Assignment no. 1

1. Check ~~tve~~ ~~number~~ oddEven

Algo

```
1. Start
2. Declare a variable n
3. Take n as input.
4. check if its remainder is 0 after dividing by 2
5. if yes +ve
6. if no -ve
7. Display result
8. END
```

2. check +ve no., check -ve no., good morning, largest of 3, area of square, area of rect,

★ History of Java

- Created in 1995 (Oracle) owned by
- James Gosling, Mike sheridon & Patrick Naughton → Green team
  sun engineer → developed at Sun Microsystems.

- Time line

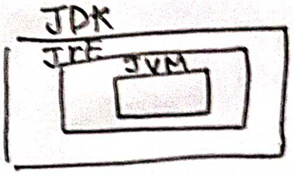
embedded system
|
Green talk (.gt) by James
|
Oak (Java was called Oak at start) → why oak? - symb of strength national tree of many countries
|
1995
Java → why Java? James was sipping coffee as the coffee was named "Java"
|
Java JDK 1.0 in 1996

★ How Java is useful & Problems it solves

- Java is high level, robust, object oriented & secure
- Platform independent
- Used to develop – enterprise app
  - network " – big data
  - desktop " – cloud
  - web " – IOT
  - games
  - Android "
- Rich Api collections to help programmers to develop
- Scalability :- adds capacity to our system, add system resourcess, handles workload.
- cross-platform :- After compling a Java code → binary code
- Memory management :- manages memory with garbage collection, automatically deletes objects (not in use) which improves speed of app
- Multithreading – Thread is a light-weight ~~proo~~ subprocess
  - allows concurrent execution of two or more threads.
  - maximizes CPU utilization.
- companies that uses Java
  - Spotify • Minecraft • Netflix

★ JVM (Java Virtual Machine)

- It is a run time engine to run Java applications.
  → calls → main method
- part of JRE (Java runtime environment)
- Platform independent becauses of JVM



* JRE (Java Runtime environment

- part of JDK (Java Development Kit)
- contains → Java class library
  ↳ specific tools
  ↳ JVM

Java code ⟶ byte code ⟶ run
↑requires JRE

JRE loads classes, verify access to memory, retrieves system resources.

= "It acts as a translator & facilitator, providing all the resources so that once you write Java software, it runs on any OS without further modifications".

- it a software package which is needed for Java to run correctly.

*	JVM	JRE	JDK
defn	- Engine that execute bytecode	Package that includes JVM, lib	A comprehensive tool for developing Java, Includes Jre, compilers & tools.
compo	byte code interpreter, Just-in-time (JIT) Compiler, Garbage collecter	JVM, Core lib & compo to Support execution	Jre, complier, tools eg. debugger, Javadoc
purpose	To make Java Platform	To provide runtime environ necessary for execution	tools to develop, compile, debug. Java app
Usage	Used indirectly by user	Used by anyone wanting to run	Used by Java developers.

★ Memory areas of JVM

program → bytecode → machine lang
(bytecode) (line by line)

Types of Memory areas allocated by JVM

1. Class - The class method area is Memory block that
stores - class code;
- Variable code
- method code
- constructer of Java program
-stores class level code → runtime constent pool
Field & method data

2. Heap :- stores objects
- class interfaces, arrays
-used to allocate memory to objects at run time.

3. Stack :- stores Frames & a new frame is created each time at every invocation of the method. & frame is destroyed with completed

4. Program computer register :- stores address of JVM instruction, storing return address or native pointer.

5. Native method stacks / cstacks :-
- ~~Also~~ not Java.
- This memory is allocated for each thread when it's created & it can be fixed or dynamic

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* Premitive data types (in blue byte)

- byte :1 8-bit signed integer : Range -128 to 127
- short :2 16 " " " : " -32,768 to 32767
- int :4 32 " " " Range -2,147,483,648 to 2,147,483,647
- long :8 64 " "
- float :4 32-bit single precision floating point no.
- double :8 64-bit "
- char :2 16-bit unicode character
- boolean : represents True or false.
  1-bit size (in java only true & false not 0 & 1)

→ Start Lec 2 ←

Java concepts

why is java secure? because there are no pointer so can not access memory locations directly.

latest version - 24

most stable - Java 1.8

Initial name - OAK

execution - .java, .class, .jar(advanced),