PROBLEM SOLVING AND PYTHON PROGRAMMING

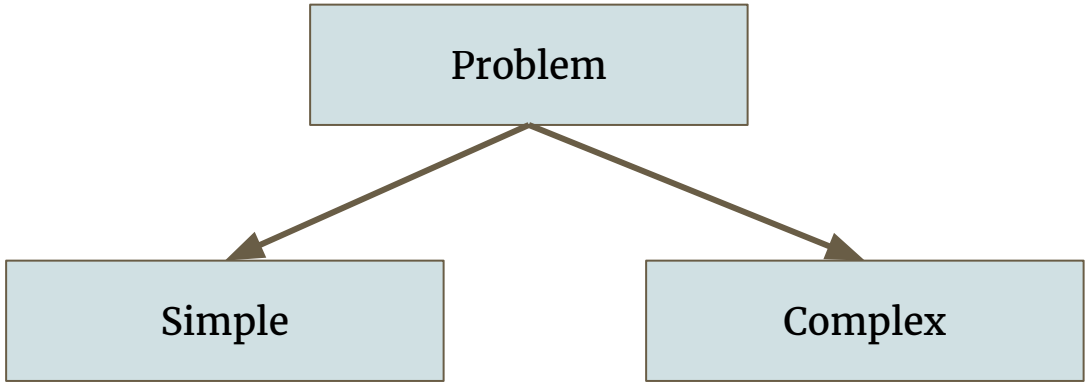
Rajasekaran AP/IT

Introduction to Problem

Rajasekaran AP/IT

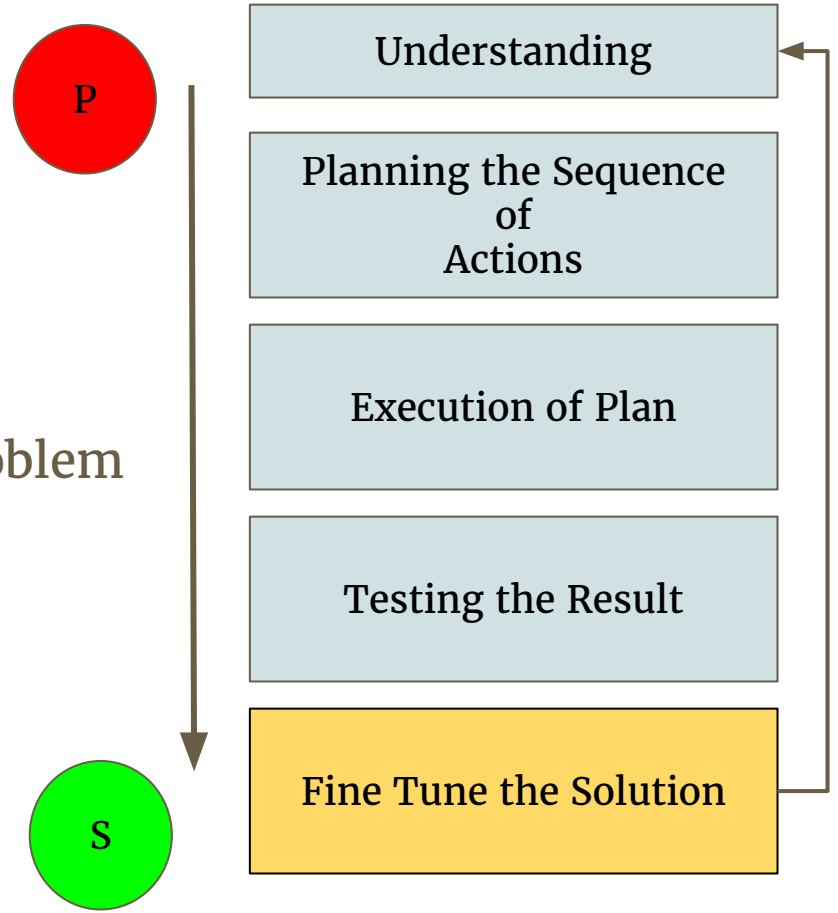
Problem Solving

The process of finding solutions to difficult or complex issues.

