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Introduction to Computational Thinking

by Kunal Goyal

CSA101 : Problem Solving with
Programming

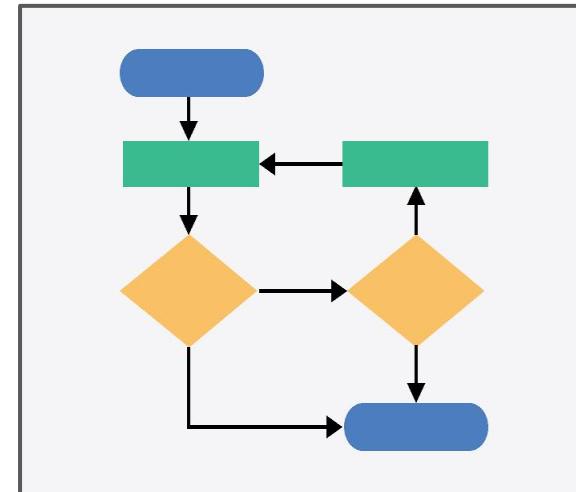
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Flowcharts

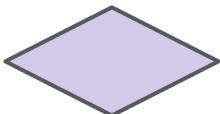
What is a Flowchart?

A **flowchart** is a diagram that shows the **step-by-step flow of logic**.

- It uses shapes like **ovals, rectangles, and arrows** to describe the process.
- Think of it as a map for your program - you know **where to start and what comes next**.

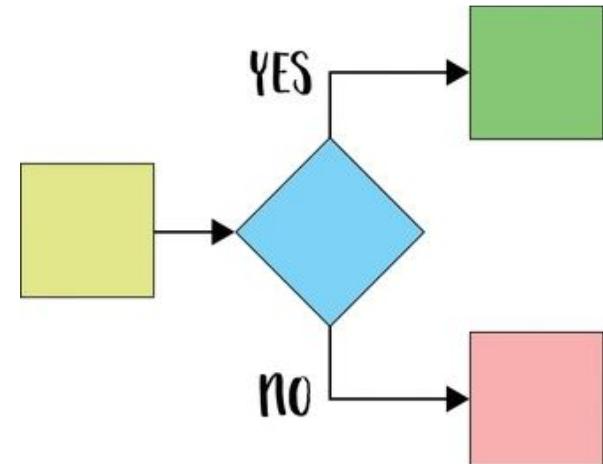


Flowchart Symbols and their Uses :

Symbol	Name	Function
	Oval	Represents the start and end of a process.
	Arrow	Indicates the flow between steps.
	Parallelogram	Used for input or output operation.
	Rectangle	Denotes the operational step.
	Diamond	Signifies a point requiring a yes/no.

Why Use Flowcharts in Programming ?

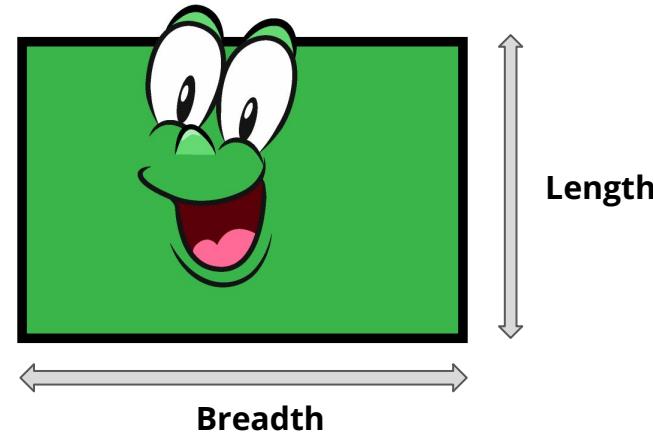
- Helps us plan logic before writing any code.
- Makes complex ideas simple to understand.
- Easier to explain your logic to others.
- Helps you find mistakes faster (debugging).



