A Micro Project report on

Perform automation testing for finding out the list and highest cost for specific product in any E-commerce website

Submitted to the CMR Institute of Technology in partial fulfillment of the requirement for the award of the Laboratory of

AUTOMATED TESTING TOOLS(SELENIUM)

of

III-B.Tech. I-Semester

in

Computer Science and Engineering Department

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CMR INSTITUTE OF TECHNOLOGY

(UGC AUTONOMUS)

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Kandlakoya,Medchal Road,Hyderabad

2023-2024

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Department of Computer Science and Engineering

CERTIFICATE

This is to certify that a Micro Project entitled with: "Perform automation testing for finding out the list and highest cost for specific product in any E-commerce website" is being Submitted By

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In partial fulfillment of the requirement for award of the Operating Systems of III-B.Tech I Semester in CSE towards a record of a bonafide work carried out under our guidance and supervision.

Signature of Faculty	**Signature of Course Coordinator**	**Signature of HOD**
Mrs.PriyaDarshini (Assistant Professor)		Mr.A.Prakash

ACKNOWLEDGEMENT

We are extremely grateful **Dr. M. Janga Reddy**, **Director**, **Dr. B.Satyanarayana**, **Principal** and **Mr.A.Prakash, Head of the Department**, Dept of Computer Science and Engineering, CMR Institute of Technology for their inspiration and valuable guidance during entire duration.

We are extremely thankful to our **Automated Testing Tools(Selenium)** Lab faculty in-charge**,** Computer Science and Engineering department, CMR Institute of Technology for his constant guidance, encouragement and moral support throughout the project.

We express our thanks to all staff members and friends for all the help and coordination extended in bringing out this Project successfully in time.

Finally, we are very much thankful to our parents and relatives who guided directly or indirectly for successful completion of the project.

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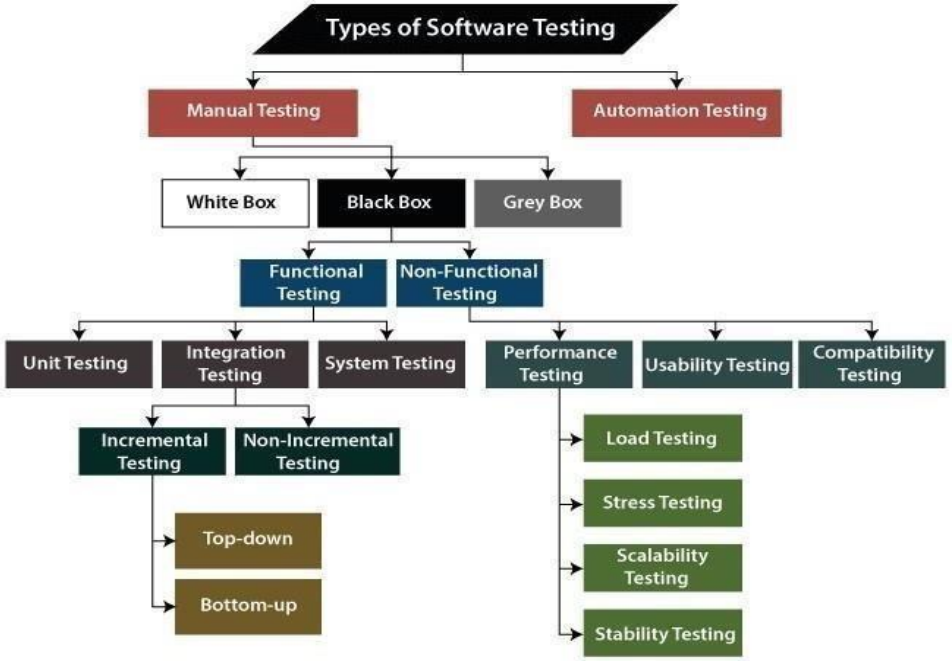
INTRODUCTION:

What is software testing?

Software testing is the process of evaluating and verifying that a software product or application does what it is supposed to do. The benefits of testing include preventing bugs, reducing development costs and improving performance.

Types of software testing:

- Manual Testing
- Automated Testing



MANUAL TESTING:

Manual testing is a software testing process in which test cases are executed manually without using any automated tool. All test cases executed by the tester manually according to the end user's perspective. It ensures whether the application is working, as mentioned in the requirement document or not. Test cases are planned and implemented to complete almost 100 percent of the software application. Test case reports are also generated manually.

Manual Testing is one of the most fundamental testing processes as it can find both visible and hidden defects of the software. is mandatory for every newly developed software before automated testing. This testing requires great efforts and time, but it gives the surety of bugfree software. Manual testing is essential because one of the software testing fundamentals is "100% automation is not possible."

