

Machine Learning with Rana Mudassar Hayat

Assignment No: 1

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Basics of Python

01- My 1st-Program

```
In [ ]: print("Learning ML with Rana Mudassar Sb")  
        print("I'm a student of Cholistan University")
```

Learning ML with Rana Mudassar Sb
I'm a student of Cholistan University

02- Operators

```
In [ ]: print("The sum of the two numbers is: ", 90 + 88)           # Addition  
        print("The result of subtraction is: ", 89 - 43)          # Subtraction  
        print("The product of the numbers is: ", 8 * 78)          # Multiplication  
        print("The result of division is: ", 90 / 2)              # Division  
        print("The result of integer division is: ", 64 // 4)      # Double Division  
        print("The result of exponentiation is: ", 2 ** 3)        # Power  
        print("The remainder of the division is: ", 9 % 2)        # Reminder  
        print("The result of the equation is: ", 68 // 4 * 9 + 8 - 10) # Equation
```

The sum of the two numbers is: 178
The result of subtraction is: 46
The product of the numbers is: 624
The result of division is: 45.0
The result of integer division is: 16
The result of exponentiation is: 8
The remainder of the division is: 1
The result of the equation is: 151

PEMDAS Parenthesis, Exponents, multiply, Divide, Addition & Substraction

Left to right sequence for M D & A S

03- Strings

we can write string in single qoutes(" "), in double qoiutes(" ") and In tripple qoutes(" " " ")

```
In [ ]: print('Single Qoutes')
        print("Double Qoutes")
        print(''''Triple Qoutes''')
```

Single Qoutes
Double Qoutes
Triple Qoutes

now what is the difference

```
In [ ]: print("What's up")
```

What's up

agr hm ise single qoutes me likhain gy to ye consider nhi kre ga

04- Comments

The shortcut keys to comments is **(Ctrl+ /)**

```
In [ ]: print("How are you?")    #press these to comment out (Ctrl+/) or use (#) before statement.
```

How are you?

05- Variables

variables: objects containing specific values.

```
In [ ]: x=10      #Numeric or Integer Variable
        print(x)

        y="I'm Pakistani!"    #string variable
        print(y)
        x=40    #Here the value of x is updating by 40.It works
                #same for 'y'..Only happen in Python not in C/C++
        print(x)
        x=x+10    #Another way to update value of x....
        print(x)
        z='?'
        print(z)

10
I'm Pakistani!
40
50
?
```

Types/Class of Variables.

A Function to Check Types of Variables.

```
In [ ]: type(x)
        print(type(x))
        type(y)
        print(type(y))
        type(z)
        print(type(z))

<class 'int'>
<class 'str'>
<class 'str'>
```

Rules to Assign a Variable

1. The variable should contain letters, numbers or underscore..

2. Do not start with numbers.

3. Spaces are not allowed.

4. Do not use keywords used in function like (break, mean ,media, test etc..)

5. Short and discriptive

6. case sensitivity (lower case and upercase letter shoul be used)

```
In [ ]: fruit="mangoes"  
print(fruit)  
print(type(fruit))
```

```
mangoes  
<class 'str'>
```

06- Input Variables

Simple Input Function

```
In [ ]: fruit_basket=input("what is your favourite fruit? ")  
print(fruit_basket)
```

```
what is your favourite fruit? mango  
mango
```

Input Function of 2nd Stage

```
In [ ]: name=input("what is your name? ")  
greeting="Hello!"  
print(greeting,name)
```

```
Hello! Ahsan
```

Input Function of 3rd Stage

```
In [ ]: name=input("what is your name? ")  
print(type(name))  
age=input("what is your age? ")
```

```
age=int(age)      #In this line we are changing the data type of variable
print(type(age))
greeting="Hello!"
print (greeting, name, "You are still young!")
```

```
<class 'str'>
<class 'int'>
Hello! ahsan You are still young!
```

07- Conditional Logics

Logical Operators are "TRUE/FALSE", "YES/NO" or "0/1"

1. equal to ==

2. not equal to !=

3. less than <

4. greater than >

5. less than and equal to <=

6. greater than equal to >=

is 4 equal to 4?

```
In [ ]: print("Is 4 equal to 4? ", 4 == 4)
        print("Is 4 not equal to 9? ", 4 != 9)
        print("Is 4 greater than 3? ", 4 > 3)
        print("Is 3 less than 6? ", 3 < 6)
        print("Is 3 less than or equal to 5? ", 3 <= 5)
        print("Is 5 greater than or equal to 4? ", 5 >= 4)
```

```
Is 4 equal to 4? True
Is 4 not equal to 9? True
Is 4 greater than 3? True
Is 3 less than 6? True
Is 3 less than or equal to 5? True
Is 5 greater than or equal to 4? True
```

