1 – OBJECT-ORIENTES-DESIGN is the process of using an object-oriented methodology to design a computing system or application. This technique enables the implementation of a software solution based on the concepts of objects.

OOD serves as part of the object-oriented programming (OOP) process or lifecycle.

- In object-oriented system design and development, OOD helps in designing the system architecture or layout – usually after completion of an object-oriented analysis (OOA). The designed system is later created or programmed using object-oriented based techniques and/or an object-oriented programming language.
- The OOD process takes the conceptual systems model, use cases, system relational model, user interface (UI) and other analysis data as input from the OOA phase. This is used in OOD to identify, define and design systems classes and objects, as well as their relationship, interface and implementation.

Software Architect responsible for OOD.

2- The C programming language is the dominant language for operating system development. Nearly all major OSes, like Windows, MacOS, and Linux are written mostly in C.

UI of Android is written in JAVA, kernel is used for Android is Linux kernel.

3- The first 10 languages appeared :

- 1951 – Regional Assembly Language
- 1952 – Autocode
- 1954 – IPL (forerunner to LISP)
- 1955 – FLOW-MATIC (led to COBOL)
- 1957 – FORTRAN (first compiler)
- 1957 – COMTRAN (precursor to COBOL)
- 1958 – LISP
- 1958 – ALGOL 58
- 1959 – FACT (forerunner to COBOL)
- 1959 – COBOL
- 1959 – RPG

- 1960 – ALGOL 60
- 1962 – APL
- 1962 – Simula
- 1962 – SNOBOL
- 1963 – CPL (forerunner to C)
- 1964 – Speakeasy
- 1964 – BASIC
- 1964 – PL/I
- 1966 – JOSS
- 1966 – MUMPS
- 1967 – BCPL (forerunner to C)
- 1967 – Logo (an educational language that later influenced Smalltalk and Scratch).

4- Low-level languages are languages that sit close to the computer's instruction set. An instruction set is the set of instructions that the processor understands.

5- Peregrine

- 6- Open sources

  1.JavaScript

  2. Python

  3.PHP

  4. Swift

  5. R Programming

  6.C++

  7. Go

  8. Kotlin

  9. Scala

  10. Ruby

- Not open sources

1.VBScript

2. C#

3. Matlab

4. Microfocus COBOL

5. IBM's mainframe

6. AIX

7. Linux

8.LabVIEW

9. ABAB

10. PL/SQL

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7 - JavaScript might be a client-side scripting language.

Advantages:

1- Simple
2- Speed
3- Interoperability
4- Server Load

Disadvantages

1- Cannot Debug

2- Unexpected stop of rendering

3- Client-side Security

4- Browser Support

Ref: https://www.tutorialspoint.com/advantages-and-disadvantages-of-javascript

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8- **Fragmentation** is an unwanted problem in the operating system in which the processes are loaded and unloaded from memory, and free memory space is fragmented. Processes can't be assigned to memory blocks due to their small size, and the memory blocks stay unused. It is also necessary to understand that as programs are loaded and deleted from memory, they generate free space or a hole in the memory. These small blocks cannot be allotted to new arriving processes, resulting in inefficient memory use.

Types of Fragmentation

- Internal fragmentation :

When a process is allocated to a memory block, and if the process is smaller than the amount of memory requested, a free space is created in the given memory block. Due to this, the free space of the memory block is unused, which causes internal fragmentation.

- External Fragmentation

External fragmentation happens when a dynamic memory allocation method allocates some memory but leaves a small amount of memory unusable. The quantity of available memory is substantially reduced if there is too much external fragmentation. There is enough memory space to complete a request, but it is not contiguous. It's known as external fragmentation.

Ref : https://www.javatpoint.com/fragmentation-in-operating-system