My 1st Program

In [ ]:

```

```

In [ ]:

```
number=3+1
name="my name is muhammad fahad"
#here is comment
print(number)
print(name)
```

My 2nd Program Operator

In [1]:

```
print(2+2)
print(33-22)
print(6/4)
print(6//4)
print(2*3)
print(2**2)
print(5%2)
print(3+2*(32+4)/3*4-3)
print(2.3+2.5)
```

```
4
11
1.5
1
6
4
1
96.0
4.8
```

My 3rd Program Strings

In [2]:

```
print("Muhammad Fahad") # double Quotes
print('Muhammad Fahad') # single Quotes
print('''Muhammad Fahad''') # triple Quotes
print("Fahad's VIGO") # why we use double Quotes

print('''He said, "What's there?"''')
print("He said, \"what's there?\"")

#access by indexing in string

name="Fahad"
print(name[0:3])

print("Fah" in name)

#we cant't change charachter in string

#we can perform operation in string

sarname="Khwaja "
name="Fahad "
```

```
print(sarname+name)

name_three_time=name*3

print(name_three_time)

name=name.upper()
print(name)

sarname=sarname.lower()
print(sarname)

print(len(sarname))

for char in name:
    print(char)


name="Fahad"
bro_name=name.replace("Fahad","Ijaz")
print(bro_name)
```

```
Muhammad Fahad
Muhammad Fahad
Muhammad Fahad
Fahad's VIGO
He said, "What's there?"
He said, "what's there?"
Fah
True
Khwaja Fahad
Fahad Fahad Fahad
FAHAD
khwaja
7
F
A
H
A
D

Ijaz
```

My 4th Program Comments

In [ ]:

```
# we use this # sign to comment-out or (ctrl+/?) key
# comments help us to understand our code to other programmers
print("We are learning Comments")
print(2+3) # here we are adding two numbers
```

My 5th Program Vaiables

In [ ]:

```
# variable: object containg specific values
x=5 # here X is integer or numeric variable
print(x)

x="Here X is string Varable"
print(x)
```

```
x=12.3 # here X has float data type
print(x)

x=x+2.7 # here X will Add its privious 12.3 into 2.7 = 15.0
        # and data type is float
print(x)

# how to check variable data type

print(type(x))

x="Here X is string Varable"
print(x)

print(type(x))

# SOME RULES OF ASSIGNING VARIABLES
# THE VARIABLE SHOULD CONTAIN LETTERS, NUMBERS, OR UNDERSCORES
# DO NOT START WITH NUMBERS
# SPACES ARE NOT ALLOWED
# DO NOT USE KEYWORDS USED IN FUNCTIONS (BREAK, MEAN, MEDIA, TEST ETC...)
# SHORT AND DESCRIPTIVE
# CASE SENSTIVITY (LOWERCASE, UPPERCASE, LOWERCASE LETTERS SHOULD BE USED)
```

My 6th Program Input_Variables

In [ ]:

```
name=input("Enter Your Name: ")
greeting='Salam'
print(greeting, name) # here it will generate space between greeting and name
                      # variables

name=input("Enter Your Name: ")
greeting='Salam'
print(greeting + name) # here it will do not generate space between
                      # greeting and name variables

print('salam',name) # this is another way to do the thing

num1=55
num2=int(input("Enter Your Age: ")) #here input will consider in string becaues
                               # we are using commas ""
print(num1+num2)
```

My 7th Program Conditional Operators

In [ ]:

```
# here we use condition based on some values it will either TRUE or FALSE
# YES or NO , 0 or 1
print(2==2)
print(2!=2)
print(3>2)
print(3<2)
print(3>=2)
print(3<=2)
```