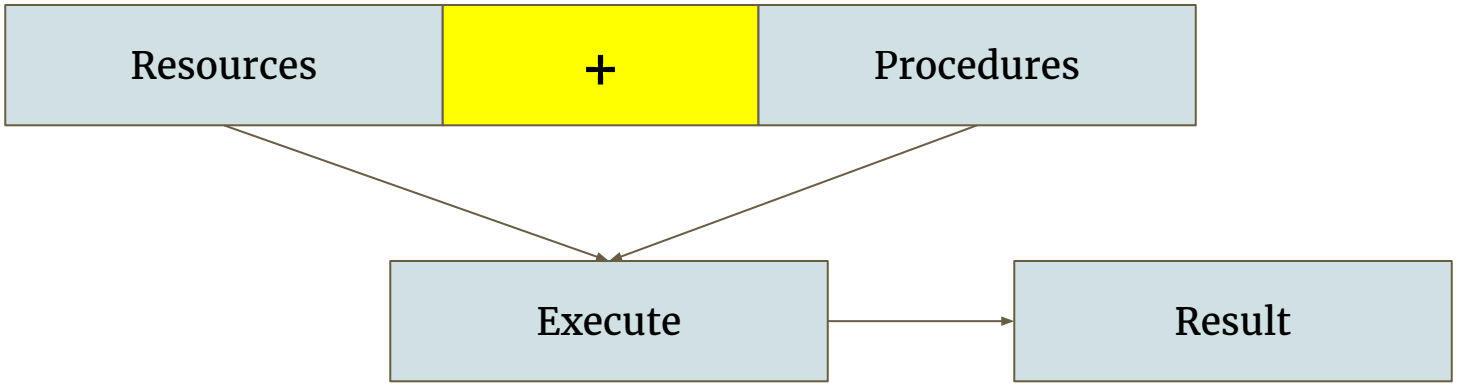


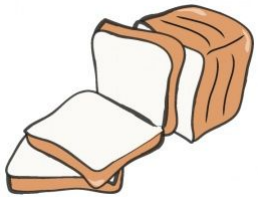
Solution to the problem

Steps involved when solving the problem



Recipe to the Solution



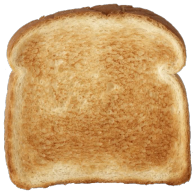


Cook a Crunchy Bread Toast for You

Frying Pan
A Slice of Bread
A Spoon of Oil
3 Minutes of Heat Source

+

Bread Toast Recipe



Do Cooking → Get Your Bread Toast

Procedure to Make Bread Toast

Step 1 : Grab a loaf of bread.

Step 2 : Get a pan and place it on the stove let it heat.

Step 3 : Pour some oil on the pan and wait for oil to be heated.

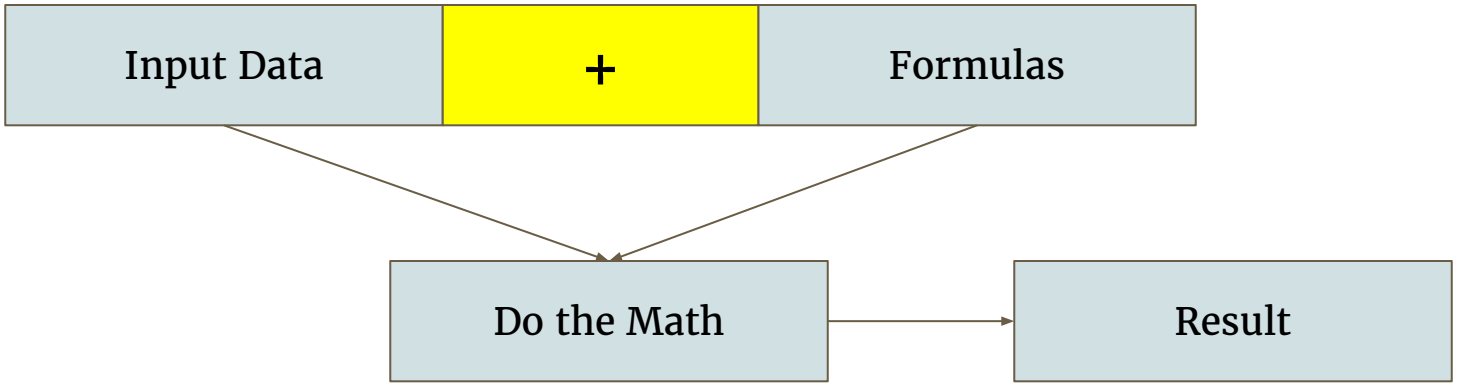
Step 4 : Put a slice on the pan and roast until it become brown in shade.