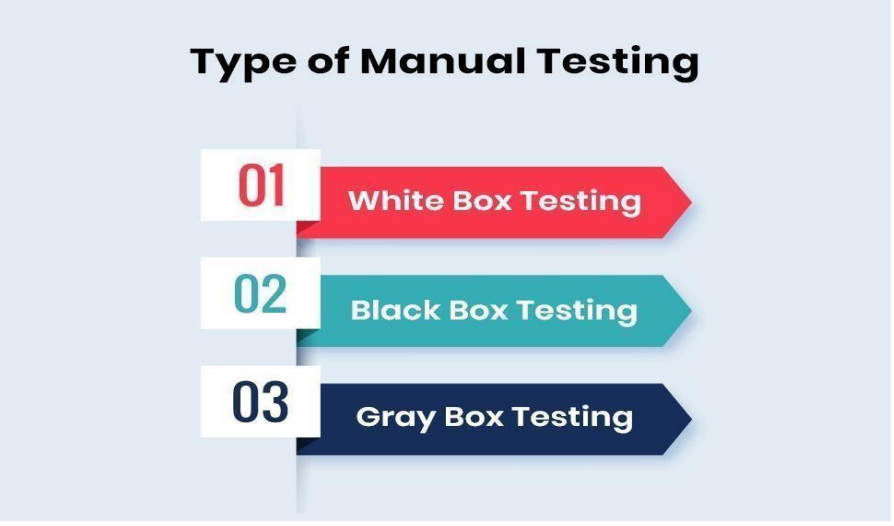
Whenever an application comes into the market, and it is unstable or having a bug or issues or creating a problem while end-users are using it. If we don't want to face these kinds of problems, we need to perform one round of testing to make the application bug free and stable and deliver a quality product to the client, because if the application is bug free, the end-user will use the application more conveniently.

If the test engineer does manual testing, he/she can test the application as an end-userperspective and get more familiar with the product, which helps them to write the correct test cases of the application and give the quick feedback of the application.

Types of Manual Testing:

There are various methods used for manual testing. Each technique is used according to its testing criteria. Types of manual testing are given below:

- White Box Testing
- Black Box Testing
- Grey Box Testing



Advantages of Manual Testing:

- It does not require programming knowledge while using the Black box method.
- It is used to test dynamically changing GUI designs.
- Tester interacts with software as a real user so that they are able to discover usability and user interface issues.
- It ensures that the software is a hundred percent bug-free.
- It is cost-effective.
- Easy to learn for new testers.

Disadvantages of Manual Testing:

- It requires a large number of human resources.
- It is very time-consuming.
- Tester develops test cases based on their skills and experience. There is no evidence that they have covered all functions or not.
- Test cases cannot be used again. Need to develop separate test cases for each new software.
- It does not provide testing on all aspects of testing.
- Since two teams work together, sometimes it is difficult to understand each other's motives, it can mislead the process.

AUTOMATED TESTING:

Automated testing is a process that validates if software is functioning appropriately and meeting requirements before it is released into production. This software testing method uses scripted sequences that are executed by testing tools. Automated testing tools execute examinations of the software, report outcomes and compare results with earlier test runs.

An organization can apply automated tests to a broad range of cases, such as unit, API and regression testing. Automated software testing's main benefit is that it simplifies as much of the manual effort as possible into a set of scripts. For example, if unit testing consumes a large percentage of a quality assurance (QA) team's resources, then this process should be evaluated as a candidate for automation.

Automated tests can run repeatedly at any time of day. This approach fits in with continuous testing as well as continuous integration (CI) and continuous delivery (CD) software

development practices, Which aim to shuttle code changes to production without gates that require manual intervention.

Advantages Of Automation Testing:

Enhanced Results

Since automation testing saves plenty of time even when complex and enormous systems are taken into consideration. This allows testing to be carried out repeatedly, delivering better and faster results with significantly lesser efforts and reduced time.

Swifter Feedback system

Automation testing is extremely crucial during the validation phase of any software project. It significantly enhances communication among the developers, designers, and product merchants, and provides space for the potential glitches to be rectified immediately thus enhancing the efficiency of the development team.

Brand Enhancement

The effectiveness of testing is always dependent on the quality of test data that is being used. Testing is often performed on the copies of live databases as creating relevant and quality test data takes copious amounts of time. Automation solutions allow you to re-use your data time and again. This saves a lot of costs from project handling and project maintenance perspective.

Cost-effective

Even though the initial investment needed for automation testing is on the higher end, it saves a lot of money for the company in the longer run. It is predominantly due to the reduction in the amount of time required to run the tests. It also contributes a much higher quality of work as there are no chances of neglect or human error. This decreases the necessity of fixing glitches in the post-release phase, thus saving huge amounts of project costs.

