Name:Ahmad islam

reg no: uw-21-ai-bs-036

discipline: BS (AI)

In [1]:
```
print("Hello Ahmad")
```

```
Hello Ahmad
```

In [4]:
```
'Ahmad islam'
```

Out[4]:
```
'Ahmad islam'
```

In [5]:
```
print("i am beginner in python")
```

```
i am beginner in python
```

In [6]:
```
# this is my first program

name= "Ahmad"
print(name)
```

```
Ahmad
```

In [10]:
```
'''this is my
second program'''
number= 25
print(number)
```

```
25
```

In [13]:
```
num1= 10
num2=20

sum= num1+num2
print("The sum of two number is:", sum)

#this is use of comment
# print("The multiplication of two number is",mul)
```

```
The sum of two number is: 30
```

In [14]:
```
# we use comment to easy to understand tough code and also make code unde

```

about variables and literals

In [15]:
```
number= 10
print(number)
```

```
10
```

In [18]:
```
name= "Ahmad"
print(name)
```

```
Ahmad
```

In [23]:
```
name="Ahmad"
print("my name is:",name)

# after assigning new value to the  name...

name= "Ahmad islam"
print("changing the value of variable")
print("")
print("now my name is",name)
```

```
my name is: Ahmad
changing the value of variable

now my name is Ahmad islam
```

In [24]:
```
#assigning multiple value to the multiple variables

number,name,points= 20, "Ahmad", 20.3

print(number,name,points)
```

```
20 Ahmad 20.3
```

conversion

In [32]:
```
#there are two type of conversion 1 is implicit and other is explicit

#first  we discussed implicit conversion

num1= 10
num2= 5.5

convert= num1+num2


print("python automatically convert data type:",convert)
print(type(convert))
```

```
python automatically convert data type: 15.5
<class 'float'>
```

In [39]:
```
#second is explicit conversion

string_integer= '10'
number=10

print(string_integer)
print(type(string_integer))

number_integer= int(string_integer)

print(number_integer)
print("then type is: ", type(number_integer))



```

```
10
<class 'str'>
10
then type is:  <class 'int'>
```

In [40]:
```
num1=10
num2=10.5
num3=10.33
name='Ahmad'
charac='A'

print(type(num1))
print(type(num2))
print(type(num3))
print(type(name))
print(type(charac))
```

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

In [44]:
```
# concatinate the strings

first_name= "Ahmad"
second_name= " Islam"
result= first_name+second_name
print(result)
print(type(result))
```

```
Ahmad Islam
<class 'str'>
```

python input taking

In [56]:
```
num1 = float(input('Enter the first number'))
num2= float(input('Enter the second number'))


print("The number you enter is:",num1)
print("The number you enter is:",num2)

print(num1n*num2)
```

```
Enter the first number5.5
Enter the second number5.5
The number you enter is: 5.5
The number you enter is: 5.5
30.25
```

In [59]:
```
num1=int(input('Enter the first number'))
num2=int(input('Enter the second number'))


print("The number you enter is:",num1)
print("The number you enter is:",num2)

print(num1*num2)
```

```
Enter the first number5
Enter the second number5
The number you enter is: 5
The number you enter is: 5
25
```

operation in python

arthemetic operation

In [61]:

```
# Arthematic operation in python (+,-,*,/,//,**,%)

num1 = int(input('Enter the first number'))
num2= int(input('Enter the second number'))


print("addition",num1+num2)

print("subtraction",num1-num2)

print("Multiplication", num1*num2)

print("division", num1/num2)

print("floor division", num1//num2)

print("power", num1**num2)

print("modulus", num1%num2)

```

```
Enter the first number5
Enter the second number3
addition 8
subtraction 2
Multiplication 15
division 1.6666666666666667
floor division 1
power 125
modulus 2
```

assignment operation

In [62]:
```
num1 = int(input('Enter the first number'))
num2= int(input('Enter the second number'))


print(num1>num2)

print(num1<num2)

print(num1>=num2)

print(num1<=num2)

print(num1==num2)

print(num1!=num2)
```

```
Enter the first number5
Enter the second number7
False
True
False
True
False
True
```

logical operation

In [8]:
```
num1=10
num2=20
name1= True
name2= False

print(num1>num2 and num1<num2)

print(num1<num2 or num1>num2)

print(not name1)
print(not name2)
```

```
False
True
False
True
```