My 8th Program Tpye Conversion

In [ ]:

```
num1=33   # data type integer
num2=43.4  # float
alphabt='fahad'   # string

print(type(num1))
print(type(num2))
print(type(alphabt))

total=num1+num2   # it will change into float

print(type(total))

age=input("Enter Your Age: ")  # here data type is string
print(type(age))

age=int(input("Enter Your Age: "))  # here data type is integer
print(type(age))

age=input("Enter Your Age: ")  # here data type is integer
print(type(int(age)))
```

My 9th Program IF ELSE ELIF

In [3]:

```
# in this we test one or more then one condition and pass argument on the base of
# here we will write a programe that voter is eligible for vote or not

age=int(input("Please Enter Your Age: "))

if age>= 18:
    print("Yes You Are Eligible For Vote")

else:
    print("No You Are Not Eligible For Vote")

# here we are creating a calculator by using if else elif

num1=float(input("Enter First Number: "))

operator=input("Enter Operator")

num2=float(input("Enter Second Number: "))

if operator=='-':
    print(num1-num2)

elif operator=='+':
    print(num1+num2)

elif operator=='*':
    print(num1*num2)

elif operator=='/':
    print(num1/num2)
else:
    print("Input Valid Values")
```

```
Please Enter Your Age: 18
Yes You Are Eligible For Vote
Enter First Number: 45
Enter Operator-
Enter Second Number: 4
41.0
```

My 10th Program FUNCTION

In [ ]:

```
'''
def total_numbers():
    maths = int(input("Enter Your Maths Number: "))
    english = int(input("Enter Your English Number: "))
    islamiat = int(input("Enter Your Islamiat Number: "))
    discrete = int(input("Enter Your Discrete Number: "))
    physics = int(input("Enter Your Physics Number: "))

    total = maths + english + islamiat + discrete + physics
    percentage = total * 100 / 500

    if percentage >= 80:
        grade = "A-Grade"
        greet = "Congratulations, "
    elif percentage >= 60:
        grade = " B "
        greet = "Keep up the good work!"
    elif percentage >= 40:
        grade = " C "
        greet = "You need to work harder to improve your grades."
    else:
        grade = "Fail"
        greet = "Sorry, you have failed the exams."

    return greet + " Your grade is: " + grade

result = total_numbers()
print(result)
'''

subject_number = [45, 45, 56, 76, 88, 89]
print("Length of subject:", len(subject_number))

total_marks = sum(subject_number)
print("Total marks:", total_marks)
```

My 11th Program Loops

In [4]:

```
# in Python We have two types of Loops
# 1- While Loop
# 2- For Loop

password = "1542"
user = input("Enter password: ")

while user != password:
    print("Incorrect password. Please try again!")
    user = input("Enter password: ")

print("Welcome!")
```

```
Enter password: 549
Incorrect password. Please try again!
Enter password: 453
Incorrect password. Please try again!
Enter password: 345346
Incorrect password. Please try again!
Enter password: 345
Incorrect password. Please try again!
Enter password: 142
Incorrect password. Please try again!
Enter password: 1542
Welcome!
```

Learning Loops

In [ ]:

```
'''
table = int(input("Enter a Number: "))
count=1

while count<=10:
    count_table=(count)*(table)
    print(table,"x",count,"=",count_table)
    count = count+1

table = int(input("Enter a Number: "))

for number in range(1,11):
    product = number*table
    print(table,"x",number,"=",product)

'''

names=["fahad","farman","owais","saif","adnan"]
for name in names:
    if name== "saif":
        continue
    print(name)
```