Efficiency Testing

Testing is one of the most pivotal parts of the entire application development cycle. The most attractive part of the automation testing is that it can be left virtually unattended. This leaves a lot of room for the results to be monitored towards the end of the process. This allows for increasing the overall efficiency of the application.

Increase in Coverage Area

Through the use of automation testing, more tests can be allotted pertaining to any application. This leads to higher testing coverage and a reduction in software anomalies. It also allows room for testing more features and complex applications. However, in order to the same thing in a manual testing scenario would require a massive team along with heavy time constraints.

Detailed Testing

All testers tend to have different testing approaches with different focus areas as per their exposure and level of expertise. With the help of automation, there is an equal focus on all areas of testing, thus assuring the best possible quality of the end product with greater emphasison each aspect of the product. Automation testing is known for its atom level approach of testing due to which it is considered error-free.

Reusability

Test Automation is repetitive in nature due to the nature of its test automation cases. In addition to an easy setup configuration, it gives the software developers an opportunity to assess the program‟s reaction. Automated test cases are totally reusable and hence can be utilized for testing any aspect of the code as per significance and through a plethora of different approaches.

Earlier Detection of Defects

Automation testing documents the software defects and hence making it considerably easier for the testing teams. This also makes it relatively easier for the development and support teamto together contemplate the defects and give a faster output. The overall development speed ofthe project is increased while ensuring correct functionality across relevant areas. The earlier any defect is identified, the better and cost-efficient it is to solve and deploy it.

Time to market

Test automation helps significantly in reducing the time-to-market launch of an application. Automation testing allows constant and regular execution of test cases. Post automation the test library execution is extremely swift and runs longer.

Disadvantages of Automated Testing :

Automated Testing has the following disadvantages:

- Automated testing is very much expensive than the manual testing.
- It also becomes inconvenient and burdensome as to decide who would automate and who would train.
- It has limited to some organisations as many organisations not prefer test automation.
- Automated testing would also require additionally trained and skilled people.
- Automated testing only removes the mechanical execution of testing process, but creation of test cases still required testing professionals.

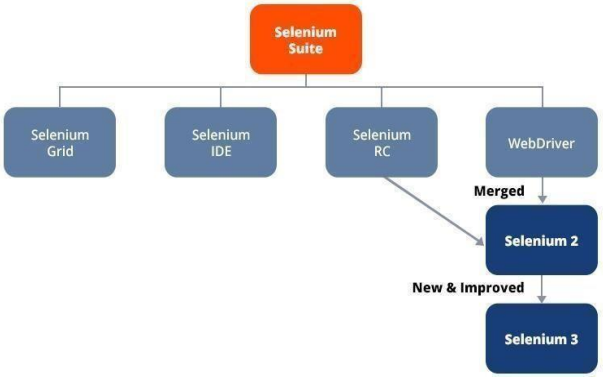
What is Selenium?

Selenium is a free (open-source) automated testing framework used to validate web applications across different browsers and platforms. You can use multiple programming languages like Java, C#, Python, etc to create Selenium Test Scripts. Testing done using the Selenium testing tool is usually referred to as **Selenium Testing**.

Selenium Tool Suite

Selenium Software is not just a single tool but a suite of software, each piece catering to different Selenium QA testing needs of an organization. Here is the list of tools

- Selenium Integrated Development Environment (IDE)
- Selenium Remote Control (RC)
- WebDriver
- Selenium Grid



At the moment, Selenium RC and WebDriver are merged into a single framework to form **Selenium 2**. Selenium 1, by the way, refers to Selenium RC.

What is Selenium IDE?

Selenium Integrated Development Environment (IDE) is the **simplest framework** in the Selenium suite and is **the easiest one to learn**. It is a **Chrome and Firefox plugin** that you can install as easily as you can with other plugins. However, because of its simplicity, SeleniumIDE should only be used as a **prototyping tool**. If you want to create more advanced test cases,you will need to use either Selenium RC or WebDriver.

What is Selenium Remote Control (Selenium RC)?

Selenium RC was the flagship testing framework of the whole Selenium project for a long time. This is the first automated web testing tool that allows users to use a programming language they prefer. As of version 2.25.0, RC can support the following programming languages:

- Java
- C#
- PHP
- Python
- Perl
- Ruby

What is Selenium Grid?

Selenium Grid is a tool used together with Selenium RC to run parallel tests across different machines and different browsers all at the same time. Parallel execution means running multiple tests at once.

This section shall explain all the steps needed to set and then run a test through Selenium with Java bindings.

Several components are a must-have for automation testing.