identity operation

In [66]:
```
# there is two type (is, is not).....

x1= 10
x2=20
y1='Ahmad'
y2='Ahmad'
z1='AHMAD'
z2=10

print(x1 is z2)

print(y1 is z1)

print(y1 is not y2)

print(y1 is not z1)
```

```
True
False
False
True
```

membership operation

In [75]:
```
#there is (in, not in)  operation  these operation is use for  tuples, di

string= "Hello my name is Ahmad"

print("Ahmad" in string)

print( "HELLO" in string)

dic= {1:"Ahmad", 2:"Ali", 3:"Ahad"}

print(1 in dic)

print(4 in dic)

print( 5 not in dic)

print("IS" not in string)
```

```
True
False
True
False
True
True
```

flow control's

if... else statement

In [14]:
```
# first we discussed if statement...
# in if statement there is only one condition...

num= 5

if(num>0):
    print("number is positive")

```

```
number is positive
```

In [16]:
```
name='Ahmad'
if(name=="Ahmad"):

    print("YES, name is Ahmad")
```

```
YES, name is Ahmad
```

In [18]:
```
#now we discussed the if else statement...
# in if else statement there is two conditions...

num=5

if(num>5):
    print("number is positive")
else:
    print("Number is nagitive")
```

```
Number is nagitive
```

In [19]:
```
num=-5

if(num>5):
    print("number is positive")
else:
    print("Number is nagitive")
```

```
Number is nagitive
```

In [31]:
```
# now we discussed the else..if statement..
# there is multiple condition in this statement

num= int(input("Enter the number"))

if(num>0):
    print("number is positive")
elif(num<0):
    print("number is nagitive")
else:
    print("number is zero")
```

```
Enter the number0
number is zero
```

In [38]:
```
#now we discussed the nested  else..if statement


num= int(input("Enter the number: "))

if(num>0):
    if(num==5):
            print("The number is positive as well as equal to 5")
elif(num<0):
    print("number is nagitive")
else:
    print("number is zero")

```

```
Enter the number: 5
The number is positive as well as equal to 5
```

python loop's

for loop

In [41]:
```
# There are three basic types of loops (for loop, whlie loop, do while lo

#first we discussed for loop


#we take a array
array= [1,2,3,4,5,6,7,8,9]

 #so here 'i' is accesser of array elements one by one and store in it an

for i in array:

    # here we use special key (end=' ') for removing free space work as e
    print(i ,end= ' ')
```

```
1 2 3 4 5 6 7 8 9
```

In [57]:
```
# this is list...

list = ["Ahmad", "Ali", "Ahad" "Asad", "Ahmal", "Arkam", "asim"]

for i in list:
    print(i)
```

```
Ahmad
Ali
AhadAsad
Ahmal
Arkam
asim
```

In [43]:
```
#loop through a string...

#lets a suppose

name= "Ahmad Islam"

 # itrate all character one by one in a string....
for j in name:
    print(j)
```

```
A
h
m
a
d

I
s
l
a
m
```

while loop

In [12]:
```
#now we discussed while loop

#let take a array

array= [1,2,3,4,5,6,7,8,9,10]
i=1
while (i<=10):
    print(i)
    i+=1

```

```
1
2
3
4
5
6
7
8
9
10
```

In [1]:
```
number= int(input("Enter the number"))
sum=0
while(number!=0):

    sum= sum+number
    number= int(input("Enter the number"))

print( sum)

```

```
Enter the number4
Enter the number5
Enter the number2
Enter the number0
11
```

Break and continue statement

In [5]:
```
#first we discussed the break statement

# in break statement when the itration reach to the particular element it

array=[1,2,3,4,5,6,7,8,9,10]

for i in array:
    if i== 5:
        break
    print(i)
```

```
1
2
3
4
```

In [6]:
```
#first we discussed the continue statement

#in continue statement  when itration reach to the particular element
#its skip the element based on the condition and continue

array=[1,2,3,4,5,6,7,8,9,10]

for i in array:
    if i== 5:
        continue
    print(i)
```

```
1
2
3
4
6
7
8
9
10
```

random and math libraries

In [28]:
```
import random
list1= [1,2,3,4,5,6,7,8,9,10]

print(random.choice(list1))
print(random.choice(list1))
```

```
10
6
```

