1. Compiler

A compiler is a program that translates a source code (program) into machine language. As Java works across platform, it compiles the source code into special code called byte code.

2. Byte code

A compiler coverts source code into machine language code, this code is called byte code in Java. It is in Unicode format and it can be interpreted and executed only by Java Virtual Machine (JVM).

3. Java Virtual Machine

A Java Virtual Machine is a piece of software that is implemented on standard operating systems. A JVM provides an environment in which Java byte code can be executed, enabling features such as automated exception handling, which provides "root-cause" debugging information for every software error (exception), independent of the source code. A JVM is distributed along with a set of standard class libraries that implement the Java application programming interface (API).

JVMs are available for many hardware and software platforms. The use of the same byte code for all JVMs on all platforms allows Java to be described as a "compile once, run anywhere" programming language. Thus, the JVM is a crucial component of the Java platform.

4. Java Development Kit

Java Development Kit (JDK) provides a number of tools which are essential to ...develop and run Java programs. Java has a large number of classes available, which come with JDK. These classes implement the handling of text, graphics, mathematical functions etc.

**5. Applets, Application, Servlets**

There are three types of Java programs and **all** are written as a class.

Java application is a standalone program that contains main method. It is exe- cutable on any platform. Java Applets are Java programs that are executed using web page by a web browser on the machine. It does not have main method.

Java servlet is an applet that runs on the server side. It does not have main method.

6. Java Character Set

Java uses the Unicode cl1aracter set. Each Unicode cl1aracter is defined by 16 bits (2 bytes). Unicode represents almost all alphabets from various languages.

7. ASCII Codes

The American Standard Code for Information Interchange (ASCII) is a character- encoding scheme originally based on the English alphabet. ASCII codes repre- sent text in computers, communications equipment, and other devices that use text. Most modem character-encoding schemes are based on ASCII and they support many additional characters.

8. **Tokens**

A smallest individual unit in a program is token. Java offers following tokens:

a. Keywords -a word that has special meaning

b. Identifiers -a name given to a variable, a class or a method for identification.

c. Literals or constants -are values that do not change. They are of various types. Example Character constant, string constant, integer constant.

d. Punctuators or separators -There are exactly nine, single character separators in Java

e. Operators -Java includes 37 operators and consists of 1, 2, or at most 3 special characters.

**9. Keywords**

The following list shows the reserved words in Java. These reserved words

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

b. Identifiers

All java components require names. Names used for classes, variables and meth- ods are called identifiers. In java there are several points to remember about identifiers. They are as follows:

All identifiers should begin with a letter (A to Z or a to z), currency char- acter ($) or an underscore (-).

After the first character identifiers can have any combination of charac- ters and digits.

A key word cannot be used as an identifier.

Most importantly identifiers are case sensitive.

Examples of legal identifiers: age, $salary, \_value, \_l\_value .Examples of illegal identifiers: 123abc, -salary

c. Literals or Constants

A literal is a source code representation of a fixed value. They are represented directly in the code without any computation. Literals can be assigned to any variable.

**d. Separator or Punctuator**

The fourth category of token is a Separator (also known as a punctuator

**e. Operators**

The fifth category of token is an Operator. Java includes 37 operators that are listed in the table below; each of these operators consists of 1, 2, or at most 3 spe- cial characters.

= - > <= < >= != && ? .+ += -- \*= I **1=** & &= 1= " *\=* %=

The keywords instanceof and new are also considered operators in Java.

9. Comments in Java

Java supports single line and multi-line comments very similar to c and c++. All

//

/\*

\*/

**10. Data Types**

There are two data types available in Java:

1. Primitive Data Types

2. Reference/Object Data Types

Primitive Data Types: There are eight primitive data types supported by Java. Primitive data types are predefined by the language and named by a key word.

|  |  |  |  |
| --- | --- | --- | --- |
| Type | Default | Byte | Range |
| byte | 0 | 1 | -128 to 127 |
| short | 0 | 2 | -32768 to 32767 |
| int | 0 | 4 | -2147483648 to  2147483647 |
| long | 0 | 8 | -9223372036854775808 to  9223372036854775807 |
| float | 0.0f | 4 |  |
| double | 0.0d | 8 |  |
| boolean | False | 1 bit |  |
| char | Null | 2 | 0 to 65535 |

Reference Data Types: .

The reference data types are arrays, classes and interfaces. It is a variable that can contain the reference or an address of dynamically created object. It is not predefined like primitive data type. Default value of any reference variable is null.

1. **What** is a Class

Class is a fundamental building block of Object oriented programming language. A class contains attributes and methods. Attribute define state of a class. Methods (also known as functions) define the behavior of class. A class creates objects. A class may create one or more number of objects. It is also called an object factory. Class, methods, variables should be named using identifiers which must start with a letter or underscore or dollar symbol.   
A class cannot be declared as private or protected mode. Only its variables, methods and inner classes can be declared as private or protected. A compound statement is block of code enclosed in opening and closing braces. A sample class is given below:

public class dog  
{  
string breed =”bulldog”;  
int age;

void dogbrown(int age)  
{  
string coloe=”brown”;  
}

void dogblack(int age)  
{  
String color=”black”;  
}

void barking()  
{

}  
}// end class