- Java Installation

The first and the most basic requirement to write and run Java programs is a Java Development Kit (JDK), which includes JRE or Java Runtime Environment.

To download and install Java, all you need to do is:

- Download Java
- Install Java
- Set the environment path.

Once this is done, to verify, go to the command prompt and type java -version. If Java is successfully installed, it will show the version of Java installed in your system.

- Eclipse Installation

There is always a need for a platform where the developers can write and run their codes, and one such platform or IDE is Eclipse. Eclipse is the most sought after Java IDEs across the world.

To download and install Eclipse, all you need to do is

- Go to their official website and download Eclipse.
- After downloading, extract the downloaded files.
- An eclipse.exe icon will appear in the Eclipse folder.

www.simplilearn.com/ice9/free_resources_article_thumb/Eclipse_IDE.JPG

Now, all you need to do to launch Eclipse is open that .exe file.

- Selenium Client and WebDriver Language Bindings

There are multiple languages that Selenium WebDriver supports and each of these languages have their client driver. Since we are concerned about Java, we require the „Selenium Java Client Driver".

To download the client driver, you need to go to the Selenium official website. There you can see several client drivers concerning different languages that Selenium supports:

Selenium Client & WebDriver Language Bindings

In order to create scripts that interact with the Selenium Server (Remote WebDriver) or create local Selenium WebDriver scripts, you need to make use of language-specific client drivers.

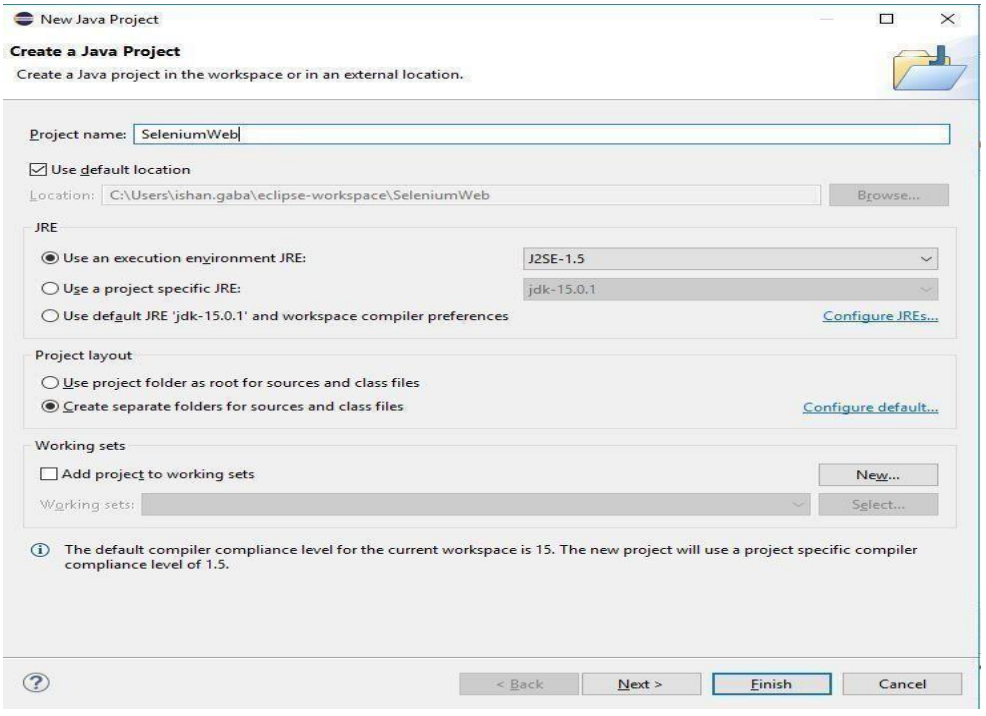
While language bindings for other languages exist, these are the core ones that are supported by the main project hosted on GitHub.

LANGUAGE	STABLE VERSION	RELEASE DATE	ALPHA VERSION	ALPHA RELEASE DATE	LINKS
Ruby	3.142.6	October 04, 2019	4.0.0alpha7	November 10, 2020	Download Alpha Download Changelog API Docs
Java	3.141.59	November 14, 2018	4.0.0-alpha-7	November 10, 2020	Download Alpha Download Changelog API Docs
Python	3.141.0	November 01, 2018	4.0.0.a7	November 10, 2020	Download Alpha Download Changelog API Docs
C#	3.14.0	August 02, 2018	4.0.0-alpha07	November 10, 2020	Download Alpha Download Changelog API Docs
JavaScript	3.6.0	October 06, 2017	4.0.0-alpha.8	December 04, 2020	Download Alpha Download Changelog API Docs

