# Session 4

* If statement
* If else statements
* If elif else statements
* Built-in String methods
* Mutable vs Immutable data types

**Conditional statements**

## 1) If statement

**If statements allow programming languages to make decisions**

We can have individual if statements without an else part. The single If statements are useful if we want to check for conditions and do certain things only if the condition is True.

**if** True:  
 print("I am True")

I am True

Usually, the conditions are created using the comparison and logical operators

a = 10  
b = 20  
a<b

True

**if** a<b:  
 print("a is lesser than b")

a is lesser than b

What happens if the condition we provided in the if statement is not true

**if** a>b:  
 print("a is lesser than b")

We print nothing because the block of code inside the if statement (the indented part is not executed). This brings us to our next use condition flow statement **If Else**

## 2) If else statement

We can have if else blocks if we want some operation to be done if the condition in the if returns false

a = 10  
b = 20  
**if** a<b:  
 print("a is lesser than b")  
**else**:  
 print("b is lesser than a")

a is lesser than b

a = 100  
b = 20  
**if** a<b:  
 print("a is lesser than b")  
**else**:  
 print("b is lesser than a")

b is lesser than a

The above code will return a wrong result if a is equal to b. So we need to have a way of testing multiple conditions inside the same if block

a = 20  
b = 20  
**if** a<b:  
 print("a is lesser than b")  
**else**:  
 print("b is lesser than a")

b is lesser than a

age=int(input('enter your age: '))

if age>18:

print('major')

else:

print('minor')

## 3) If elif else statement

We can have if elif else blocks are used when we want to check for multiple conditions

a = 20  
b = 20  
**if** a<b:  
 print("a is lesser than b")  
**elif** a>b:  
 print("b is lesser than a")  
**else** :  
 print("both are equal")

both are equal

### TASK 1

**A school has the following rules for the grading system: Below 25 - F 25 to 45 - E 45 to 50 - D 50 to 60 - C 60 to 80 - B Above 80 - A Ask user to enter marks and print the corresponding grade.**

a = int(input("enter your marks : "))  
  
**if** a<25:  
 print("F")  
**elif** a>=25 **and** a<45:  
 print("E")  
**elif** a>=45 **and** a<50:  
 print("D")  
**elif** a>=50 **and** a<60:  
 print("C")  
**elif** a>=60 **and** a<80:  
 print("B")  
**elif** a>=80 **and** a<=100:  
 print("A")  
**else**:  
 print("not valid")

enter your marks : 50  
C

## 4) Built-in String methods

**All datatypes including Strings are an object in Python. This means we can call methods on the objects created using these classes.** Try creating a string then write the variable name followed by a . and press the tab key

my\_string = "hello world"  
my\_string.

The upper() method capitalizes all characters in the string The upper() method is an not in place method.

my\_string = "hello world"  
print(my\_string.upper())  
print(my\_string)

HELLO WORLD  
hello world

Since it is a not in place method we will have to reassign it to the same variable to reflect the changes

my\_string = "hello world"  
my\_string = my\_string.upper()  
print(my\_string)

HELLO WORLD

The split() method splits the strings at a specified character. By default the split character is space The split() converts the split words into a list The split() method is an not in place method.

my\_string = "hello world How are you"  
x = my\_string.split()  
print(x)  
print(my\_string)

['hello', 'world', 'How', 'are', 'you']  
hello world How are you



# Homework

**1) Take values of the length and breadth of a rectangle from the user and check if it is square or not.**

**2) Write a program to check for leap year. A leap year is exactly divisible by 4. Except for a century year (i.e. divisible by 100), for a century year to be a leap year it should also be divisible by 400.**

example inputs:

* 1000 is not a leap year
* 2000 is a leap year

**3) Write a program for a Python calculator whose output depends on the user's input operator and numbers. The program should prompt users to enter 2 numbers and ask for an operator. The program should output the answer to the operation performed.** Example: **Input 1:** 200 **Input 2:** 400 **Input 3:** +

**OUTPUT:** 600

**4) Write the code to Split all the words and save them into a list**

x = "Hello, How, Are, You,"

# HOMEWORK SOLUTION

*#TASK 1:*  
  
length = int(input("enter length value: "))  
breadth =int(input("enter breadth value: "))  
  
**if** length ==breadth:  
 print("It is square")  
   
**else**:  
 print("It is rectangle")

enter length value: 52  
enter breadth value: 52  
It is square

*#TASK 2:*  
  
year = int(input("Enter a year: "))  
  
**if** (year % 4) == 0:  
 **if** (year % 100) == 0:  
 **if** (year % 400) == 0:  
 print("Leap year")  
 **else**:  
 print("Not a leap year")  
 **else**:  
 print("leap year")  
**else**:  
 print("Not a leap year")

Enter a year: 2000  
Leap year

*#TASK 3:*   
number1 = int(input("Enter first number: "))  
number2 = int(input("Enter first number: "))  
print("operations can be performed: +, -")  
choice = input("Enter your choice: ")  
  
**if** choice =="+":  
 print(number1+number2)  
   
  
**if** choice =="-":  
 print(number1-number2)

Enter the first number: 56  
Enter first number: 23  
operations can be performed: +, -  
Enter your choice: +  
79

*#TASK 4:*  
x = "Hello,How,Are,You,"  
y=x.split()  
print(y)

['Hello, How, Are, You,']

#TASK 5: Write a Python program to check whether you are eligible to vote or not using if else condition

#TASK 6:

Write a Python program that will check for the following conditions:

If the light is green – The car is allowed to go If the light is yellow – The car has to wait If the light is red – The car has to stop Other signal – unrecognized signal. Example black, blue, etc… #using if elif and else

#TASK 7: Test if a is greater than b, AND if c is greater than a:

#TASK 8: Write a code to insert 41 before 51 my\_list =[12,21,31,51]

#TASK 9: Write a code to append the number 61 my\_list =[12,21,31,51]

#TASK 9: Write a code to pop the number 6 from the give list list1 = [1, 2, 3, 4, 5, 6]

#TASK 10: Write a code to pop the number 8 list1 = [ 1, 2, 3, 4, 5, 6 ]