Week-2: Summary:

First, we will learn about the **data type**. We can check the data type using **type()** function.

1. integer = {-5, -4, -3, -2, -1, 0, 1, 2, 3, 4}
2. float = {3.1416, 5.00, 3.32}
3. string / text = {'Bangladesh', "Bangladesh"}

Variable Type:

1. var = 4 # type(var)
2. var = 4.5 # type(var)
3. var = 'Odin' # type(var)
4. var = 4+11 # type(var)
5. var = 4.75+81 # type(var)
6. var = '4' + '5' # type(var)

Examples:

1. print(type(-11.0)) # float
2. print(type(-11.)) # float
3. print(type(-11)) # integer
4. print(type('Dhaka')) # String / Text
5. print(type("-11.5")) # String / Text

Operators in python:

There are different types of operators on python. We can compare two or more operands using operators. The most commonly used variables are greater than **(>)**, less than **(<)**, equal **(=)**, not equal **(!=)**, greater or equal **(>=)**, and less or equal **(<=)**.

Operator	Meaning
== (double equal to)	Equal to
<	Less than
>	Greater than
!=	Not equal to
<=	Less than or equal to
>=	Greater than or equal to

How does the operator use it?

1. print(5>6)
2. print(5>=5)
3. print(51<=6)
4. print(5==6)
5. print(5!=6)
6. print(5<6)

7. v = 4
   print(2<v<9)

8. v = 2
   print(2<=v<9)

9. v = 2
   print(2<v<=9)

Logical Operator (True / False):

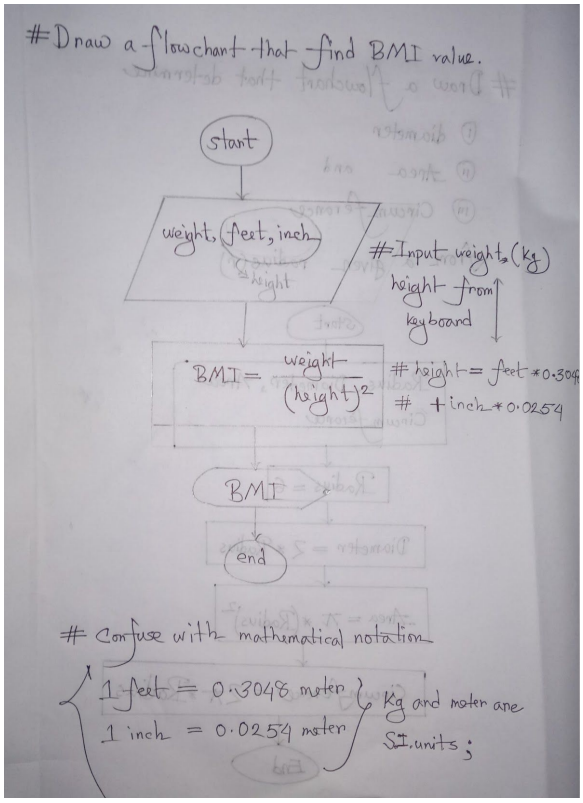
p	q	p∧q
T	T	T
T	F	F
F	T	F
F	F	F

p	q	p∨q
T	T	T
T	F	T
F	T	T
F	F	F

Let's practice:

1. print((5!=6) && (6==5))
2. print((5!=6) || (6==5))
3. print((5==6) || (6==5))

Now, we will practice a problem on BMI calculation.




```
weight = float(input()) # kg

feet   = float(input())  # feet

inch   = float(input())  # inch

height = (feet * 0.3048) + (inch * 0.0254)

BMI = weight / (height**2.0)

print('You BMI is: {}'.format(BMI))
```

Calculating BMI is an interesting problem. To calculate BMI we need to know height and weight. We need three variables to express height and weight. Those are weight, feet, and inch.