List and tuples

In [ ]:

```
#--------   LIST   ------------

names= ["Fahad","Farman",342,"comstas", True]
print(names)

#chaning list item by giving index postion
names[1]="Ijaz Ahmad"
print(names)

print("      ")
#index of item
print(names[0])


print("      ")
#negative indexing
print(names[-4])

print(names[0:3])
print("     ")
#checking whether item is present in the list or not
print("Fahad" in names)

print('Farman' in names)

print("     ")


#by using for loop and showing item one by one

for name in names:
    print(name)


print("     ")
#if we want to insert item according to our required posiotin then we use insert
names.insert(0, "Khwaja")
print(names)



print("     ")
#we use append to add itme in the list this will be shown in the last position.
names.append("Khwaja")
print(names)




print("     ")
#if we want to remove item from list we use "remove" if there are two similar value
names.remove("Khwaja")
print(names)


print("     ")
#if we want to copy a list we use copy()

names_1=names.copy()
print(names_1)


print("     ")
#-------------      TOUPLES     ------------------
'''touples are also a group of items but there is some difference btw list and toup
and we write items in() and seperated by , comma'''


names=("fahad", 342, "KHWAJA")
print(names)

print("     ")

for name in names:
    print(name)
```

Python Dictionaries

In [5]:

```python
intro={"name": "Fahad", "age": 18}
print(intro)

print("   ")

print(intro["name"])

print("   ")

#inserting new key: and their values
print(intro.get("hobbies","Chess Game"))
print("   ")


intro["Hobbies"]="Chess"
print(intro)
print("  ")

#how to change the value of key:
intro["name"]="Ijaz Ahmad"
print(intro)
print("   ")

intro["name","age"]="Ijaz Ahmad",30

print(intro)
print("  ")

#Removing item from list

intro.pop("name")
print(intro)

#iterating through a dictionary

for key in intro:
    print(key)
    print(intro[key])
```

```
{'name': 'Fahad', 'age': 18}

Fahad

Chess Game

{'name': 'Fahad', 'age': 18, 'Hobbies': 'Chess'}

{'name': 'Ijaz Ahmad', 'age': 18, 'Hobbies': 'Chess'}

{'name': 'Ijaz Ahmad', 'age': 18, 'Hobbies': 'Chess', ('name', 'age'): ('Ijaz Ahma
d', 30)}

{'age': 18, 'Hobbies': 'Chess', ('name', 'age'): ('Ijaz Ahmad', 30)}
age
18
Hobbies
Chess
('name', 'age')
('Ijaz Ahmad', 30)
```

Python Sets

In [ ]:

```
name= {"Fahad","Ijaz Ahmad","Abid Hussain", "Ghulam Abbas"}
print(name)

print("  ")
print("  ")

name=set(["Fahad", "Ijaz Ahmad","Abid Hussain","Ghulam Abbas"])
print(name)

print("  ")
print("  ")

#we can add item in sets

name.add("Khwaja Shahzad")
print(name)



print("  ")
print("  ")
#we can also add list,touple and other ittrable lists into set it is like union in

school={"tcf","sunni","almehram"}
college=["tcf college","islamia college","government college"]

school.update(college)
print(school)

print("  ")
print("  ")

tution= {"mak","anees","shamas","tcf"}

education=school.union(tution)
print(education)

education= school | tution
print(education)



print("  ")
print("  ")


# intersection in sets

taleem=school.intersection(tution)
print(taleem)

taleem=school & tution
print(taleem)


print("  ")
print("  ")

school={"tcf","sunni","almehram"}
college=["tcf college","islamia college","government college"]

school.update(college,{"khatoon pakistan college"})
print(school)
print("  ")
print("  ")

'''we can also delete item from set by using .discard or .remove discard is better
.remove will show an error but discard method will work normally
'''

school.discard("government college")
print(school)

print("  ")
print("  ")

school.remove("khatoon pakistan college")
print(school)


print("  ")
print("  ")

# we can check that while item is present or not in the set
print("tcf" in school)

print("loot mar school" in school)

print("  ")
print("  ")


#we can itterate item by using for loop

for sacool in school:
    print(sacool)


print("  ")
print("  ")

# we can also delete all the item from set by using .clear()

school.clear()
print(school)
```

Object oriented programming (OOP)

