IO & Variables

Python Programming Workshop

Contents:

Review

- A **program** or **algorithm** is a sequence of instructions to perform a specific task. Consider the example of baking a cake

Review

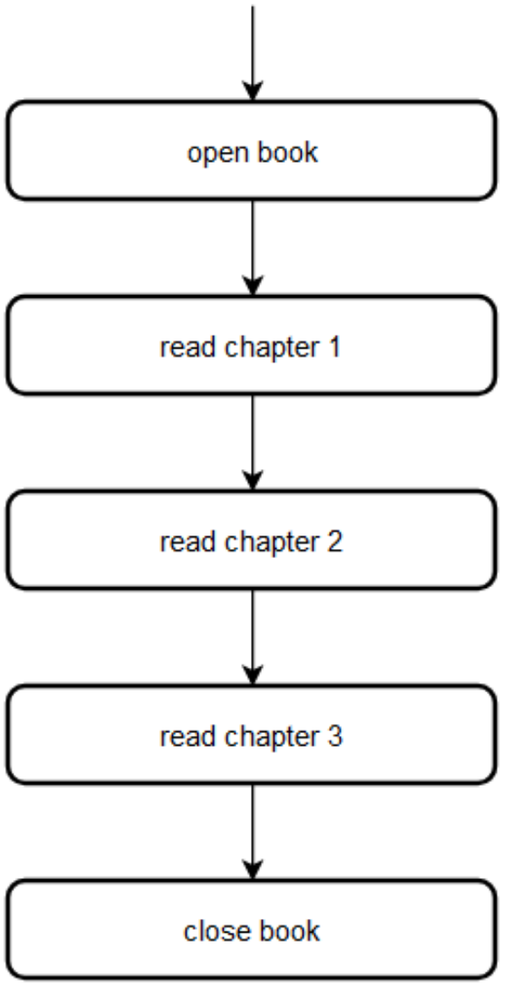
- A **program** or **algorithm** is a sequence of instructions to perform a specific task. Consider the example of baking a cake

- 3 **logic structures** used to write programs
  - Sequence
  - Selection
  - Loop

Review

- Sequence

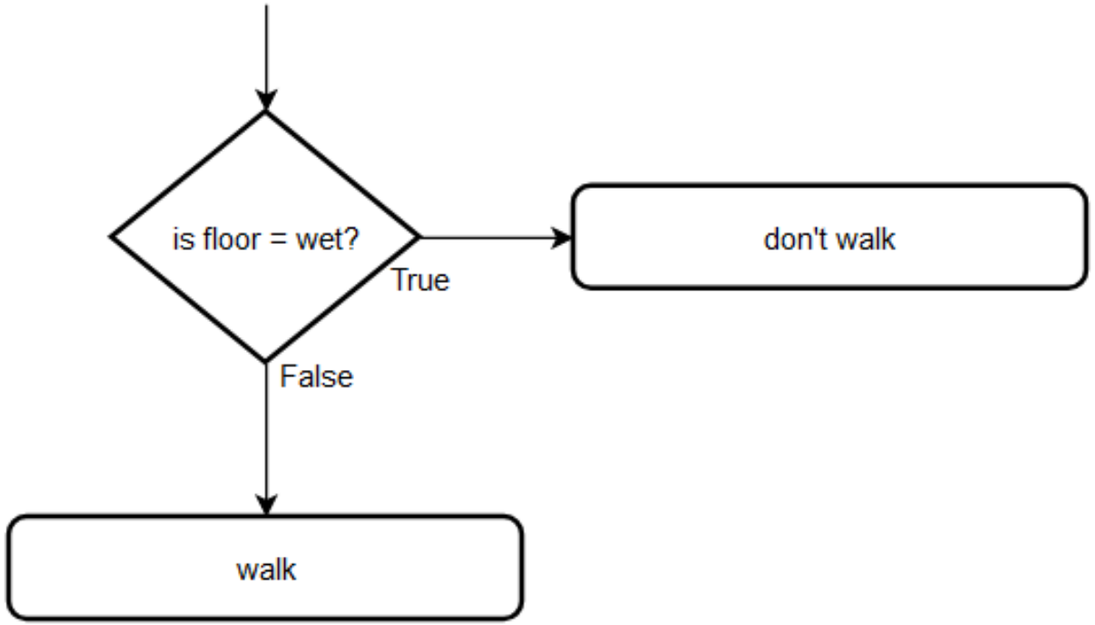
```
1 Open book
2 Read first chapter
3 Read second chapter
4 Read third chapter
5 Close book
```