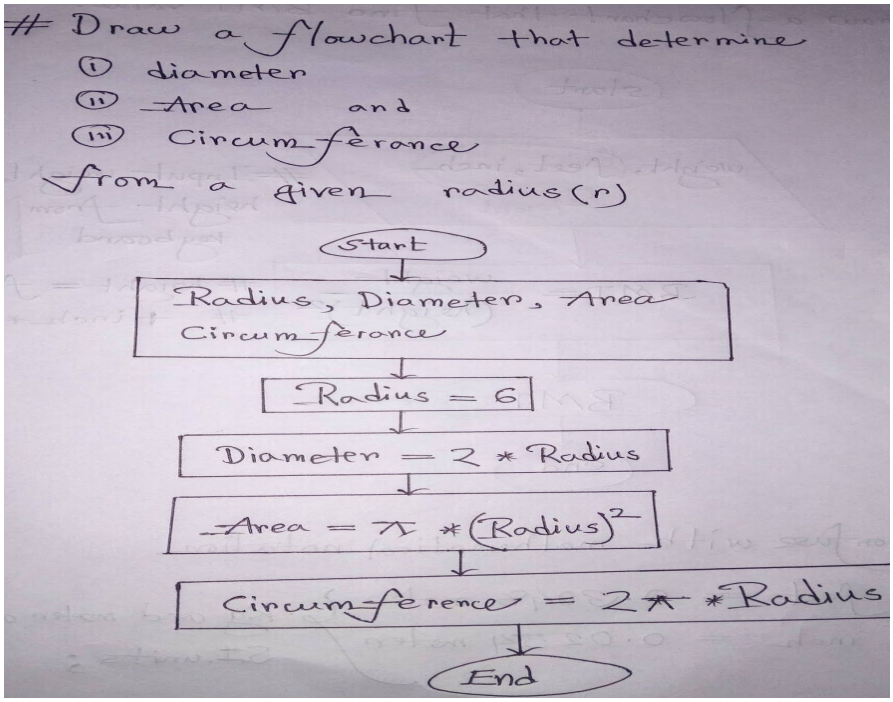
Step-1: We will take three inputs from the user. *# using input function and all the inputs are float.*

Step-2: We have to convert height from feet to meters. *# 1 feet = 0.3048 meters, and 1 feet = 0.0254 meters.*

Step-3: This step is the main part of our code, which is calculating BMI. *# Formula of calculating BMI is, BMI = weight/ height**2*

Step-4: Almost done! Let's print. *# Don't forget to use format() function.*

Now, we will practice a problem on circle calculation.



Let's solve another problem! Now we will calculate the diameter, area, and circumference using radius.

Step-1: This problem is almost the same. We have to take a radius from the user.

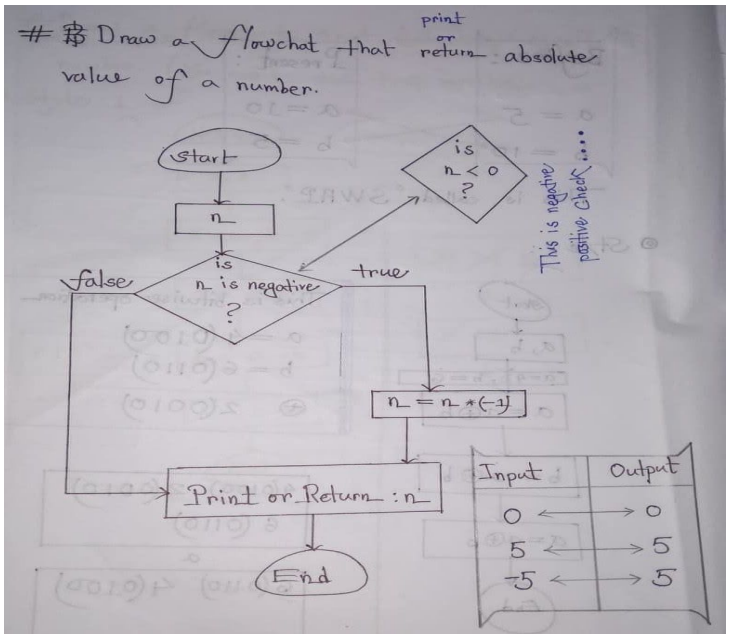
Step-2: In this step, we will calculate the diameter using a formula. *# Diameter = 2 * radius*

Step-3: Here comes the area. *# From our high school experience, we know, area = pi * (radius ** 2)*

