

# 1. Introduction

## Why study Algorithm?

- It is important for all other branches of computer science
- Plays a key role in modern technological innovation
- As a developer, our everyday work is to solve problems and algorithms solve problems very efficiently.
- Practicing algorithms will increase your skill and your visibility at work thereby building a strong foundation in logical thinking and problem solving

## What is an algorithm?

### 1.1 Notion of algorithm:

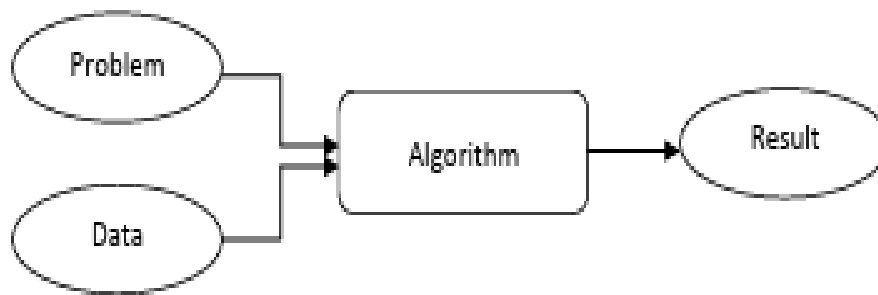
#### Definition-1-

A computer program enables the computer to solve a problem, but before we can tell the computer how to solve the problem, we must first be able to solve it ourselves in the form of an algorithm. 1.1. Algorithmics refers to the discipline that studies algorithms and their applications in computer science.

#### Definition-2-

An algorithm is a method for solving a given problem in a finite time; the word algorithm comes from the name of the famous Arab

mathematician Al Khwarizmi (Abu Ja'far Mohammed Ben Mussa Al-Khwarismi)



## Examples of "algorithms" in everyday life

### ① Problem Definition

Objective: Prepare a cup of coffee by following a series of well-defined steps.

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### ② Natural Language Algorithm

1. Take a cup.
  2. Check for available ground coffee.
    - o If yes, go to next step.
    - o If not, go buy or use an alternative.
  3. Heat water to a suitable temperature.
  4. Add a teaspoon to a filter or directly into the cup.
  5. Pour the hot water over the coffee.
  6. Mix if necessary.
  7. Add sugar or milk as you prefer.
  8. Serve and enjoy.
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### 3 Pseudocode algorithm

Begin

Take a cup

If coffee available then

Heat the water

Add a teaspoon to the cup

Pour hot water

If need sugar or milk then

Add sugar/milk

EndIF

Mix

Drink and enjoy

Otherwise

Buy coffee

EndIF

End