Review

- Selection

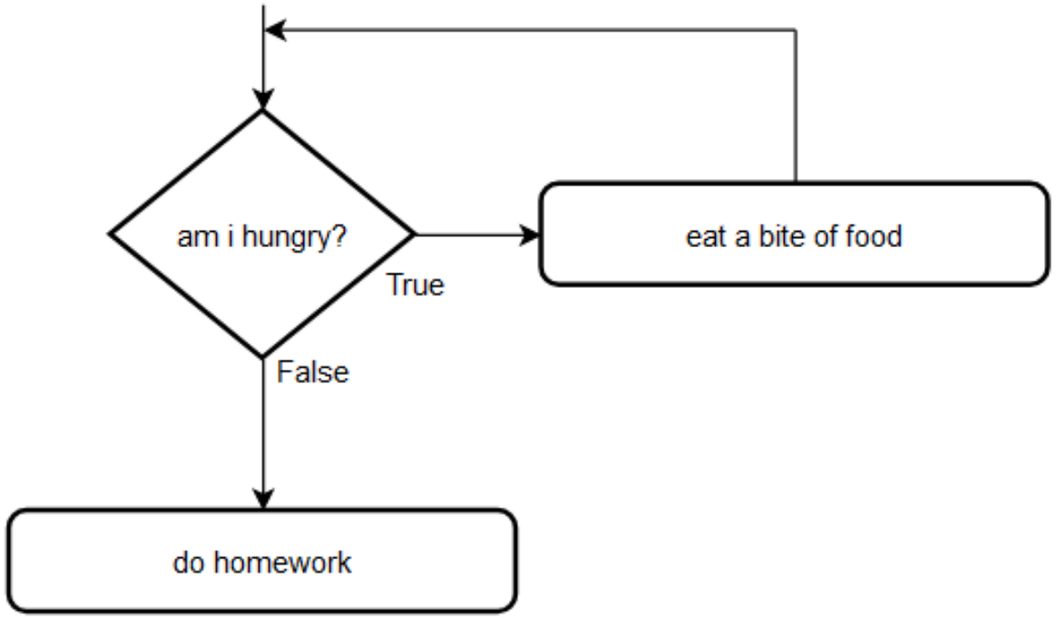
```
1  if floor is wet then
2      Don't Walk
3  else
4      walk
```



