Assignment 1

Search About Java

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Microsoft Windows [Version 10.0.22631.4037]
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C:\Users\pooja\Desktop\project\AUG24-CDAC\Day3-CDAC\SECTION 3 Lamborghini Exercise>javac Hello.java

C:\Users\pooja\Desktop\project\AUG24-CDAC\Day3-CDAC\SECTION 3 Lamborghini Exercise>java Hello
Hello World!

C:\Users\pooja\Desktop\project\AUG24-CDAC\Day3-CDAC\SECTION 3 Lamborghini Exercise>
```

```
module_os_ exam.txt    Hello.java
1    //WAP of hello world.
2
3    class Hello{
4        public static void main( String args[]){
5
6        System.out.println("Hello World!");
7
8        }
9    }
```

Assignment -1   03/09/24

* A short history of Java -

- Java was first developed in 1991 by team of engineers at Sun microsystem.

- Java was developed by Sun microsystems, technology company.

- Green Project - it was internal project at Sun microsystems, aimed at finding new opportunities in the Consumere electronics industry.

- Java was originally created as a part of this project to run on this devices.

- Green Team -
  [James Grosling, Patrick Naughton, mike sherida
      ↑
  "Father of Java"

* The original language named Oak, was later rename to java in 1995

- The name java was inspired by Java Coffee.

* The "*7" Device (1992)-
  In 1992 the team developing java created a device called "*7" to show how their new technology could work in smart gadgets.

* Failure of "*7" - Time-warner declined to use java for their set-top boxes + video-on-demand service.

* **Breakthrough with the web (1994) —**

In 1994, java gained significant attention when team developed a web browser Called webRunner.

This browser had unique ability to run applets, →[applets - is a small Java Program], that could be embedded in web pages & run directly within the browser. It was major breakthrough.

* **First public Implimentation — Java 1.0 in 1996**

Java 1.0 was the first official version of java made available to the public in 1996.

* **Acquisition of java —**

In 2010, Oracle Corporation, a major software & hardware Company, acquired sun microsystems.

* **Slogan. → "Write once, Run Anywhere".**
Java's slogan highlights its most powerful features → Platform independant

It meaning Java program run of one platform (like windows) it can run on any other platform (like linux or macOs) without needing modification, as long as platform has JVM installed

* Java Virtual Machine [JVM]

when we write code, it gets compiled
into bytecode, which the JVM can interpret
& execute on any device & os.
This makes java platform-independent.

* Automatic memory management -
Java handles process memory m automatically
through process called garbage collection.

* Java Editions -

1) Java SE [standard Edition] =

The core version of java that includes
the basic libraties + tools needed
for general-purpose programming.
Key Components → Java appln Programming Interface (API) + JVM
* Used for → Developing desktop application
Command line tools,
Small to medium - sized applications.

2) Java EE → Extended version of Java
SE, with additional libraries +
frameworks designed for building
large-scale, web-based application.
Key components → Servlets, JSP, Filter, JPA, JTA, JMS, EJB, Jsf, Java mail
  Used for — Developing enterprise-level
applications such as online banking
systems, e-commerce platforms +
large-scale web services.

3) Java ME (micro Edition]
A version of java designed for
mobile + embedded devices with limited
resources

Used for — Developing appln for
Smartphones, tablets + small appliances
like IOT devices.

Java SE — Basic Java Programming
Java EE — Enterprise level application
Java ME — mobile + embedded devices
Java FX — rich, modern user interfaces.
It is used for building rich, modern user interfaces for desktop appl
Java Cord — used for developing appl for smart card & secure IOT devices.

1) Java lan is both, technology as well as platform.

→ Is not only programing language is a platform that provides runtime enviroment (the Jvm) where java program can be executed.

2) Java's standardization is managed through the java Community process. (JCP)

3) Extension of java source file .java

→ These files are written by developers & are compiled into bytecode by the Java Compiler.

4) Java is object oriented but also support procedural + functional programmin paradaligms.

5) Java is statically typed lang. It means type checking is done at Compile time

6) Java is Case-sensitive lang.

7) Java, Kotlin, Scala, Grroovy are some one Jvm bas language
These languaes are desined to run on Jvm. They can use java labrarie + tools

What is API —

API — Appⁿ programming Interbace.
It is set of tools & protocol that allow
different software appⁿ to communicate
with each other.

Java version —

1) Java 8 —   Long term support

Java 11
Java 17
Java 21

* SDK → Software development kit →
it is collection of tools, libraries, documental
& sample code that developers' use to
Create appⁿ for specific platform.
It includes every thing needed to
write, compile, test & debug software
making it easier & faster to develop
appⁿ.

* JDK— [Java development kit] —

It provides the tools needed to write
Compile & run java code.
writing code — JDK includes text editor & other
                      tools to write java code.
Compiling code — The java Compiler (Java c)
Converts your written code into.
byte code, ~~which can be run~~

Running Programs - The JDK includes JVM the java runtime enviroment (JRE) + Jvm which allow you to run java programs.

Java runtime Enviroment (JRE)

→ -To execute /run java appl^n on developer's machine / client's machine, we require Java Runtime Enviroment (JRE).

- The JRG comes with the JDK by default, so developers do not need to download.

- on client machine, we must first download 4 install the JRE.

* Components of Java Runtime enviroment -
   1) Java class Library (rt. jar)
   2) Java virtual machine (Jvm)

→ Et.jar is the Core library file in JRE. It contains standard java classes libraries. necessary for running java application. This includes packages → java.lang, java.util, java.io

Et.jar provides fundamental classes that the Jvm needs to execute java programs.

SEC.zip   vs   Et.jar   vs   Java.api.docs

Source Code of Java API	Compiled Code of Java API	Documentation of Java API

SEC.zip	Et.jar	jdk-80xx -docs-dll

Contains   Contains   Contains
.java files   .class files   .html files