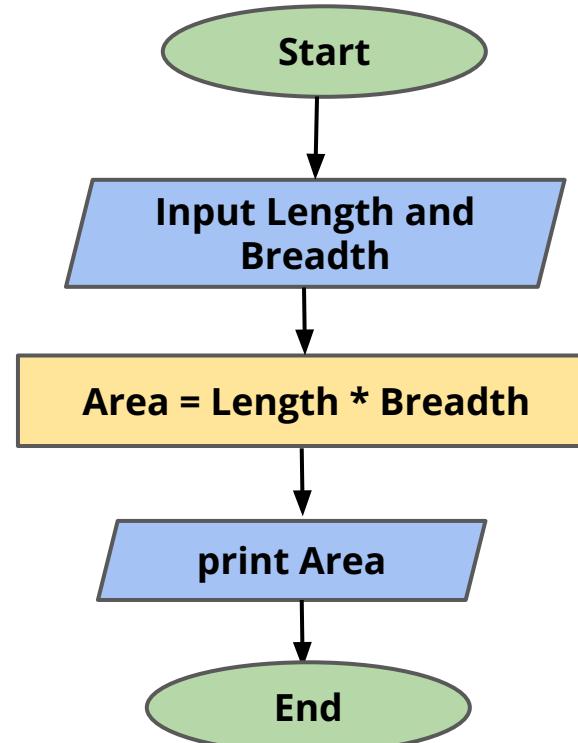
Area of a Rectangle :

- Imagine you want to calculate how much land your rectangular garden covers.
- You know the length and the breadth, but how do we find the area? 🤔

Let's break it down visually!



Flowchart – Area of a rectangle :



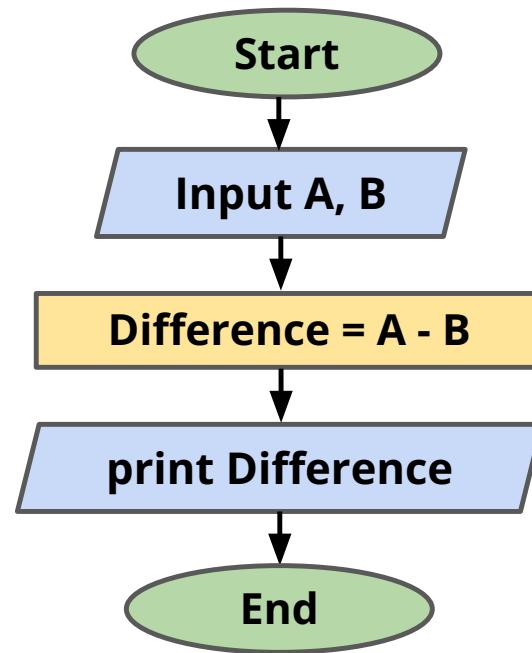
Difference of two numbers :

- You have two numbers.
- You want to find out how much more one is than the other. 🤔