Review

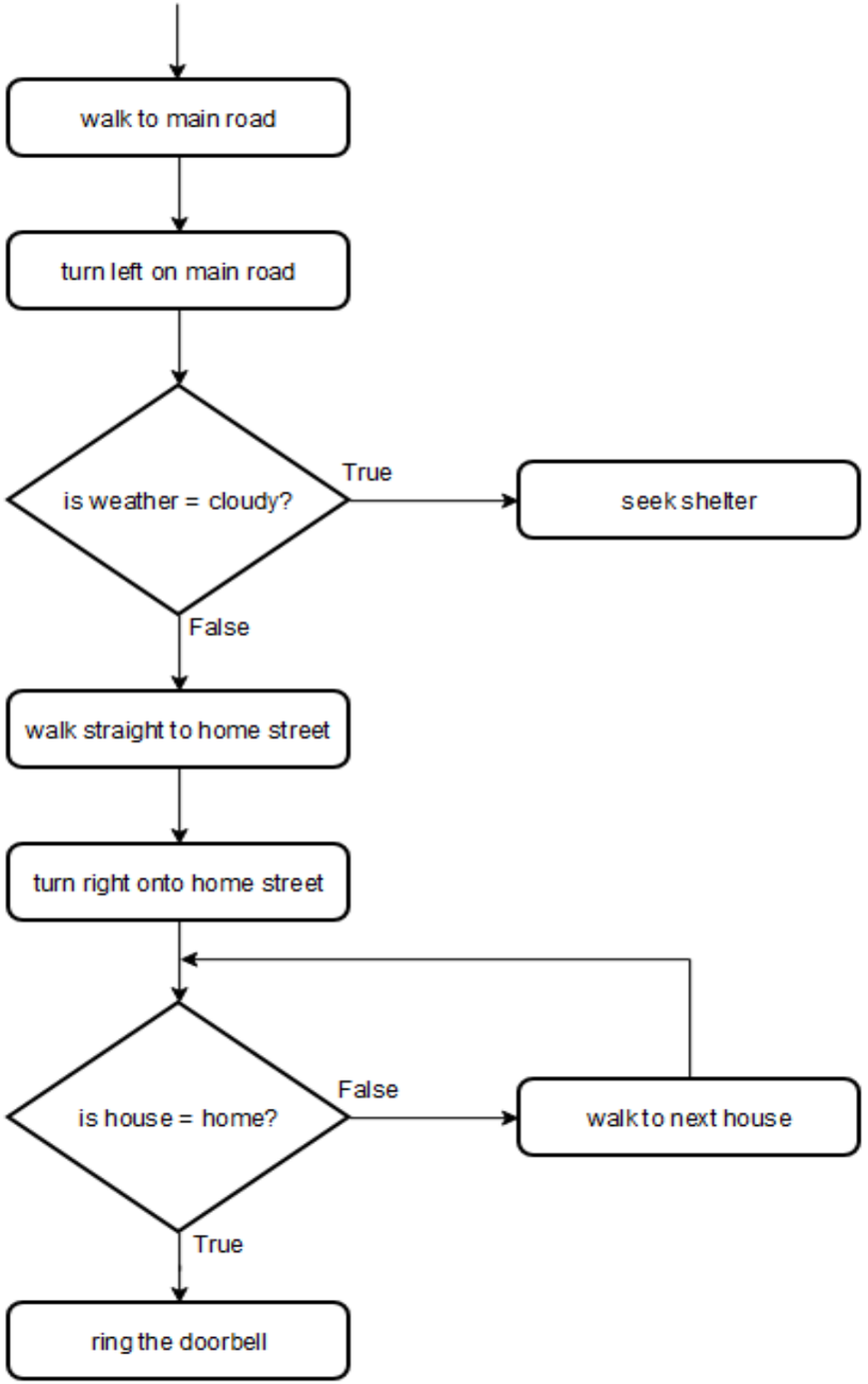
- Loop

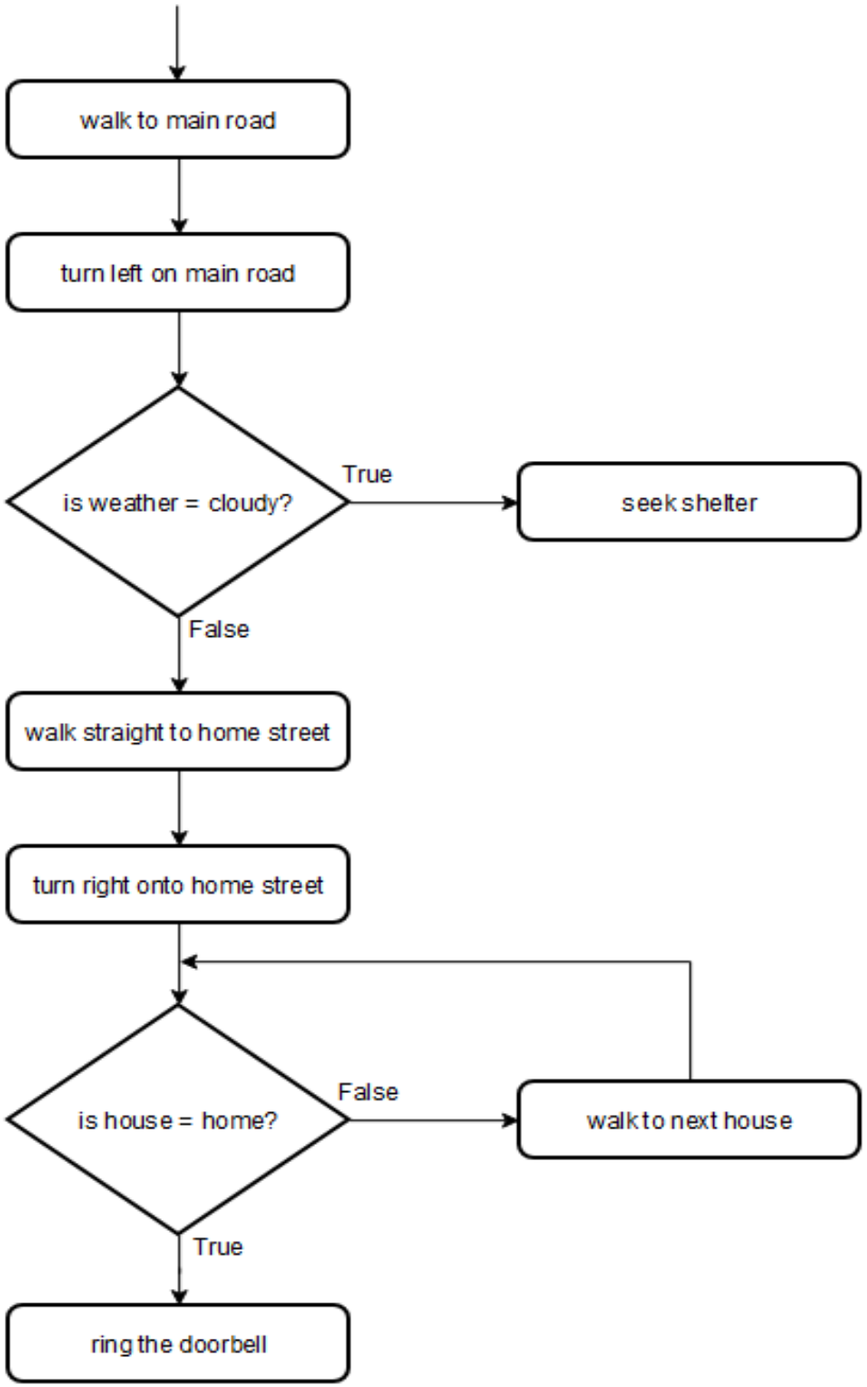
```
1 while you continue to be hungry
2     Eat a bite of food
3 Do homework
```

