

In the name of Allah

# Hello Everybody

Let's get started!

# Intelligence

# Problem solving

Can you think of a day in your life which goes without problem-solving?

For example, morning routine

# Algorithm

A sequence of activities to be processed for getting desired output from a given input.

# Characteristics of an algorithm

# 1. Well-defined

An algorithm should have precisely and unambiguously defined steps, leaving no room for confusion or multiple interpretations.



## 2. Finite

The algorithm must have a limited number of steps, ensuring that it will eventually terminate and produce a result.

# 3. Input

An algorithm takes input(s) that are well-defined and specified, on which it operates to produce an output.

# 4. Output

It produces a clear result or output after executing the steps on the given input(s).

# 5. Effective

Each step of the algorithm must be simple enough to be executed in a finite amount of time and space.

## 6. Deterministic

For a given input, the algorithm should always produce the same output, ensuring consistency.

# 7. Problem-solving

Algorithms are designed to solve specific problems or perform particular tasks.

# 8. Reproducible

Algorithms can be reproduced independently by following the same set of instructions.

# 9. Optimality

Some algorithms aim to find the best or most efficient solution among all possible solutions.



# 10. Analysis

Algorithms can be analyzed for their efficiency and correctness in terms of time complexity and space complexity.

# pseudocode

A notation resembling a simplified programming language, used in program design.

# Flowchart

A flowchart is a graphical representation of a process or algorithm using different shapes and arrows to illustrate the flow of steps and decisions in a visual and easy-to-understand manner.

# Structured programming

Structured programming is a programming paradigm that emphasizes the use of structured control flow constructs, such as loops and conditionals, to improve the clarity, efficiency, and maintainability of code.

# Late in 1960s

Structured programming was introduced by Dutch computer scientist Edsger W. Dijkstra in the late 1960s. Dijkstra published a seminal paper titled "Go To Statement Considered Harmful" in 1968, which argued against the unstructured use of the "go to" statement in programming languages

# Types of control structures

1. Sequence
2. Branching (Selection)
3. Loop (Repetition)

That's all for today!