



Concepts of Programming

Day 1: Mar 2023

Introduction to Java

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Java:

- General purpose programming language.
- Support Object Oriented programming.
- In 1991,Sun Microsystem,USA developer for Java.
- Developer James Gosling : "OAK";
- Overcome the limitations of C & C++ programming in terms of reliability & portability.
- Simple, reliable, portable, more secure & powerful programming language.
- Java is Platform.

Platform:

- Any hardware or software environment which runs the program.
- JRE(Java Runtime environment) & API, => Java platform.
- JDK(Java Development Kit) 1.0=> jan 1996.

Why Java?

- Java is a high level, robust, secured and object-oriented programming language.
- Java is a *Programming language* and a *Platform*.

Platform: *Any hardware or software environment in which a program runs, is known as a platform.*

- Java is the *Internet Programming Language*.
- Java enables users to develop and deploy applications on the Internet for servers, desktop computers, and small hand-held devices.

Applications of Java



***Desktop
GUI***



Enterprise



Scientific



***Web-
based***



***Cloud-
based***



Gaming

Java Applications:

-Desktop applications

- stand-alone applications
- antivirus, VLC media player, etc...

-Web-based applications

- client server architecture based application.
- amazon, railway station, etc...
- Servlet, JSP(Java server pages), Struts, Spring, Hibernate, JSF, etc...

-Enterprise applications

- distributed in nature, banking,
- load balancing, clustering, high level security, etc
- EJB (Enterprise Java Beans)
- Scientific applications

-Mobile applications

- Micro editions of java
- Gaming applications
- Android, Java ME

-Cloud applications

Java platforms/edition:

1.J2SE:standard edition

- core java platform for desktop or general application.

2.J2EE:Enterprise edition

- Component based approach for distributed industry.

3.J2ME: Micro edition

- targeted to the small, stand alone applications.
- to design light weight applications.

There are 3 Java Platform Editions:

1. Java 2 Platform, Standard Edition (J2SE)

- Core Java Platform targeting applications running on workstations

2. Java 2 Platform, Enterprise Edition (J2EE)

- Component-based approach to developing distributed, multi-tier enterprise applications