Step 5 : Turn the slice and roast until it become brown in shade.

Step 5 : Get the toasted bread from the pan and serve it.

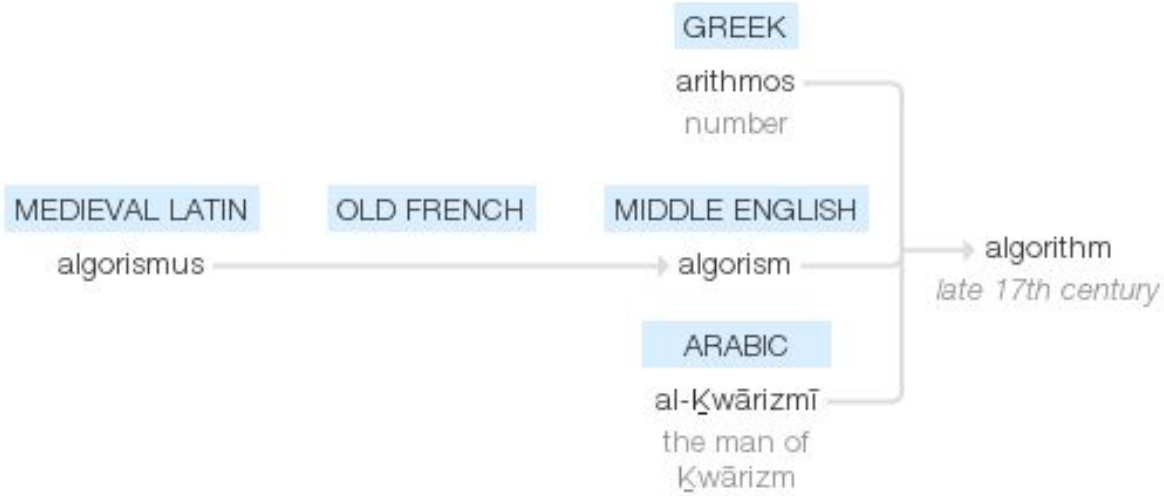
Step 6: Turn off the heat source.

If a problem comes from mathematics then what we need to do?