In [ ]:

```
'''
class intro:
    pass

My_intro=intro()
My_intro.name="Fahad"
My_intro.age=18

print(My_intro.name)
print(My_intro.age)

print("  ")
print("  ")
```

```
class Intro:
    def introduction(self):
        name = input("Enter Your Name: ")
        age = int(input("Enter Your Age: "))
        print(f"Hello, {name}! You are {age} years old.")

detail = Intro()
detail.introduction()

detail = Intro()
detail.introduction()
'''


print("  ")
print("  ")

class Student:
    """
    Represents a student and their performance on a test.
    """

    def check_pass_or_fail(self):
        """
        Determines if the student passed or failed the test based on their score.
        Returns a string indicating the result.
        """
        name = input("Enter Your Name: ")
        age = int(input("Enter Your Age: "))
        score = int(input("Enter Your Score: "))

        if score >= 40:
            result = f"Wow! {name} You Have Passed ^-^ Even You Are Just {age} Yea
        else:
            result = f"Ops! {name} You Failed ^_^ You Have wasted your 1 year, now

        return result

# Example usage
student = Student()
result = student.check_pass_or_fail()
print(result)

print("  ")
print("  ")

student = Student()
result = student.check_pass_or_fail()
print(result)


print("  ")
print("  ")
```

Every thing is object in Python

In [ ]:

```
list_item =[1,True,"This is list"]
print(type(list_item))

adding_new_item=list_item.__add__(["+","Here we are adding by .__add__() ",4,5])
print(adding_new_item)
```

```
adding_new_item=list_item + (["+","Here we are adding by + () ",4,5])
print(adding_new_item)

count=list_item.count
print(count)


sets={"Comsats","FAST","LUMS"}
print(type(sets))

dictionary={"Name":"Muhammad Fahad","Father_Name":"Muhammad Buksh"}
print(type(dictionary))

touples=("mango","Apple",22)
print(type(touples))

def my_name():
    pass

print(type(my_name))

num=2
print(type(num))


string="type"
print(type(string))


booll=True
print(type(booll))






print("  ")
print("  ")
print("  ")








list_item =[1,"List",True]
print(dir(list_item))


print("  ")
print("  ")


sets={"Comsats","FAST","LUMS"}
print(dir(sets))

print("  ")
print("  ")
```

```python
dictionary={"Name":"Muhammad Fahad","Father_Name":"Muhammad Buksh"}
print(dir(dictionary))

print("  ")
print("  ")


touples=("mango","Apple",22)
print(dir(touples))

print("  ")
print("  ")


def my_name():
    pass

print(dir(my_name))

print("  ")
print("  ")


num=2
print(dir(num))

print("  ")
print("  ")


string="type"
print(dir(string))


print("  ")
print("  ")


booll=True
print(dir(booll))








print("  ")
print("  ")
print("  ")








list_item =[1,"List",True]
print("This is ID of List ",id(list_item))


print("  ")
print("  ")


sets={"Comsats","FAST","LUMS"}
print("This is ID of Set ",id(sets))

print("  ")
print("  ")


dictionary={"Name":"Muhammad Fahad","Father_Name":"Muhammad Buksh"}
print("This is ID of Dictionary ",id(dictionary))


print("  ")
print("  ")


touples=("mango","Apple",22)
print("This is ID of Touple ",id(touples))

print("  ")
print("  ")


def my_name():
    pass

print("This is ID of Function ",id(my_name))

print("  ")
print("  ")


num=2
print("This is ID of integer ",id(num))

print("  ")
print("  ")


string="type"
print("This is ID of string ",id(string))


print("  ")
print("  ")


booll=True
print("This is ID of bool ",id(booll))


#storing values in variables

a=[1,2,3]
b=a

a.append(4)
print("a = ",a)
print("b = ",b)

print("-------------Here is Differecne-------------")
```

```
a=[1,2,3]
b=a.copy()

a.append(4)
print("a = ",a)
print("b = ",b)
```