In [27]:
```
import math

print("The pi value is:",math.pi)

print("The cos 0 value is: ",math.cos(0))

print("The log1 value is: ",math.log(1))

print("The factorial of 5 is: ",math.factorial(5))
```

```
The pi value is: 3.141592653589793
The cos 0 value is:  1.0
The log1 value is:  0.0
The factorial of 5 is:  120
```

Lists in python

In [7]:

```
#we write list in [] brakets... its may be number its may be names of thi

list2= [1,2,3,4,5,5,5,3]

print("The list is:", list2)

# add element in a list using append()..

list2.append(7)

print("updated list", list2)


# change list item using  idex access

list2[3]="blue"

print("change list",list2)

# remove item from list using remove()

list2.remove("blue")
print("remove item list is:", list2)


#length of list using len()...

print("The length of list is:", len(list2))


# reverse the list using  reverse()

list2.reverse()

print("reverse list is: ",list2)


count =list2.count(5)
print("5 present in lists ",count, "times")

# now try insert(), sort() and extend()..... by your self

```

```
The list is: [1, 2, 3, 4, 5, 5, 5, 3]
updated list [1, 2, 3, 4, 5, 5, 5, 3, 7]
change list [1, 2, 3, 'blue', 5, 5, 5, 3, 7]
remove item list is: [1, 2, 3, 5, 5, 5, 3, 7]
The length of list is: 8
reverse list is:  [7, 3, 5, 5, 5, 3, 2, 1]
5 present in lists  3 times
```

Tuples in python

In [34]:

```
# here we discussed a tuple how we write a tuple just by tuple=() similar
# but in tuple we can not modify if one the item is  added( immutatble).

#lets play with tuples



tuple1= (1,2,3,4,5,6,7,8,9,10)

print("Tuple is: ",tuple1)

#acces by index....
print(tuple1[0])
print(tuple1[5])

#access by loop...
print("The tuple is access by loop:" )
for i in tuple1:
    print(i, end=' ')


# checking the length of the tuple..
print("The length of the tuple is: ", len(tuple1))


#checking the element present in tuple or not..
print(5 in tuple1)
print(20 in tuple1)


#modify the tuple

tuple1[0]= 20
print(tuple1)

```

```
Tuple is:  (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
1
6
The tuple is access by loop:
1 2 3 4 5 6 7 8 9 10 The length of the tuple is:  10
True
False

---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[34], line 33
     28 print(20 in tuple1)
     31 #modify the tuple
---> 33 tuple1[0]= 20
     34 print(tuple1)

TypeError: 'tuple' object does not support item assignment
```

string in python

In [35]:
```
# now we discussed a string, string is basically the sequence of characte

string1="my name is khan"
string2="python is very interesting language"
print(string1)
print(string2)
```

```
my name is khan
python is very interesting language
```

In [39]:
```
string3="Hello"

#acces by index...
print(string3[0])


#python also have a negative indexes...
print(string3[-4])
```

```
H
e
```

In [42]:
```
#now we discussed the slicing of string in python...

string1="my name is khan"

print(string1[1:6])
print(string1[4:8])
```

```
y nam
ame
```

In [43]:
```
#string is immutable cannot be modify....

string= "Ahmad"

string[3]='g'
print(string)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[43], line 5
      1 #string is immutable cannot be modify....
      3 string= "Ahmad"
----> 5 string[3]='g'
      6 print(string)

TypeError: 'str' object does not support item assignment
```

In [45]:
```
#but we can change the whole string giving new value

string= 'Ahmad'
string = "Islam"
print(string)
```

```
Islam
```

In [50]:
```
# now we discussed the camparing of two strings....

string1="Hello"
string2= "hello"
string3="Hello"

#for string1 and strin2
if(string1==string2):
    print("same")
else:
    print("not same")

#for string1 and string3
if(string1==string3):
    print("match")
else:
    print("not")

```

```
not same
match
```

In [58]:
```
# now we discussed the string adding with each other


string4= "Ahmad "
string5= "Islam"

result = string4+string5

print(result)
```

```
Ahmad Islam
```