Mathematically the Procedures is

Algorithm



Algorithm

- A finite set of unambiguous instructions performed in a prescribed sequence to achieve a goal, especially a mathematical rule or procedure used to compute a desired result.
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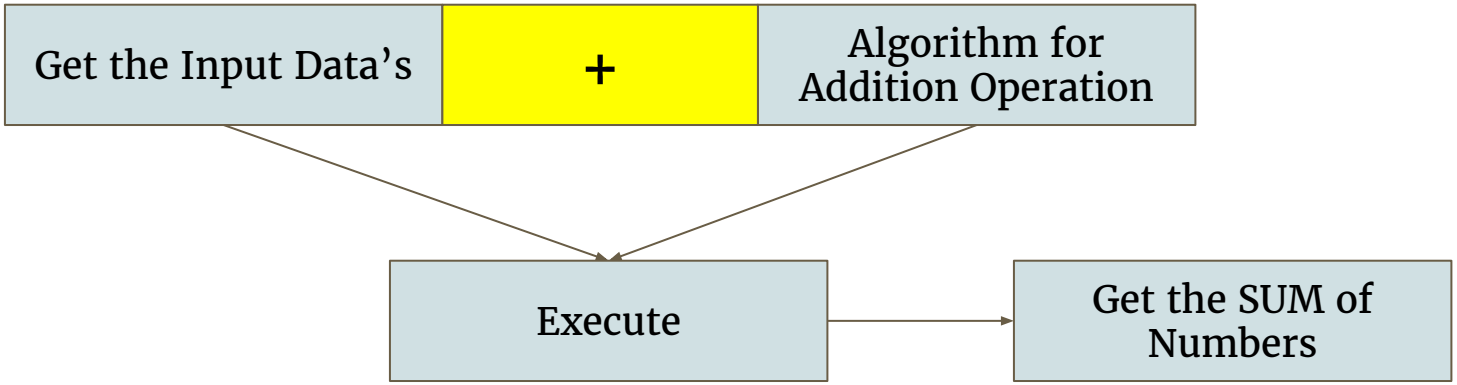
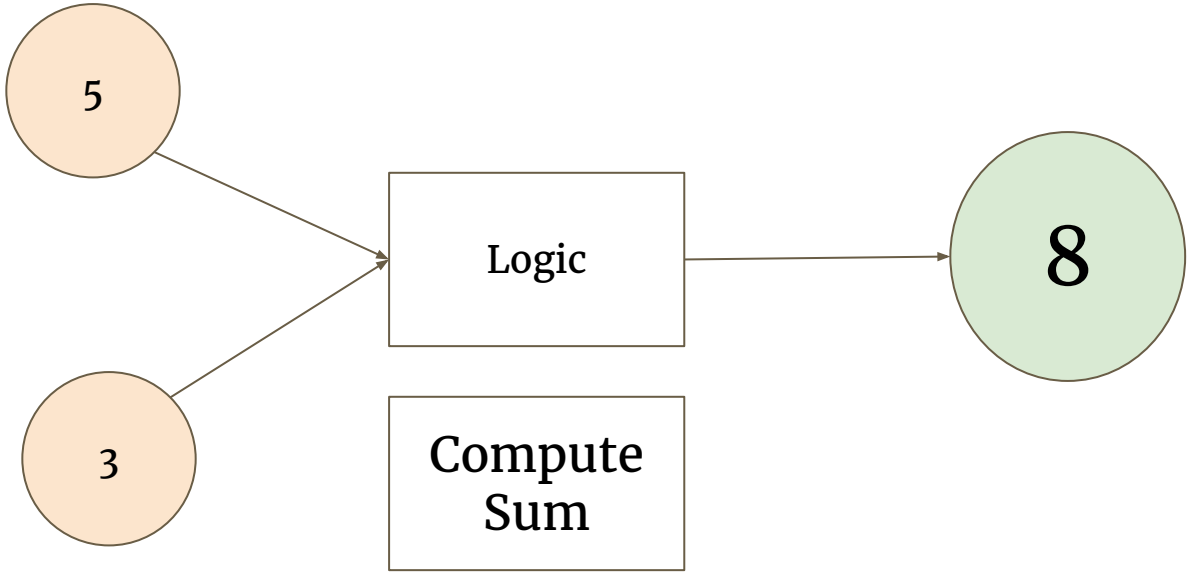
- Algorithms are the basis for most computer programming.

Simple Mathematical Problem



Simple Mathematical Problem



Addition Algorithm Human Version

Step 1 : Get 2 inputs.

Step 2 :Perform addition.

Step 3 : Get the Result.

Addition Algorithm Computer Version

Step 1 : Get 1st Input and store.

Step 2 : Get 2nd Input and store.

Step 3 : Grab the stored value and perform the addition logic.

Step 4 : Compute the result.

Step 5 : Store the result.

Step 6 : Display the result and exit

Need of Algorithm

1. Efficiency
2. Abstraction
3. Reusability

Basic Building Blocks of Algorithm

- ***Instructions/ Statements***
- ***State***
- ***Control Flow***
- ***Functions***

Instruction/Statement

In computer programming, a statement is the **smallest standalone element** of an imperative programming language that expresses some action to be carried out. It is an instruction written in a high-level language that commands the computer to perform a specified action.

1. Simple Statement [assertion, Assignment, Call]
2. Compound Statement [block, loops, conditions, jumps]

State

In information technology and computer science, a program is described as stateful if it is designed to remember preceding events or user interactions; the remembered information is called the state of the system.