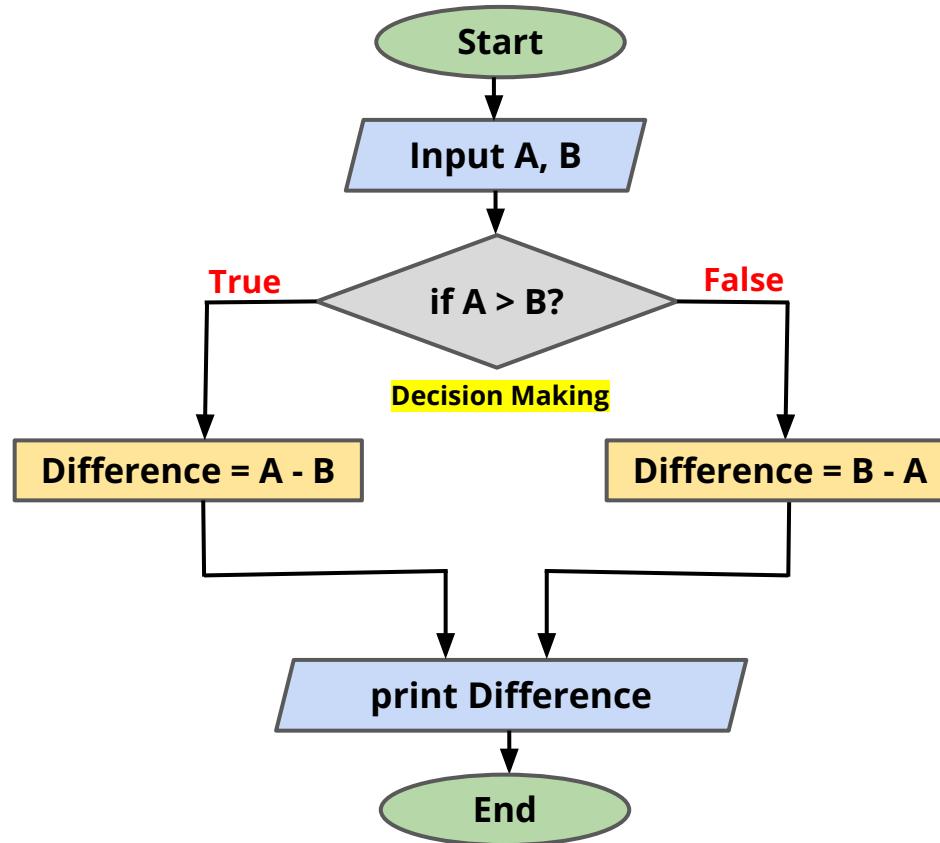
Let's break it down visually!



Flowchart – Difference of two numbers :



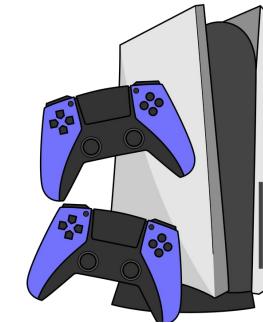
Flowchart – Difference of two numbers :



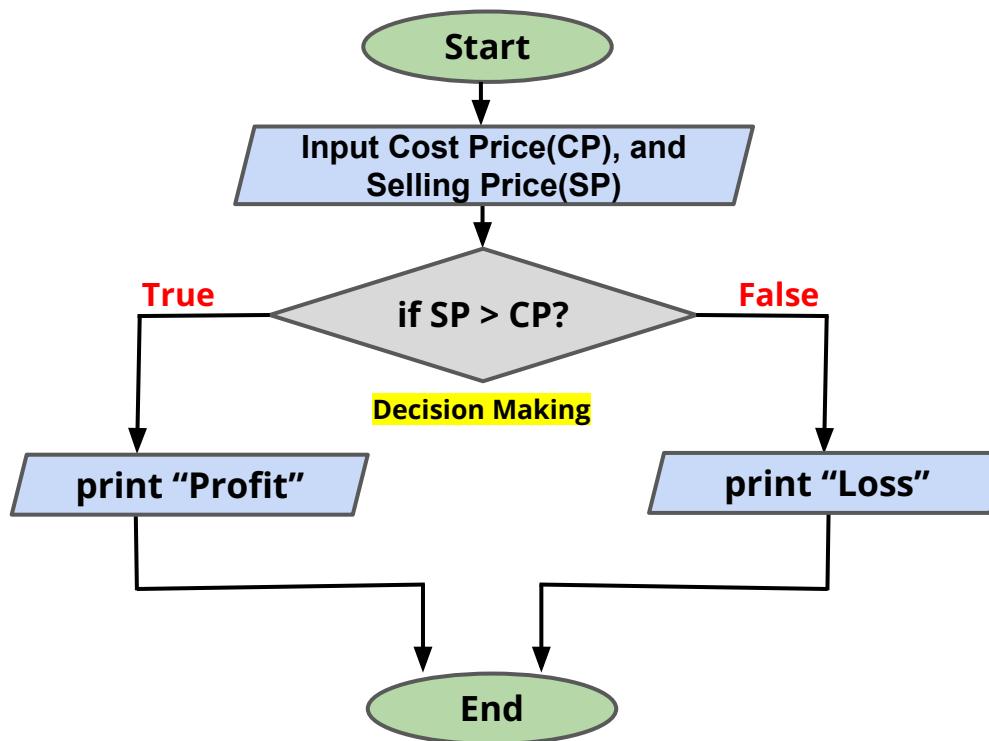
Profit or Loss

- Imagine you bought a PS5 and then sold it to a friend.
- Did you make some extra cash 💰 or lose a bit 💔 ?