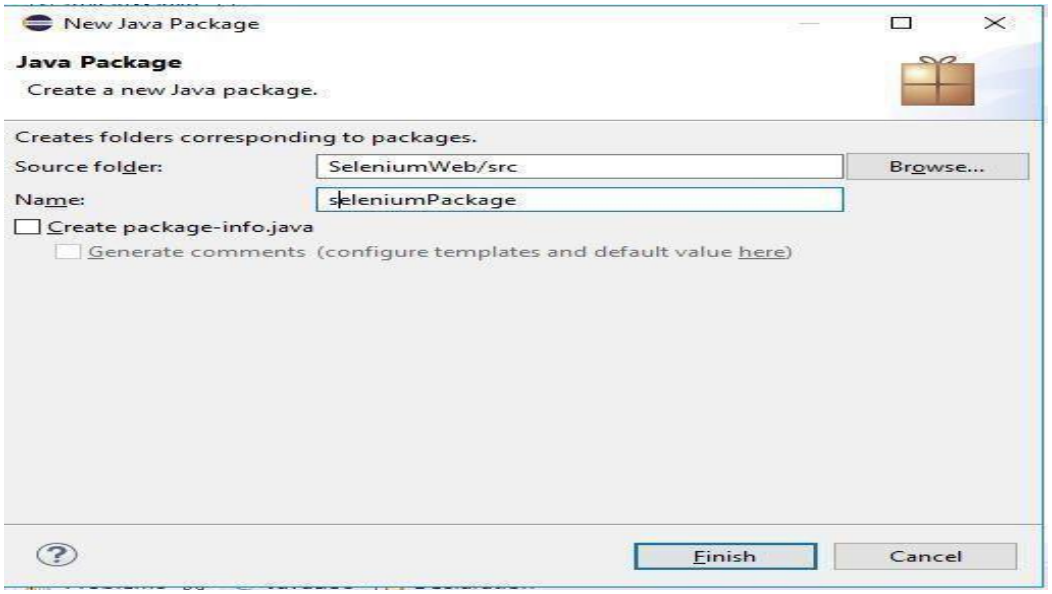
- Configuration of Selenium WebDriver with Eclipse

This is the most crucial step to start with Selenium. The steps to configure Selenium WebDriver with Eclipse are:

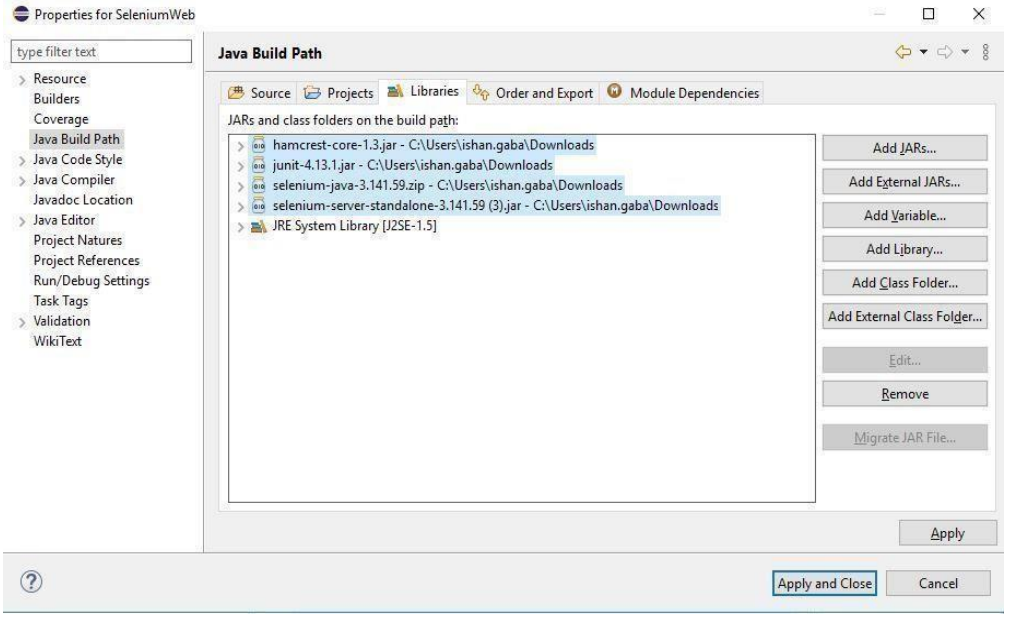
- Launch Eclipse (Double-clicking on the eclipse.exe file).
- Create a workspace.
- Then, create a new Java project:
- File -> New -> Java Project



- Then once the project is created, right-click on the project and create a package under it.
- New -> Package



