**Automation** – Doing any task using a tool or a system without any manual intervention is called as automation. **Ex –** Fan, Escalator, Mixer

**Why do we go for Automation? (OR) What are the advantages of Automation?**

* Faster
* Saves time
* Reduces effort
* Increases the quality
* Re - usable

**Disadvantages of Automation**

* Initial investment is high
* Requires constant maintenance
* Requires skilled labour
* No natural intelligence

**What is Test Automation?**

In Software Testing, Test automation means Testing the software using a Tool/software as per the Test case instead of doing it manually

**What are the different Test** automation(Functional) tools available?

QTP,Selenium,VSTS(coded UI),RFT,SilkTest

AutoIT,SAHI,Cucumber

**What are the languages that Selenium supports?**

Java,C#(sharp),Ruby, Perl, Python & PHP

We chose Java with Selenium as it is popularly used language for Selenium .

1. What is JAVA?

Java is a high level programming Language. It is an object oriented language introduced by SUN MicroSystems in June 1995.

The language derives much of its syntax from C and C++, but it has fewer low-level facilities than either of them.

Java applications are typically compiled to bytecode (class file) that can run on any Java virtual machine (JVM) regardless of computer architecture.

History of Java

James Gosling, Mike Sheridan, and Patrick Naughton initiated the Java language project in June 1991.Java was originally designed for interactive television, but it was too advanced for the digital cable television industry at the time.The lanuage was initially called Oak after an oak tree that stood outside Gosling's office; it went by the name Green later, and was later renamed Java, from Java coffee, said to be consumed in large quantities by the language's creators. Gosling aimed to implement a virtual machine and a language that had a familiar C/C++ style of notation.

Sun Microsystems released the first public implementation as Java 1.0 in 1996. It promised "Write Once, Run Anywhere" (WORA), providing no-cost run-times on popular platforms. Fairly secure and featuring configurable security, it allowed network- and file-access restrictions.

Oracle Corporation acquired Sun Microsystems in 2009-2010(Jan 2010)

and is currently owner of official implementation of Java SE platform

Features of JAVA

Java Features : Here we list the basic features that make Java a powerful and popular programming language :

1)Compiled and Interpreted:- It has both Compiled and Interpreter Feature .Program of java is First Compiled and then it is Interpreted .First of all The Program of java is Compiled then after Compilation it creates Byte Codes rather than Machine Language Then After Byte Codes are Converted into the Machine Language with the help of the Interpreter .

2)Platform Independent:- Java Language is Platform Independent means program of java is Easily transferable because after Compilation of java program byte code will be created then we have to just transfer the Byte Code to another computer.

3)Object-Oriented:- This is purely OOP Language, that is, all the Code of the Java Language is Written into the classes and Objects. This feature of java has made it Most Popular Language because it also Supports Code Reusability, Maintainability etc.

4)Robust and Secure:- The Code of java is Robust ,Means it first checks the reliability of the code before Execution When We trying to Convert the Higher data type into the Lower Then it Checks the Demotion of the Code then It Will Warn the User Not to do this, hence it is Robust.

Secure : When We transfer the Code from One Machine to Another the First Check the Code either it is Effected by the Virus or not or it Checks the Safety of the Code if code contains the Virus then it will never Executed .

The absence of pointers in Java makes it impossible for applications to gain access to memory locations without proper authorization as memory allocation and referencing model is completely opaque to the programmer and controlled entirely by the underlying run-time platform .

5)Simple, Small and Familiar:- is a simple Language Because it contains many features of other Languages like C and C++ and Java Removes Complexity because it doesn’t use pointers, Storage Classes and Go to Statements and java Doesn’t support Multiple Inheritance

6)Multithreaded and Interactive:- Java uses Multithreaded Techniques For Execution Means Code is Divided into the Small Parts , those are Executed by java in Sequence and Timed Manner this is Called as Multithreaded .In this Program of java, it is divided into the Small parts & these are Executed by Compiler . Java is Called as Interactive because Code of java Supports CUI and Also GUI Programs.

7)Dynamic and Extensible Code:- Java has Dynamic and Extensible Code Means With the Help of OOPS java Provides Inheritance and With the Help of Inheritance we Reuse the Code that is Pre-defined and also uses all the built in Functions of java and Classes

8)Distributed:- Java is a distributed language which means that the program can be designed to run on computer networks. Java provides an extensive library of classes for communicating ,using TCP/IP protocols such as HTTP and FTP. This makes creating network connections much easier than in C/C++. You can read and write objects on the remote sites via URL with the same ease that programmers are used to when read and write data from and to a file. This helps the programmers at remote locations to work together on the same project.

**List of Java Keywords**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| abstract | assert | boolean | break | byte | case |
| char | class | const | continue | do | default |
| double | Else | extends | enum | final | finally |
| float | For | goto | if | implements | import |
| instanceof | Int | interface | long | native | new |
| package | private | protected | public | return | short |
| static | strictfp | super | switch | synchronized | this |
| throw | throws | transient | try | void | volatile |
| while | catch |  |  |  |  |

# Naming convention

|  |
| --- |
| A naming convention is a rule to follow as you decide what to name your identifiers (e.g. class, package, variable, method, etc.), but it is not mandatory to follow that is why it is known as convention not rule. |

#### Advantage:

|  |
| --- |
| By using standard Java naming conventions they make their code easier to read for themselves and for other programmers. Readability of Java code is important because it means less time is spent trying to figure out what the code does. |

|  |  |
| --- | --- |
| class name | should begin with uppercase letter and be a noun e.g.String,System,Thread etc. |
| Interface name | should begin with uppercase letter and be an adjective (whereever possible). e.g. Runnable,ActionListener etc. |
| method name | should begin with lowercase letter and be a verb. e.g. main(),print(),println(),actionPerformed() etc. |
| variable name | should begin with lowercase letter e.g. age, firstName,orderNumber etc. |
| package name | should be in lowercase letter. e.g. java,lang,sql,util etc. |
| constants name | should be in uppercase letter. e.g. RED,YELLOW,MAX\_PRIORITY etc. |