3. Java 2 Platform, Micro Edition (J2ME)

- Targeted at small, stand-alone or connectable consumer and embedded devices

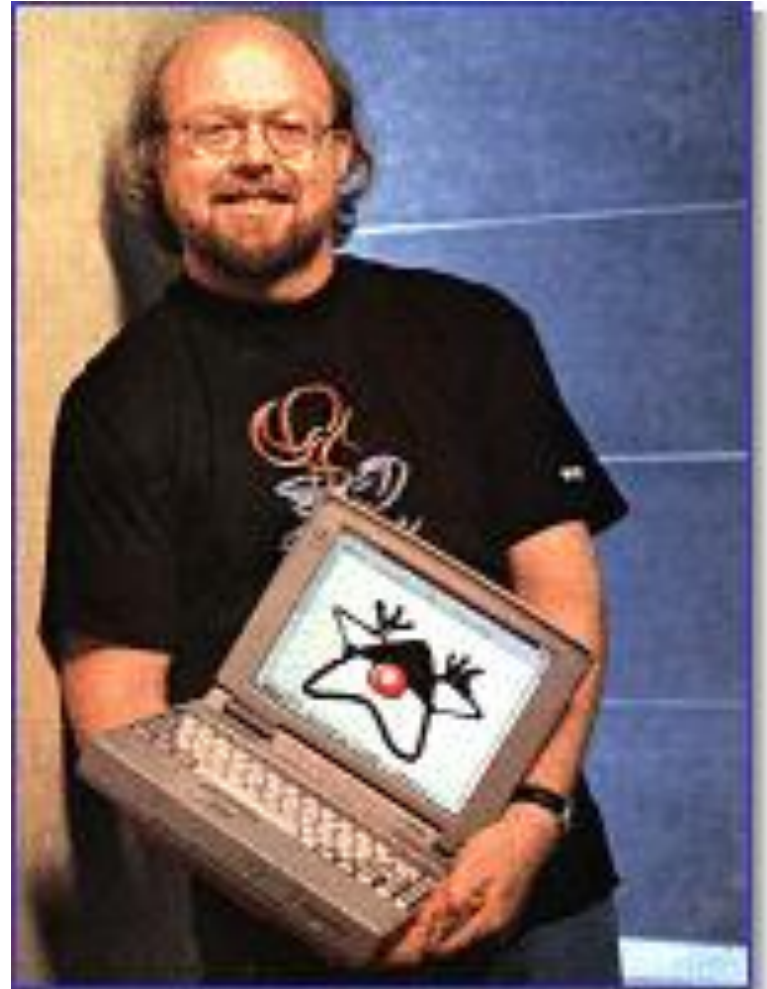
Origin of Java

James Gosling & Patrick Naughton at 1990

Goal : To develop distributed system which is applicable to electronic products(platform independent)

James Gosling

- James Gosling is generally credited as the inventor of the Java programming language
- He was the first designer of Java and implemented its original compiler and virtual machine
- He is also known as the Father of Java.



JDK Versions

- JDK Alpha and Beta (1995)
- JDK 1.0 (23rd Jan, 1996)
- JDK 1.1 (19th Feb, 1997)
- J2SE 1.2 (8th Dec, 1998)
- J2SE 1.3 (8th May, 2000)
- J2SE 1.4 (6th Feb, 2002)
- J2SE 5.0 (30th Sep, 2004)
- Java SE 6 (11th Dec, 2006)
- Java SE 7 (28th July, 2011)
- Java SE 8 (18th March, 2014)

Types of Java application:

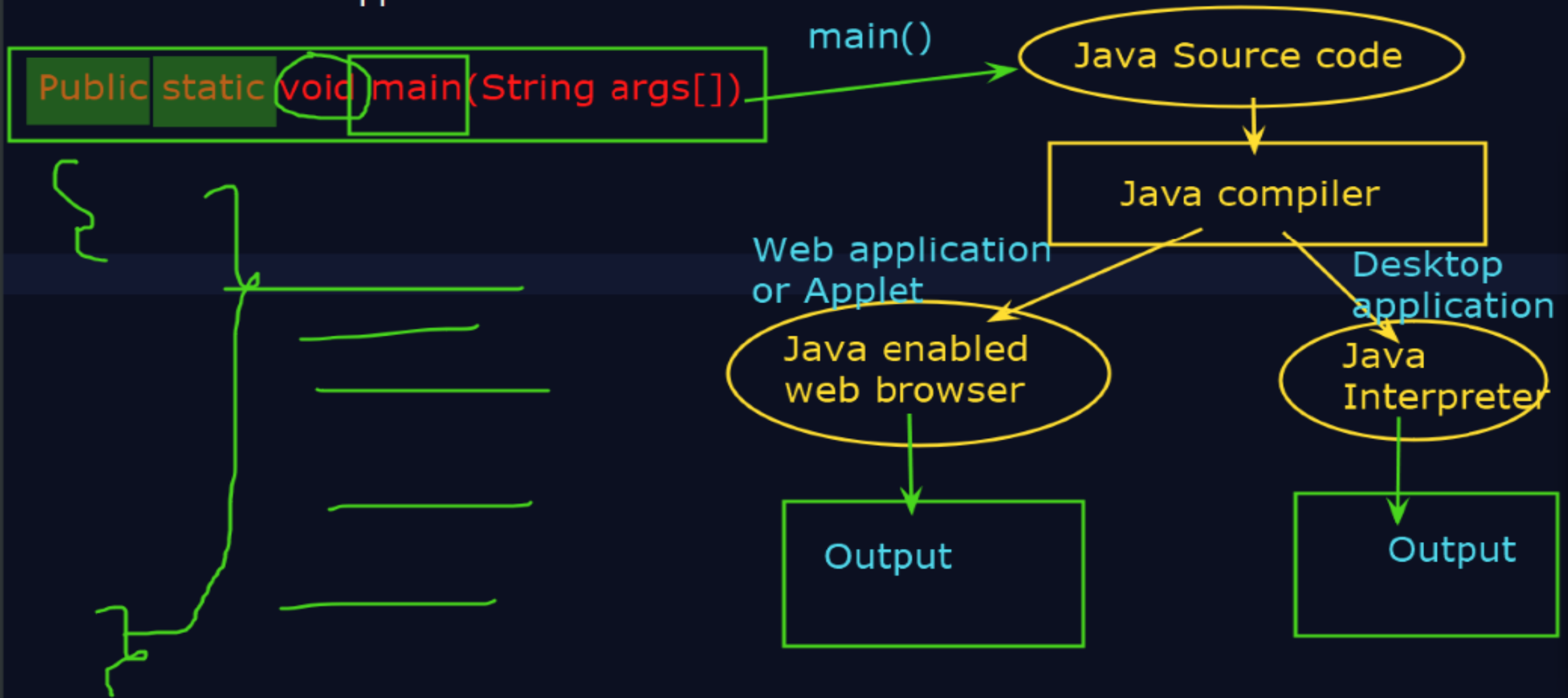
1. Stand alone application:

- Runs on our machine.
- stand-alone application.
- Compiler and interpreter will be used.
- read & write program file

2. Web applet application:

- Runs on browser.
- Internet applications.
- downloaded from server and execute on browser.
- execute the applet.

downloaded from server and execute on
-execute the applet.



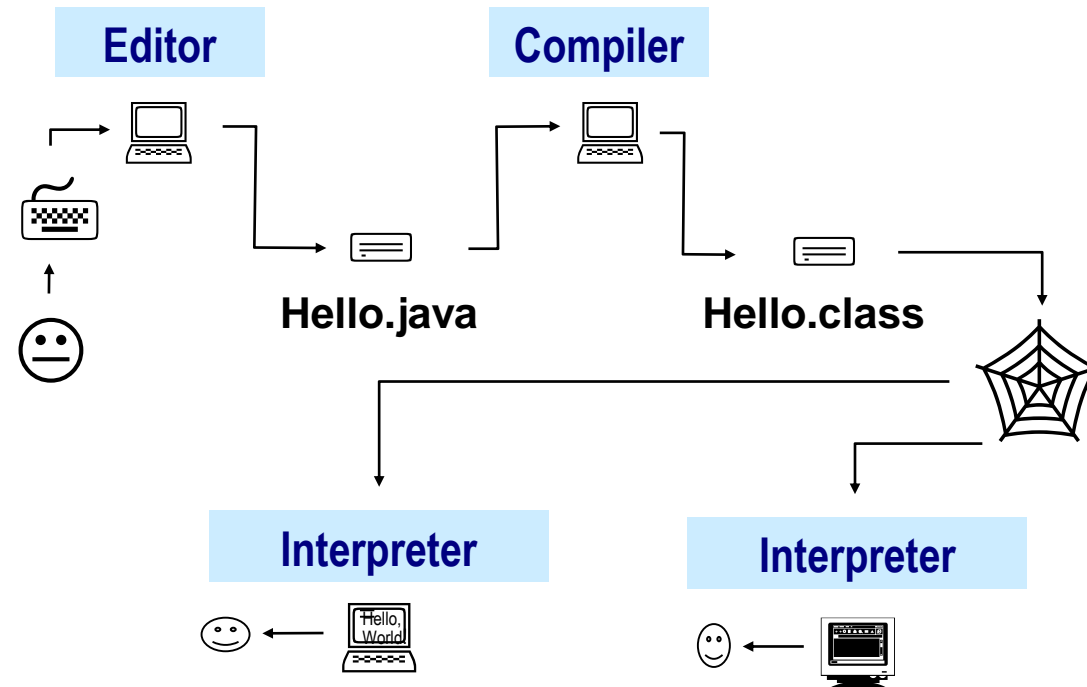
Writing your first Java program

```
class Hello
{
    public static void main(String[] args)
    {
        System.out.println ("Hello World program");
    }
}
```