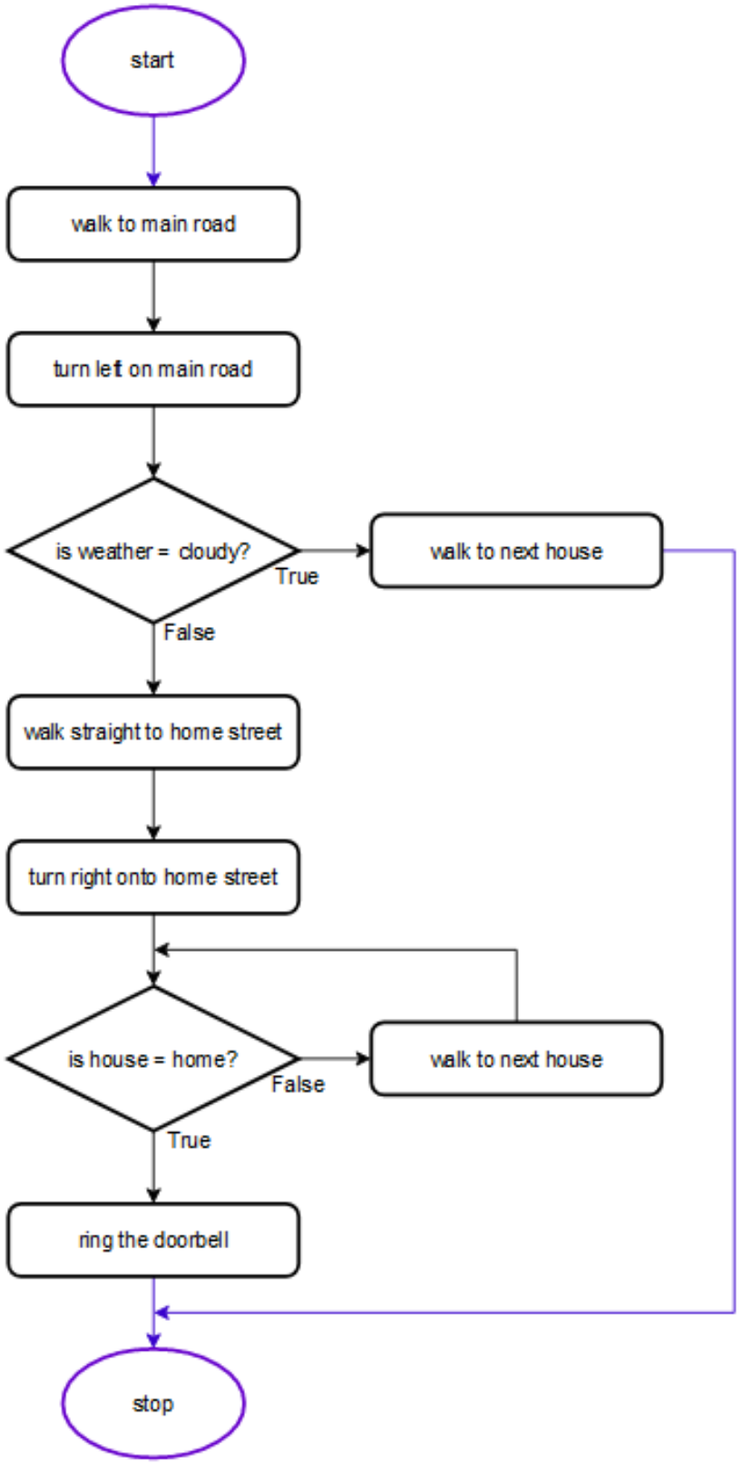


Review

```
1. Walk straight from school until you reach the main road.
2. Turn left on the main road.
3. If weather is "cloudy" then
4.     Seek shelter
5. else
6.     Continue straight until you see your street
7.     turn right onto your street
8.     While house is not your house
9.         Walk to the next house on the street
10.    Ring the doorbell
```