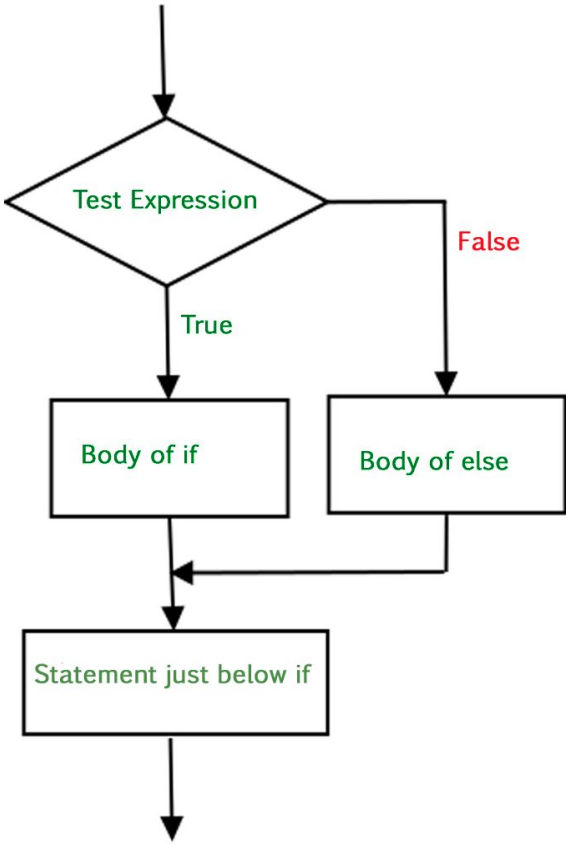
Step-4: We will calculate circumference now. *# Formula is circumference = 2*pi*radius*

Step-5: Without using radius we can use diameter on calculating circumference. Let's print our results.

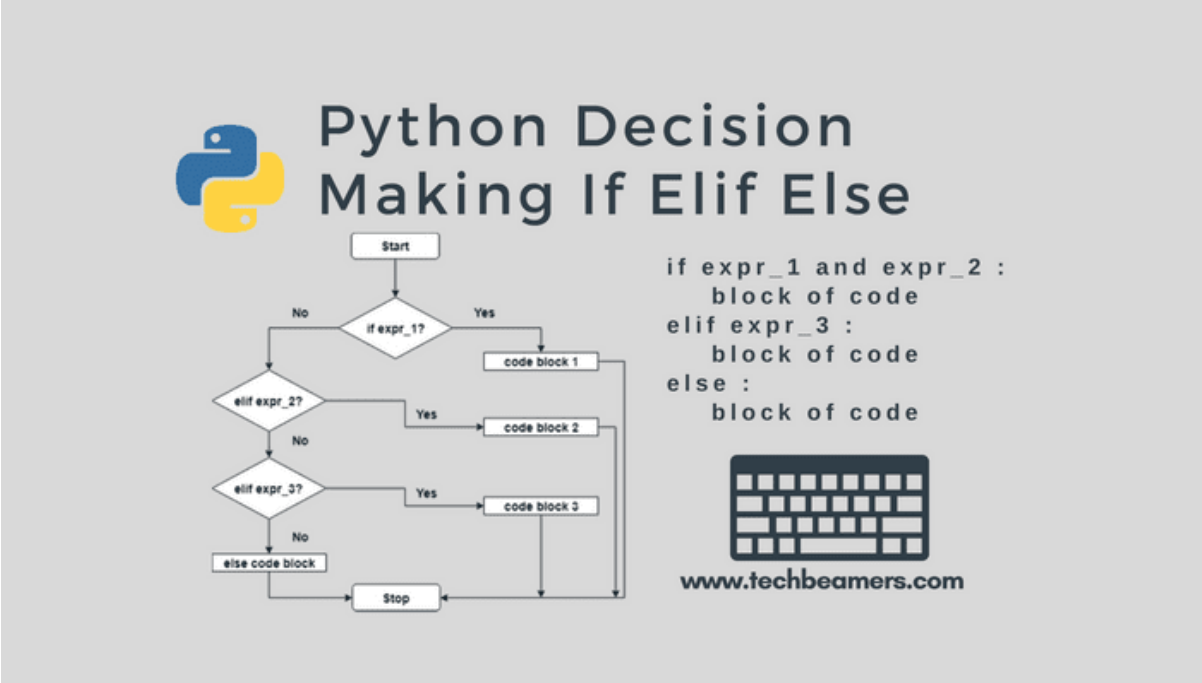
Find the positive and negative values:

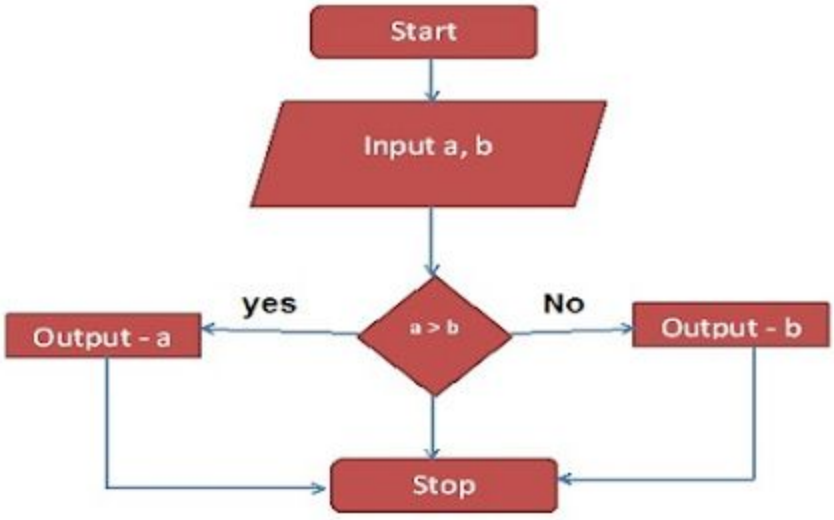


The basic flow of condition:



Conditions in python:





We will ensure the greater number of two numbers in this problem.

Condition is a familiar word in our real-life world. Now, we will learn the use of conditions in python.

Now, practice a problem of conditioning.

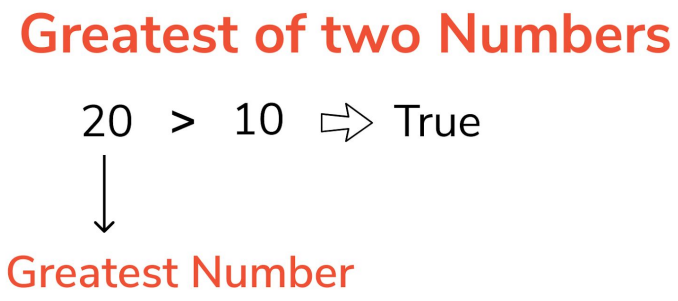
We will take a number as input from the user and determine whether the number is positive or negative.
Step-1: We will take an integer as input. *# use int(input())*
Step-2: Now, we will check, whether the number is greater than or equal zero or not. If yes then the number is positive and if not then the number is negative. *# we will use if and elif for checking the number. We will understand more after printing the output of this problem.*
Step-3: We're almost done! Let's print the result.

Odd-even checking with python with % operator:

```
i=23
if i%2==0:
    print("This is the if block")
    print("i is an even number")
else:
    print("This is the else block")
    print("i is an odd number")
```

```
This is the else block
i is an odd number
```

We can solve odd-even checks using basic conditions (if-else).



We will ensure the greater number of two numbers in this problem and next you will practice finding a minimum of two numbers using the same procedure.

```
def max_of_three(a,b,c):
    """Find the max of three numbers."""
    #compare a to b
    if a > b:
        #compare a and c
        if a > c:
            return a
        else:
            c > a
            return c
    elif a < b:
```

We will ensure the greater number of three numbers in this problem and next you will practice finding a minimum of three numbers using the same procedure.

Practice Problems

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1. Determine a number whether it is odd or even.
2. Find leap year from a given year.
3. Fizz-Buzz (If a number is divided by both 3 and 5 is called “fizz-buzz”, but a
4. number is only divided by only 3 is called “fizz” and a number is only divided
5. by 5 is called “buzz”. Otherwise is ”None”.)
6. Input a number, check whether it is positive or negative.
7. Input a number, print the absolute value of that number.
8. Input two numbers, tell which one is greater.
9. Input two numbers, tell which one is less.
10. Input three numbers, tell which one is greater.
11. Input three numbers, tell which one is less.Practice / Assignment
12. Input a character, determine whether it is a vowel or not.
13. Coin Change [Easy Greedy]