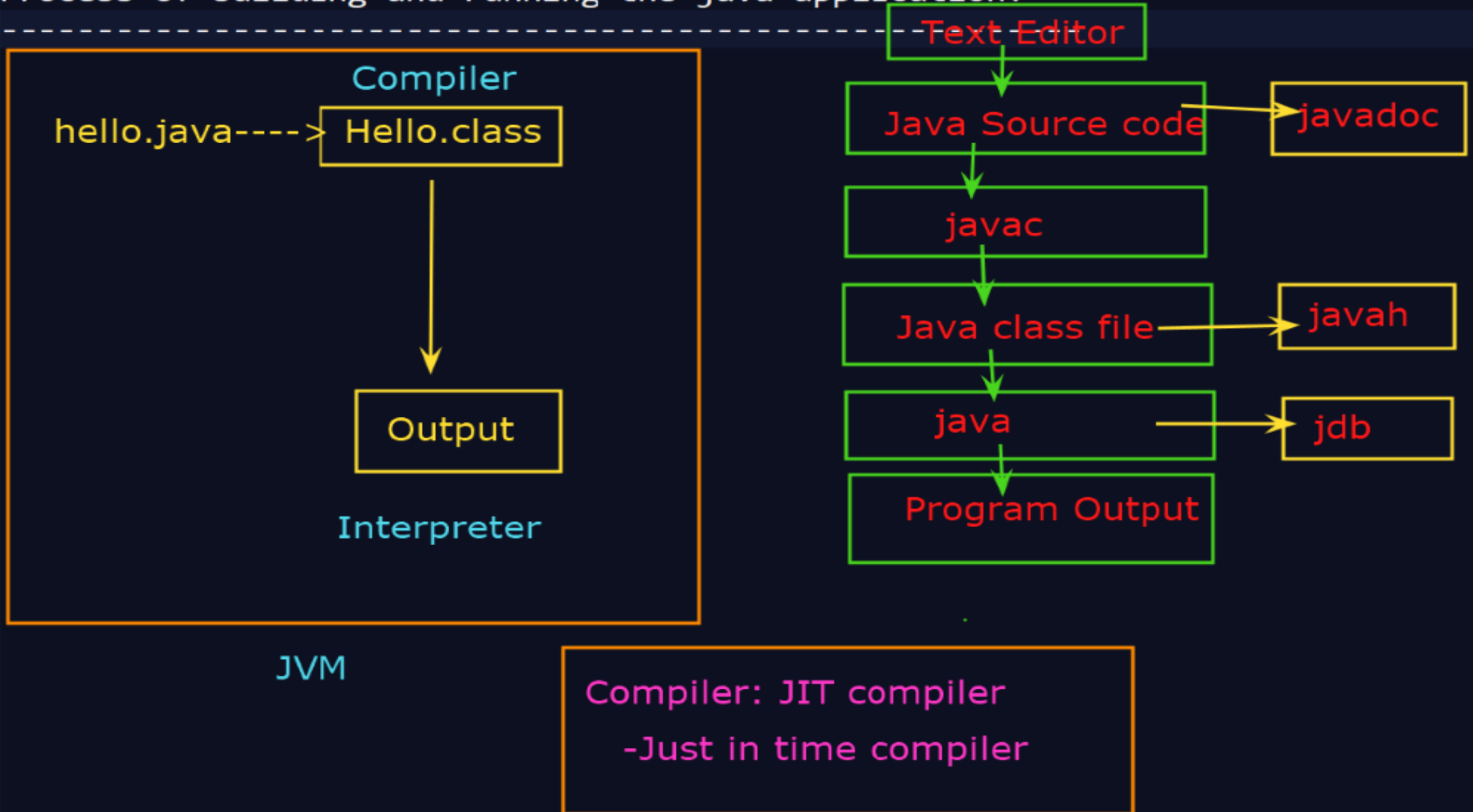
```
class Hello{  
    public static void main(String args[])  
    {  
        System.out.println("Hello!");  
    }  
}
```



Java's Compiler + Interpreter



Process of building and running the java application:



Home work:

Q1. Identify the features for the following java versions.:

- Java 8, 11, 15, 17, 19.

- Java SE 8 Mar 2014

Q2. Comparision of C++ and Java.

Q3. Read:

- Compiler

- Interpreter

- Jit-compiler

- Bytecode

- JDK

- JVM

- JRE