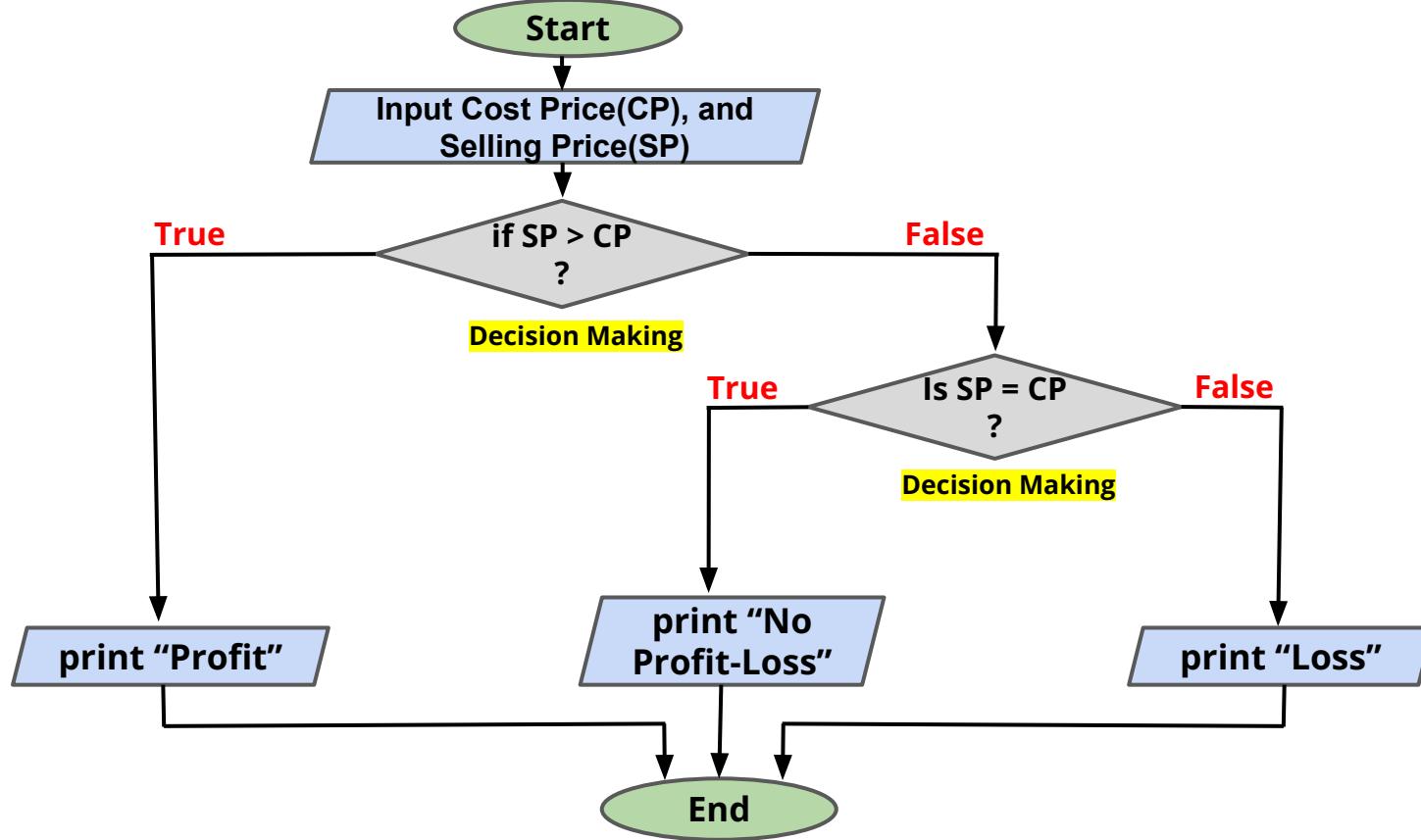
Let's break it down visually!