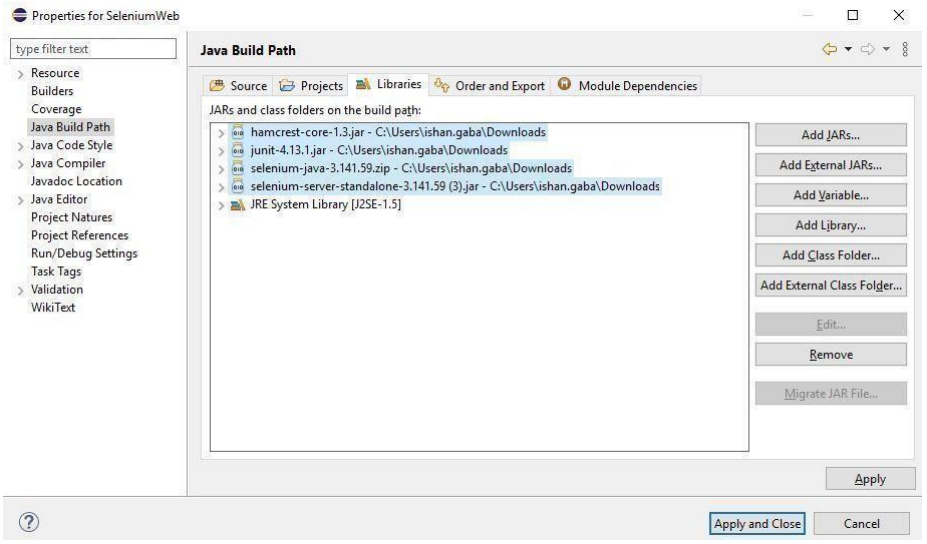
- Then, right-click on the package and make a new class.
- New -> Class



After the class is created, it is time to add Selenium jar files to the project.

To add jar files:

- Right-click on the project folder and go to properties.
- In the dialog box that appears, navigate to the “Java Build Path”.
- Click on “Add External JARs”



To use the Chrome browser, it is necessary to have the driver executable. To get the driver executable:

- Go to the official Selenium website.
- Go to the third-party driver browser section.
- Download the executable for the specific browser.

After it is downloaded, all you need to do is put the code in your eclipse window.

REQUIREMENTS:

Recommended Operating Systems

- **Windows:** 7 or newer
- **MAC:** OS X v10.7 or higher **Linux:** Ubuntu

Hardware Requirements

We strongly recommend a computer fewer than 5 years old.

- Processor: Minimum 1 GHz; Recommended 2GHz or more
- Ethernet connection (LAN) OR a wireless adapter (Wi-Fi)
- Hard Drive: Minimum 32 GB; Recommended 64 GB or more
- Memory (RAM): Minimum 1 GB; Recommended 4 GB or above
- Sound card w/speakers
- Some classes require a camera and microphone

Recommended Software

Supported Browsers

People often ask what browser they should use. There is no single answer for this. Use whichever browser works best on your computer. However, we recommend downloading Firefox and/or Chrome in addition to having Internet Explorer or Safari.

- Firefox
- Chrome

Tools Required

- Install Java JDK
- Install Eclipse
- Install Selenium Webdriver Files

IMPLEMENTATION:

LIST OF PRICES:

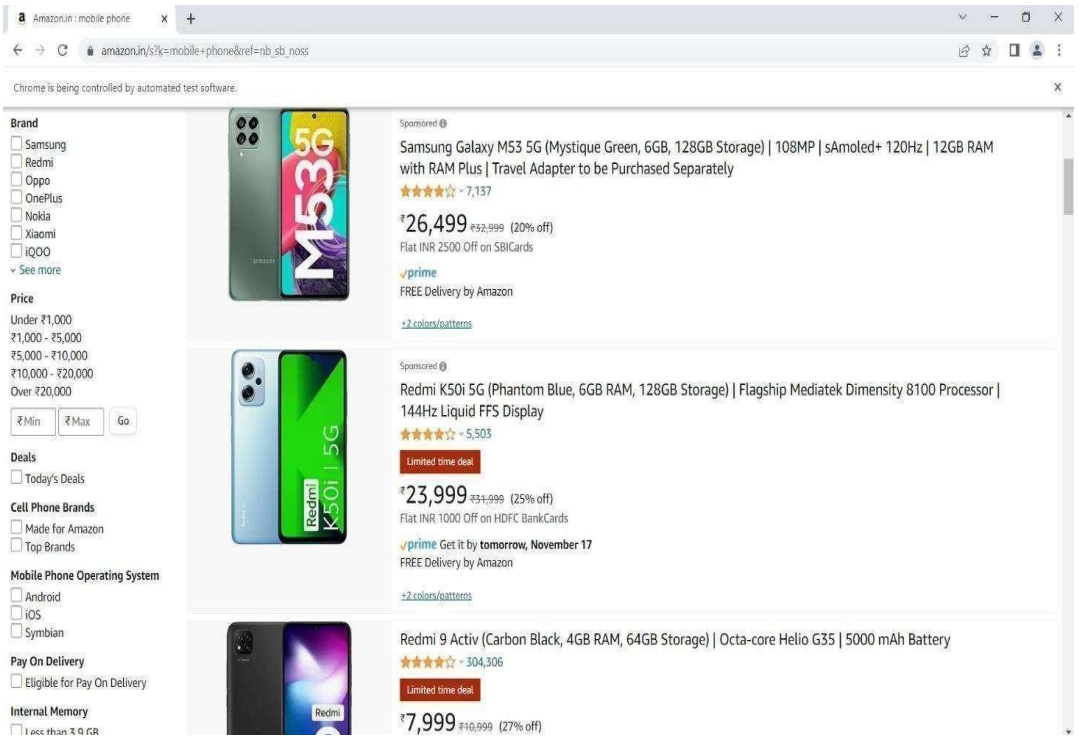
```
package nikhil;
import java.util.ArrayList;import java.util.HashMap;
import java.util.List;
import java.util.Map;
import java.util.Map.Entry;
import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.chrome.ChromeDriver;
public class micro {
	public static void main(String[] args) {
		System.setProperty("webdriver.chrome.driver",
"C:\\Users\\DELL\\Downloads\\chromedriver_win32\\chromedriver.exe");
		WebDriver driver=new ChromeDriver();
	driver.get("http://www.amazon.in/");
	driver.manage().window().maximize();
	WebElement bar=driver.findElement(By.id("twotabsearchtextbox"));
	bar.sendKeys("mobile phone");
	WebElement sbar=driver.findElement(By.id("nav-search-submit-button"));
	sbar.click();

	List<WebElement> priceElements =driver.findElements(By.cssSelector("[class='a-price-
whole']"));
	Map<WebElement, Integer> map = new HashMap<WebElement, Integer>();

	for(int i = 0;i < priceElements.size();i++) {

		if(priceElements.get(i).getText() != ""){

	map.put(priceElements.get(i),Integer.parseInt(priceElements.get(i).getText().replaceAll(",",
"")) );
		}
	}
```


Amazon.in : mobile phone
amazon.in/s?k=mobile+phone&ref=nb_sb_noss
Chrome is being controlled by automated test software.
Brand
Samsung
Redmi
Oppo
OnePlus
Nokia
Xiaomi
iQOO
See more
Price
Under ₹1,000
₹1,000 - ₹5,000
₹5,000 - ₹10,000
₹10,000 - ₹20,000
Over ₹20,000
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Go
Deals
Today's Deals
Cell Phone Brands
Made for Amazon
Top Brands
Mobile Phone Operating System
Android
iOS
Symbian
Pay On Delivery
Eligible for Pay On Delivery
Internal Memory
Sponsored
Samsung Galaxy M53 5G (Mystique Green, 6GB, 128GB Storage) | 108MP | sAmoled+ 120Hz | 12GB RAM with RAM Plus | Travel Adapter to be Purchased Separately
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₹26,499 ₹32,999 (20% off)
Flat INR 2500 Off on SBICards
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FREE Delivery by Amazon
+2 colors/patterns
Sponsored
Redmi K50i 5G (Phantom Blue, 6GB RAM, 128GB Storage) | Flagship Mediatek Dimensity 8100 Processor | 144Hz Liquid FFS Display
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Limited time deal
₹23,999 ₹31,999 (25% off)
Flat INR 1000 Off on HDFC BankCards
prime Get it by tomorrow, November 17
FREE Delivery by Amazon
+2 colors/patterns
Redmi 9 Activ (Carbon Black, 4GB RAM, 64GB Storage) | Octa-core Helio G35 | 5000 mAh Battery
304,306
Limited time deal
₹7,999 ₹10,999 (27% off)