In [62]:
```
string6="my name is khan"
for i in string6:
    print(i)
```

```
m
y

n
a
m
e

i
s

k
h
a
n
```

dictionary in python

In [5]:
```
# now we discussed dictionary in python syntax {key: "value"}
# lets play with dictionary

dic= {1: "Ahmad", 2: "Ali" ,3: "Asim", 4: "Farjad"}

# access by keys....

print(dic[1])
print(dic[2])
print(dic[3])
```

```
Ahmad
Ali
Asim
```

In [10]:
```
dic= {1: "Ahmad", 2: "Ali" ,3: "Asim", 4: "Farjad"}

#access by loop iteration..just access keys not values

for i in dic:
    print(i)
```

```
1
2
3
4
```

In [11]:
```
dic= {1: "Ahmad", 2: "Ali" ,3: "Asim", 4: "Farjad"}

#access by loop iteration..just access keys not values

for i in dic:
    print(dic[i])
```

```
Ahmad
Ali
Asim
Farjad
```

In [16]:
```
dic= {1: "Ahmad", 2: "Ali" ,3: "Asim", 4: "Farjad"}

#changing the value of dictionary....

dic[1]="ahad"
print(dic)

dic[2]= "balaj"
print(dic)

#adding the value in dictionary...
dic[5]= "Uzair"
print(dic)

# removing element form dictionary..
del dic[4]
print(dic)


```

```
{1: 'ahad', 2: 'Ali', 3: 'Asim', 4: 'Farjad'}
{1: 'ahad', 2: 'balaj', 3: 'Asim', 4: 'Farjad'}
{1: 'ahad', 2: 'balaj', 3: 'Asim', 4: 'Farjad', 5: 'Uzair'}
{1: 'ahad', 2: 'balaj', 3: 'Asim', 5: 'Uzair'}
```

function in python

In [18]:
```
# okah first we discussed default function......

def name():
     print("My name is Ahmad")
name()
```

```
My name is Ahmad
```

In [21]:
```
def  name1():
    print("i am very excited to explore python")
    print("this is default function")
name1()
```

```
i am very excited to explore python
this is default function
```

In [23]:
```
# now we discussed the argument function

def var(name):
    print(name)

var("Ahmad")
```

```
Ahmad
```

In [25]:
```
def var(name):
    print(name)
name=input("Enter the name:")
var(name)
```

```
Enter the name:ahmad
ahmad
```

In [31]:
```
#okah now we add two number using function

num1=int(input("Enter the first number: "))
num2= int(input("Enter the second number: "))
def sum(a,b):

    sum=0;
    sum= num1+num2
    print("the sum of two number is:", sum)

sum(num1,num2)
```

```
Enter the first number: 4
Enter the second number: 4
the sum of two number is: 8
```

In [37]:

```
# now perform 4 arthematic operation using function divide large problem


num1=int(input("Enter the first number: "))
num2= int(input("Enter the second number: "))

def sum(a,b):

    sum=0;
    sum= a+b
    print("the sum of two number is:", sum)

sum(num1,num2)

def sub(c,d):

    sub=0;
    sub= c-d
    print("the subtraction of two number is:", sub)

sub(num1,num2)

def mul(e,f):

    mul=1;
    mul= num1*num2
    print("the multiplication of two number is:", mul)

mul(num1,num2)

def div(g,h):

    div=0;
    div= g/h
    print("the division of two number is:", div)

div(num1,num2)

```

```
Enter the first number: 5
Enter the second number: 5
the sum of two number is: 10
the subtraction of two number is: 0
the multiplication of two number is: 25
the division of two number is: 1.0
```

python object and class

In [25]:
```
# python also support class and objects
#lets start

class bike():
    name=""
    gear=0
# creating object in class
bike1= bike()

bike1.name="kawasaki h2r"
bike1.gear= 7
print({bike1.name})
print({bike1.gear})
```

```
{'kawasaki h2r'}
{7}
```

In [27]:
```
# now we create multiple object...

class bike():
        name=""
        gear=0
 # create two object in class...
bike1= bike()
bike2= bike()

bike1.name="kawasaki h2r"
bike1.gear=7

bike2.name="BMW"
bike2.gear=8

print({bike1.name})
print({bike1.gear})

# for second bike....
print({bike2.name})
print({bike2.gear})
```

```
{'kawasaki h2r'}
{7}
{'BMW'}
{8}
```

In [ ]:
```

```