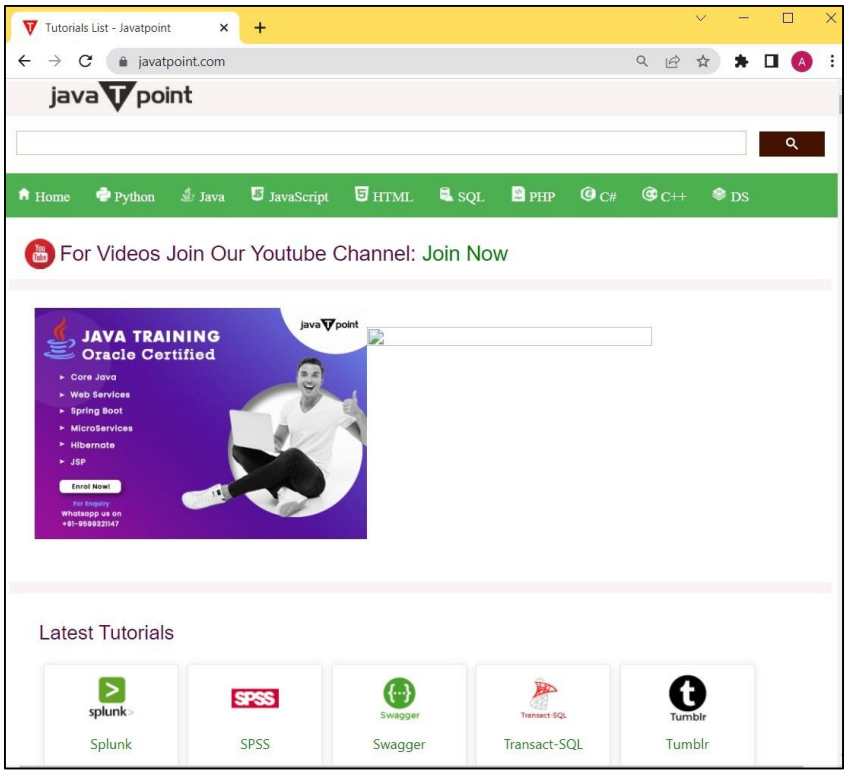
- Incorrect or missing functions
- Interface errors
- Errors in data structures or external database access
- Behavior or performance errors
- Initialization and termination errors

Result and Discussion:

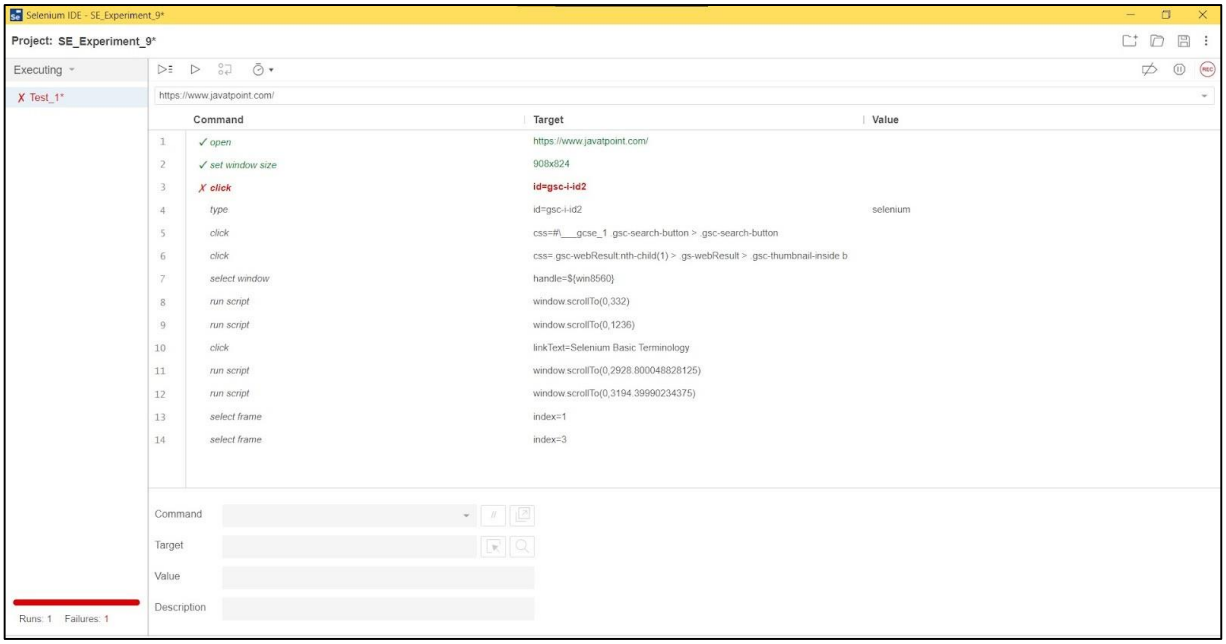




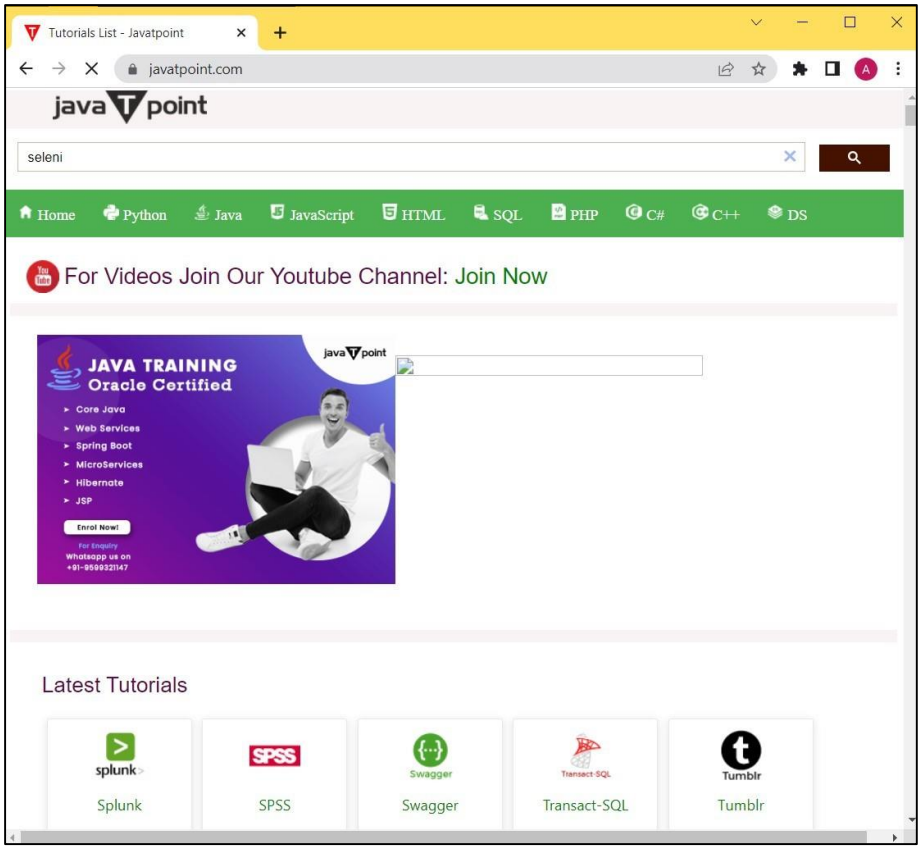
Installing Selenium IDE



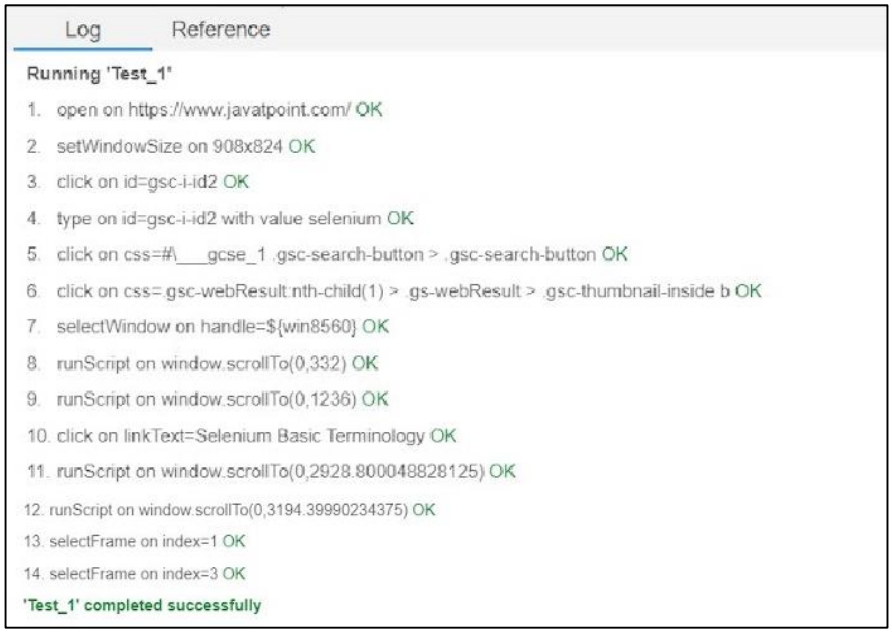
Website Selected for testing



Test cases running for the website, showing initial errors



Selenium resolving error and testing further



Log for successful Test Run on Selenium

Learning Outcomes: Students should have the ability to

LO1: Students will be able to understand Software Testing Concepts and the various Software standards.

LO2: to test a software with the help of Junit

LO3: create test cases

LO4: To understand different tools for testing

Outcomes: Upon completion of the course students will be able to write test cases for the project.

Conclusion: We learned about the concept of white box testing and black box testing and also learned their properties and features. We understood about the Selenium Tool and how to use it and finally implemented a test using this tool on a website. Several concepts related to testing were revised while performing this experiment.

Viva Questions:

1. **What is the difference between white box and black box testing?**
2. **What are Software Testing Concepts?**

For Faculty Use

Correction Parameters	**Formative Assessment [40%]**	**Timely completion of Practical [40%]**	**Attendance/ Learning Attitude [20%]**	
Marks Obtained				