FINDING HIGHEST PRODUCT PRICE:

```
package nikhil;
import java.util.ArrayList;
import java.util.HashMap;
import java.util.List;
import java.util.Map;
import java.util.Map.Entry;
import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.chrome.ChromeDriver;

public class micro {

	public static void main(String[] args) {
		System.setProperty("webdriver.chrome.driver",
"C:\\Users\\DELL\\Downloads\\chromedriver_win32\\chromedriver.exe");
		WebDriver driver=new ChromeDriver();
	driver.get("http://www.amazon.in/");
	driver.manage().window().maximize();
	WebElement bar=driver.findElement(By.id("twotabsearchtextbox"));
	bar.sendKeys("mobile phone");
	WebElement sbar=driver.findElement(By.id("nav-search-submit-button"));
	sbar.click();

	List<WebElement> priceElements =driver.findElements(By.cssSelector("[class='a-
price-whole']"));
	Map<WebElement, Integer> map = new HashMap<WebElement, Integer>();
	for(int i = 0;i < priceElements.size();i++) {


		if(priceElements.get(i).getText() != ""){

	map.put(priceElements.get(i),Integer.parseInt(priceElements.get(i).getText().rep
laceAll(",", "")) );

		}

	}


	List<Entry<WebElement, Integer>> le=new ArrayList<Map.Entry<WebElement,
Integer>>(map.entrySet());
	le.sort(Entry.comparingByValue());

	for(Entry e : le) {
			System.out.println(e.getValue());
		}
	  le.get(le.size()-1).getKey().click();


	}

}
```

Problems Javadoc Declaration Console X

<terminated> micro [Java Application] C:\Program Files\Java\jdk-18.0.1.1\bin\javaw.exe (18-Nov-2022, 8:43:24 pm – 8:43:36 pm) [pid: 13172]

299

<terminated> micro [Java Application] C:\Program Files\Java\jdk-18.0.1.1\bin\javaw.exe (18-Nov-2022, 8:43:24 pm – 8:43:36 pm) [pid: 13172]

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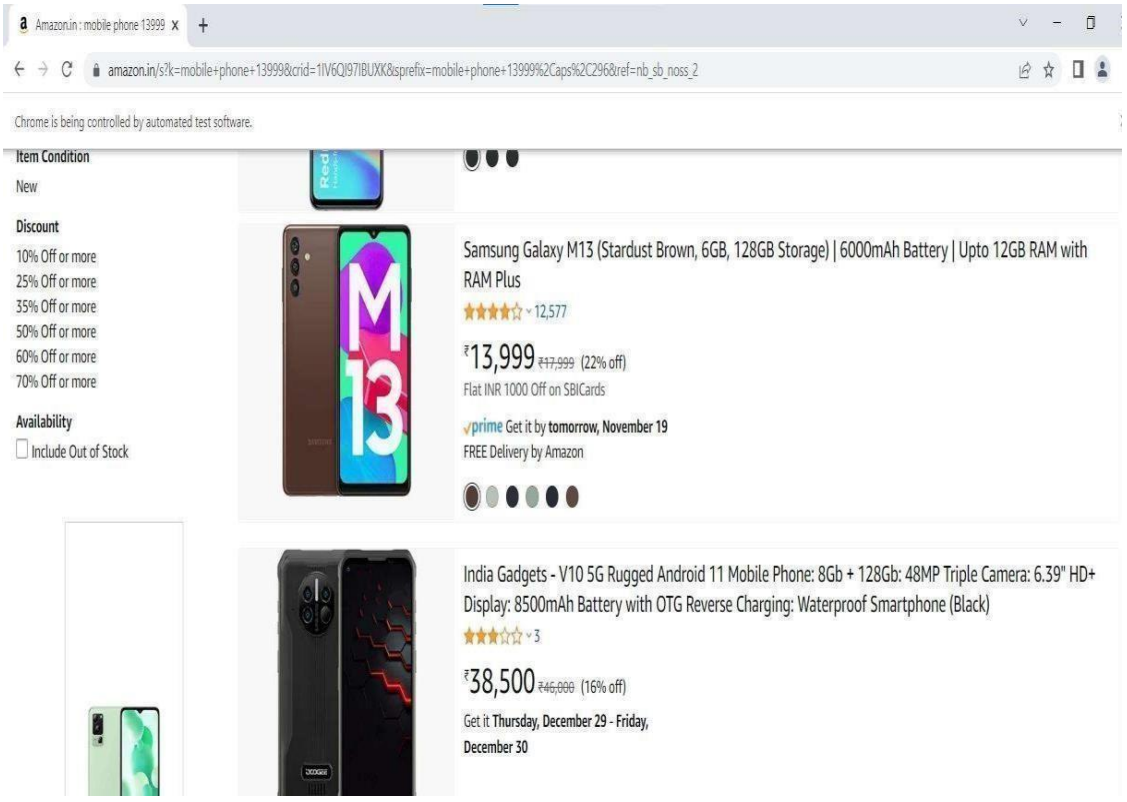

CONCLUSION:

So finally we perform Auotmation testing for finding the list and highest cost for specific product in any e-commerce website first we had done Accessing Amazon Website and specify Web Element from the amazon by using inspect and we had done list of product prices from amazon website .Then we find highest product price. In this way we have analyzed automation testing on e-commerce.

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