Application of Logical Operators

```
In [ ]: ali_age=4
        age_at_school=5
        print(ali_age==age_at_school)
```

False

Input Function and Logical Operator

```
In [ ]: age_at_school=5
        student_age=input("How old is student? ") #INPUT FUNCTION
        student_age=int(student_age) #CONVERTING string INTO int DATA TYPE
        print (type(student_age))
        print(student_age>=age_at_school) #LOGICAL OPERATOR
```

```
How old is student? 4
<class 'int'>
False
```

08- if,else & elif

- Program to convert temperature from Celsius to Fahrenheit or vice versa

```
In [ ]: choice = input("Enter '1' to convert from Celsius to Fahrenheit, or '2' to convert from Fahrenheit to Celsius: ")

if choice == '1':
    celsius = float(input("Enter temperature in Celsius: "))
    fahrenheit = (celsius * 9/5) + 32
    print("Temperature in Fahrenheit:", fahrenheit)
elif choice == '2':
    fahrenheit = float(input("Enter temperature in Fahrenheit: "))
    celsius = (fahrenheit - 32) * 5/9
    print("Temperature in Celsius:", celsius)
else:
    print("Invalid choice!")
```

Temperature in Fahrenheit: 374.0

- **Program to calculate the grade based on the percentage**

```
In [ ]: percentage = float(input("Enter the percentage: "))

if percentage >= 90:
    grade = 'A'
elif percentage >= 80:
    grade = 'B'
elif percentage >= 70:
    grade = 'C'
elif percentage >= 60:
    grade = 'D'
else:
    grade = 'F'

print("Grade:", grade)
```

Grade: C

- **Calculate Students Age to Join School**

```
In [ ]: student_age=input("How old is student? ")
student_age=int(student_age)
required_age_at_school=5
if student_age==required_age_at_school:
    print("Congrats student can join the school.")
elif student_age > required_age_at_school:
    print("student should join Higher secondary school.")
elif student_age <= 2:
    print("you should take care of student he/she is a still baby")
else:
    print("student can't join the school.")
```

student should join Higher secondary school.

09- Functions

```
print("We are learning python")
```

```
print("We are learning python")
```

```
print("We are learning python")
```

```
print("We are learning python")
```

```
print("We are learning python")
```

Defining a Function by different ways

- 1

```
In [ ]: def print_code():  
        print("We are learning python")  
        print("We are learning python")  
        print("We are learning python")  
        print_code()
```

- 2

```
In [ ]: def print_code():  
        text="We are learning ML"  
        print(text)  
        print(text)  
        print(text)  
        print_code()
```

We are learning ML

We are learning ML

We are learning ML

- 3

```
In [ ]: def print_code(text):  
        print(text)  
        print(text)  
        print(text)  
        print_code("We are learning ML")
```


We are learning ML
We are learning ML
We are learning ML

Defining a Function of Future

```
In [ ]: def future_age(age):  
        new_age=age+20  
        return new_age  
        print(new_age)  
        futurre_prediction_age= future_age(18)  
        print(futurre_prediction_age)
```

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10- Loops

While Loop

```
In [ ]: x=0  
        while (x<=10):  
            print(x)  
            x=x+1
```

0
1
2
3
4
5
6
7
8
9
10

For Loop

```
In [ ]: for x in range(0,10):  
        print(x)
```

0
1
2
3
4
5
6
7
8
9

Array

```
In [ ]: days=["mon","tue","wed","thu","fri","sat","sun"]  
days
```

```
Out[ ]: ['mon', 'tue', 'wed', 'thu', 'fri', 'sat', 'sun']
```

```
In [ ]: days=["mon","tue","wed","thu","fri","sat","sun"]  
for d in days:  
    if (d=="fri"):  
        break           #loop stops  
    print(d)
```

mon
tue
wed
thu

```
In [ ]: days=["mon","tue","wed","thu","fri","sat","sun"]  
for d in days:  
    #loop stops  
    if (d=="fri"):  
        continue       #skips d  
    print(d)
```

mon
tue
wed
thu
sat
sun

End