Flowchart - Profit or Loss :



Flowchart - Profit or Loss :



Saying Hello to World

The First Step into Programming :

"Every journey begins with a single step."

- Today we write our first ever program.
- We'll make the computer do exactly what we want.
- But... how do we talk to a computer?



What Does a Computer Understand ?

How
Computers
Understand
Language



What Does a Computer Understand?

- Computers don't think — they just follow instructions.



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What Does a Computer Understand?

- Computers don't think — they just follow instructions.
- We use a programming language to talk to it.
- Just like we learn English/Hindi to talk to each other, we can use a programming language like Python to talk to the computer.



Let's Write our First Program :

- Now let us open our computers and start talking to it.
- Our first activity will be to write our first program printing - "Hello, World" .

```
python  
  
print("Hello, World!")
```

Code Snippet



Hello, World!

What You Just Did :

- You talked to a computer and said “Hello, World”.
- You saw your words appear like magic.
- You wrote your first ever program 🎉🎉🎉.



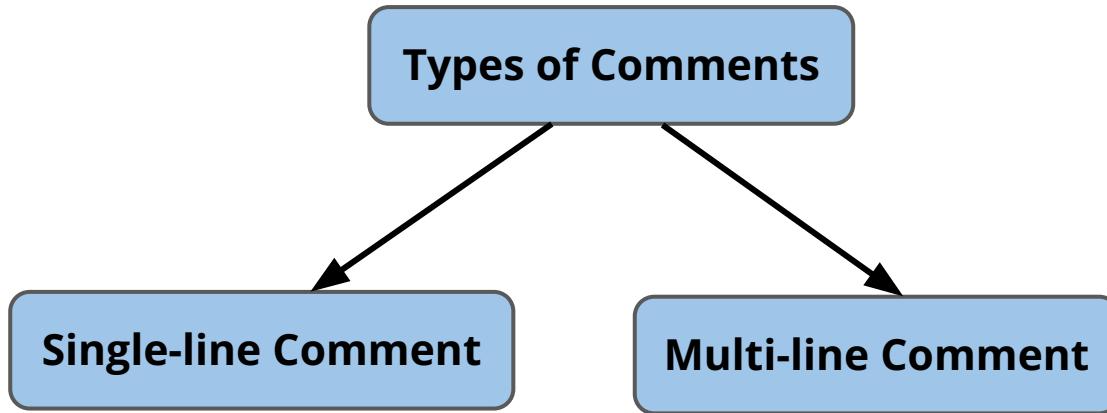
Comments

Comments :

- In Python, comments are used to add notes, explanations, or annotations within the code.
- They are ignored by the Python interpreter and do not affect program execution.



Comments :



Single-line Comments :

- A **single-line comment** is written using the `#` symbol.
- Everything after `#` on that line is **ignored** by the Python interpreter.

```
python  
  
# Take user input
```

Multi-line Comments :

- A **multi-line comment** in Python is **used to write comments that span across multiple lines**. These are useful when you want to describe a block of code or add detailed notes.
- In Python, multi-line comments can be written using **multiple # symbols** or with **triple quotes** ('''' or """).

```
# This program calculates the area of a circle
# It takes radius as input from the user
# Then it uses the formula: area = 3.14 * r *r
```

```
'''
```

```
This program calculates the area of a circle
It takes radius as input from the user
Then it uses the formula: area = 3.14 * r *r
'''
```

Code Snippet



Quiz Time!

Please fill the feedback!

Thank You!