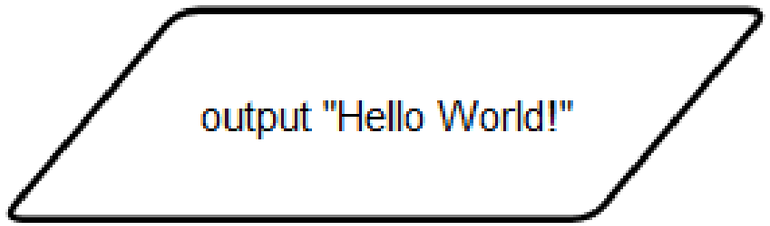



walk to main road
turn left on main road
is weather = cloudy?
True
seek shelter
False
walk straight to home street
turn right onto home street
is house = home?
False
walk to next house
True
ring the doorbell


start
walk to main road
turn left on main road
is weather = cloudy?
True
walk to next house
False
walk straight to home street
turn right onto home street
is house = home?
False
walk to next house
True
ring the doorbell
stop

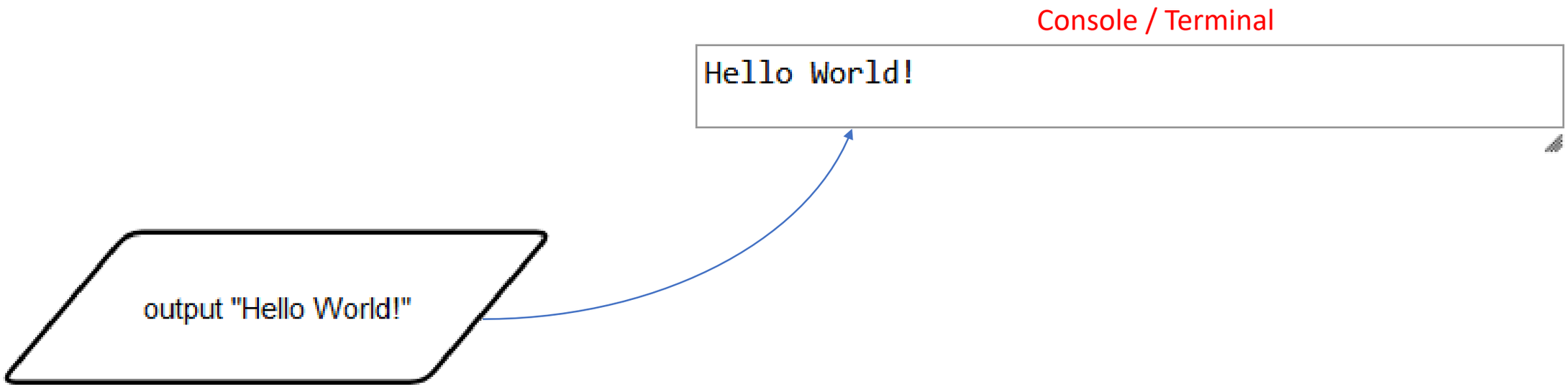
Input & Output

- Computers process data and produce output



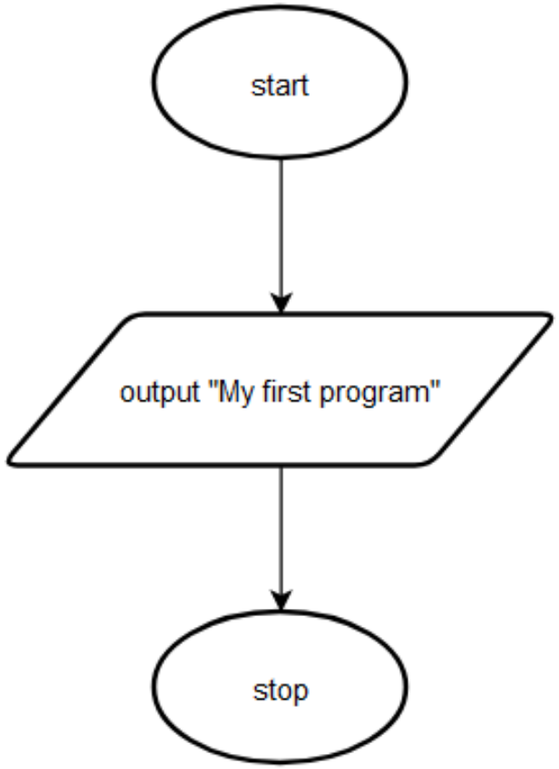
Input & Output

- Computers process data and produce output



Input & Output

- **Task:** Output “My first program” to the console



Pseudocode

```
1  start
2  output "My first program"
3  stop
```

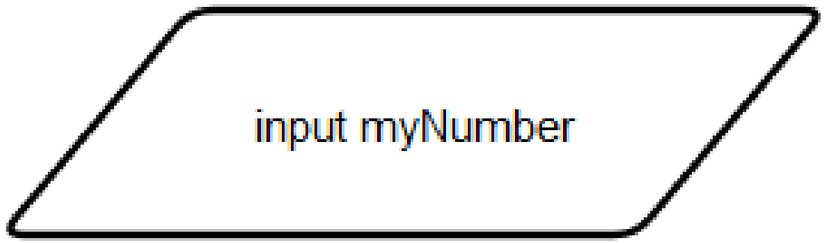
Program Code

```
1  print("My first program")
```

