Java link:

https://www.oracle.com/java/technologies/javase/jdk14-archive-downloads.html

Eclipse link:

https://www.eclipse.org/downloads/packages/release/kepler/sr1/eclipse-ide-java-developers

Oops concepts:

1) Inheritance

When one object acquires all the properties and behaviors of a parent object, it is known as inheritance. It provides code reusability. It is used to achieve runtime polymorphism.

2) Polymorphism

If one task is performed in different ways, it is known as polymorphism. For example: to convince the customer differently, to draw something, for example, shape, triangle, rectangle, etc.

In Java, we use method overloading and method overriding to achieve polymorphism.

Another example can be to speak something; for example, a cat speaks meow, dog barks woof, etc.

3) Abstraction

Hiding internal details and showing functionality is known as abstraction. For example phone call, we don't know the internal processing.

In Java, we use abstract class and interface to achieve abstraction.

4) Encapsulation

Binding (or wrapping) code and data together into a single unit are known as encapsulation. For example, a capsule, it is wrapped with different medicines.

A java class is the example of encapsulation. Java bean is the fully encapsulated class because all the data members are private here.

Java

Java was started as a project called "Oak" by James Gosling in June 1991.

Class

Collection of objects is called class. It is a logical entity.

A class can also be defined as a blueprint from which you can create an individual object.

Class doesn't consume any space.

Object

Java Object:

Any entity that has state and behavior is known as an object. For example, a chair, pen, table, keyboard, bike. An Object can be defined as an instance of a class. An object contains an address and takes up some space in memory.

Advantages of Java

1) Simple

Java is straightforward to use, write, compile, debug, and learn than alternative programming languages. Java is less complicated than C++; as a result, Java uses automatic memory allocation and garbage collection.

2) Object-Oriented

It permits you to form standard programs and reusable code.

3) Platform-Independent

Java code runs on any machine that doesn't need any special software to be installed, but the JVM needs to be present on the machine.

4) Distributed computing

Distributed computing involves several computers on a network working together. It helps in developing applications on networks that can contribute to both data and application functionality.

5) Secure

Java has no explicit pointer. Apart from this, it has a security manager that defines the access of classes.

6) Memory allocation

In Java, memory is divided into two parts one is heap and another is stack. Whenever we declare a variable JVM gives memory from either stack or heap space. It helps to keep the information and restore it easily.

7) Multithreaded

It has the potential for a program to perform many tasks at the same time

JDK, JRE, and JVM

JVM:

JVM (Java Virtual Machine) is an abstract machine. It is called a virtual machine because it doesn't physically exist. It is a specification that provides a runtime environment in which Java bytecode can be executed. It can also run those programs which are written in other languages and compiled to Java bytecode. JVM, JRE, and JDK are platform dependent because the configuration of each OS is different from each other.

JRE= jvm + set of libraries

JRE is an acronym for Java Runtime Environment. It is also written as Java RTE. The Java Runtime Environment is a set of software tools which are used for developing Java applications. It is used to provide the runtime environment. It is the implementation of JVM. It physically exists. It contains a set of libraries + other files that JVM uses at runtime.

JDK = jre+ development tools

JDK is an acronym for Java Development Kit. The Java Development Kit (JDK) is a software development environment which is used to develop Java applications. It contains JRE + development tools.

JDK is an implementation of any one of the below given Java Platforms released by Oracle Corporation:

1. Standard Edition Java Platform

2. Enterprise Edition Java Platform

3. Micro Edition Java Platform

Sample program:

```
class Hello {

public static void main(String args[])

{

System.out.println ("Hello world");

}

}
```