Run Code

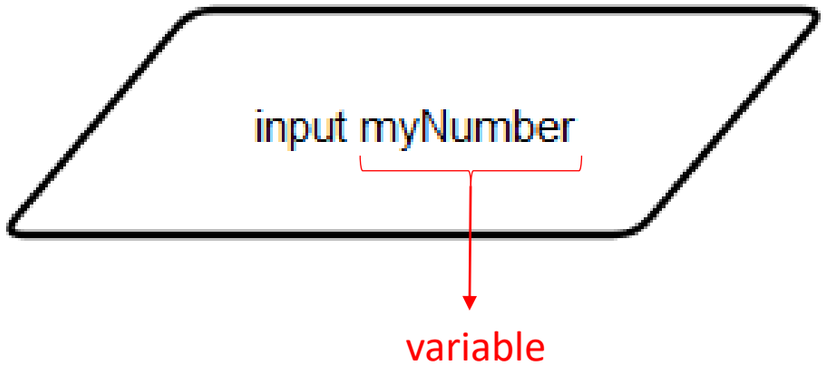
Input & Output

- Computers take input data



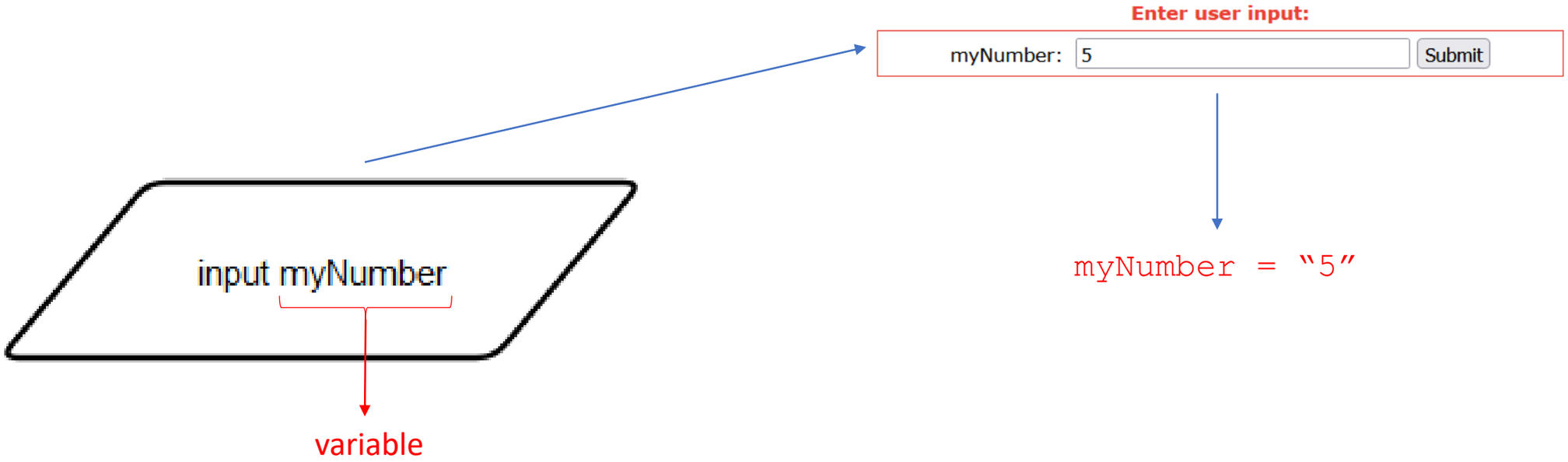
Input & Output

- Computers take input data



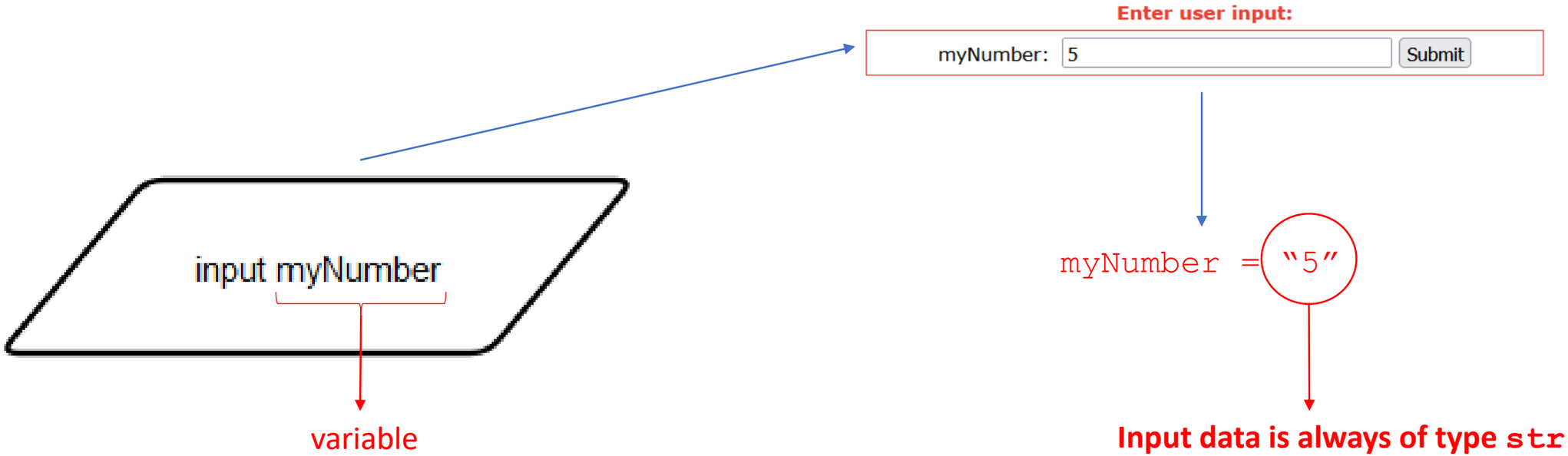
Input & Output

- Computers take input data



Input & Output

- Computers take input data

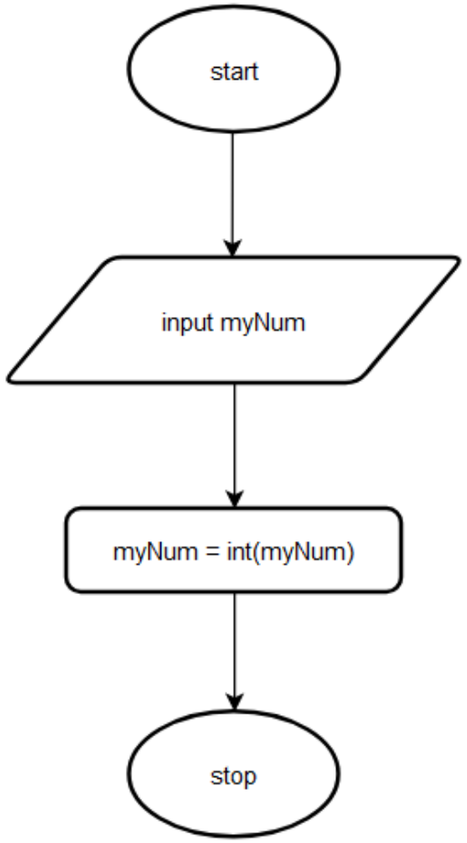


Input & Output

- Computers take input data
  - Data types
    - `str : “this is a string #$12345%”`
    - `int : 2, 5, 10, 300, 0`
    - `float: 3.5, 1.2, 10.19`
    - `bool: True, False`
- To take input data as a different data type, you have to perform **type conversion**.

Input & Output

- **Task:** Take `int` input from user and store it in a variable called `myNum`



Pseudocode

```
start
input myNum
myNum = int(myNum)
```

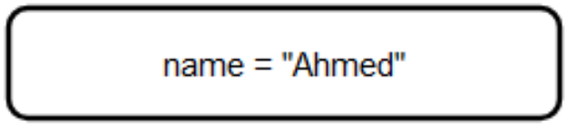
Python Code

```
myNum = input()
myNum = int(myNum)
```

Run Code

Variable Assignment

- You can assign data of any data type to variables



Pseudocode

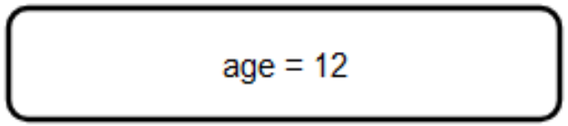
```
1  name = "Ahmed"
```

Python Code

```
1  name="Ahmed"
```

Variable Assignment

- You can assign data of any data type to variables



Pseudocode

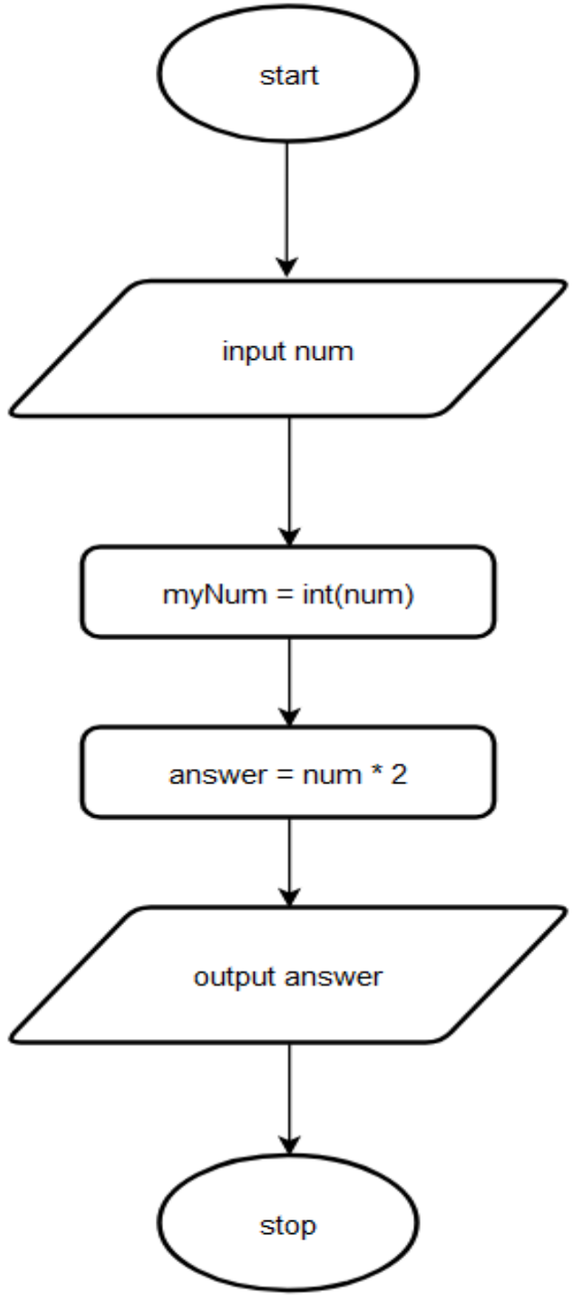
```
1 age=12
```

Python Code

```
1 age=12
```

“multiply by 2” Program

- **Task:** Write a program that takes an `int` input and outputs the value after multiplying it by 2.



“multiply by 2” Program

- **Task:** Write a program that takes an `int` input and outputs the value after multiplying it by 2.

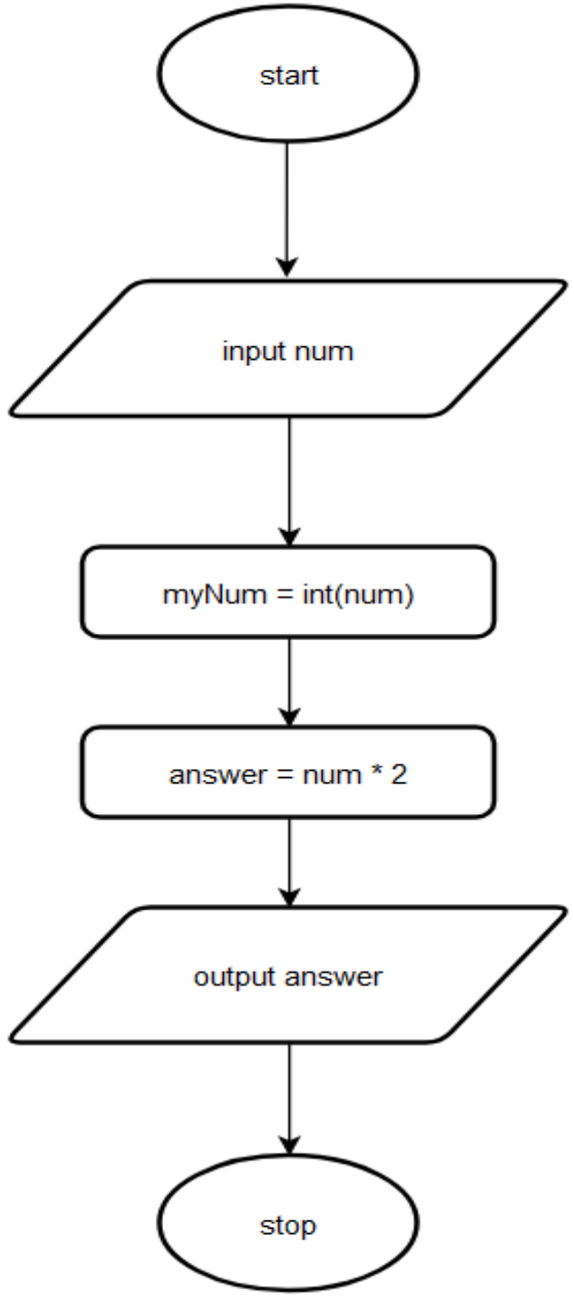
Pseudocode

```
start
input num
num = int(num)
answer = num * 2
output answer
stop
```

Python Code

```
num = input()
num = int(num)
answer = num * 2
print(answer)
```

Run Code



CLOSING