OOP in Python

In [ ]:

```
class Employee:
    def __init__(self, salary=0, name=0, high_bouns="We will give you one month lea
        self.salary = salary
        self.name = name
        self.high_bouns = high_bouns
        self.low_bouns = low_bouns

    def get_details(self):
        self.salary = int(input("What Do You Expect a salary Package from Us: "))
        self.name = input("What is your Name: ")

    def Education(self):
        education_level = int(input("Please Enter Your Qualification 10th/12th/16t
        exprience = int(input("How much Experience do you have in this field: "))
        return education_level, exprience

class Result(Employee):
    def decision(self):
        education_level, exprience = self.Education()
        if education_level == 10 and exprience >= 2:
            final_salary = (80/100)*self.salary
            print("Our Final Decision for you is if you clear our Test and Intervie
            print(f"Mr.{self.name} we will give you {final_salary} and also {self.

        elif education_level == 10 and exprience < 2:
            final_salary = (70/100)*self.salary
            print("Our Final Decision for you is if you clear our Test and Intervie
            print(f"Mr.{self.name} we will give you {final_salary} and also {self.

        elif education_level == 12 and exprience >= 2:
            final_salary = (85/100)*self.salary
            print("Our Final Decision for you is if you clear our Test and Intervie
            print(f"Mr.{self.name} we will give you {final_salary} and also {self.

        elif education_level == 12 and exprience < 2:
            final_salary = (75/100)*self.salary
            print("Our Final Decision for you is if you clear our Test and Intervie
            print(f"Mr.{self.name} we will give you {final_salary} and also {self.

        elif education_level == 16 and exprience >= 2:
            final_salary = (90/100)*self.salary
            print("Our Final Decision for you is if you clear our Test and Intervie
            print(f"Mr.{self.name} we will give you {final_salary} and also {self.

        elif education_level == 16 and exprience < 2:
            final_salary = (85/100)*self.salary
            print("Our Final Decision for you is if you clear our Test and Intervie
            print(f"Mr.{self.name} we will give you {final_salary} and also {self.

        elif education_level == 18 and exprience >= 2:
            final_salary = (100/100)*self.salary
            print("Our Final Decision for you is if you clear our Test and Intervie
            print(f"Mr.{self.name} we will give you {final_salary} and also {self.

        elif education_level == 18 and exprience < 2:
            final_salary = (95/100)*self.salary
            print("Our Final Decision for you is if you clear our Test and Intervi
            print(f"Mr.{self.name} we will give you {final_salary} and also {self.
        else:
            print("Something went wrong!")

announcement = Result()
announcement.get_details()
announcement.decision()
```

In [7]:

```
import random

def guess_the_number():
    number = random.randint(1, 100)
    print("I'm thinking of a number between 1 and 100.")
    while True:
        guess = int(input("Enter your guess: "))
        if guess < number:
            print("Your guess is too low.")
        elif guess > number:
            print("Your guess is too high.")
        else:
            print("Congratulations! You guessed the number.")
            break

guess_the_number()
```

```
I'm thinking of a number between 1 and 100.
Enter your guess: 50
Your guess is too low.
Enter your guess: 60
Your guess is too low.
Enter your guess: 70
Your guess is too high.
Enter your guess: 61
Your guess is too low.
Enter your guess: 65
Your guess is too high.
Enter your guess: 63
Your guess is too high.
Enter your guess: 62
Congratulations! You guessed the number.
```

Assignment of List Functions

In [ ]:

```
import operator

first_list = []
list_size = int(input("How many elements do you want to add to the list? "))
for i in range(list_size):
    num = input("Enter List Element: ")
    first_list.append(num)

print("The list is:", first_list)
print("  ")
print("The Length of the list is:", len(first_list))
print("  ")
print("The Max of the list is:", max(first_list))
print("  ")
print("The Min of the list is:", min(first_list))
print("  ")
insert_element=input("Enter The Element You Want to insert: ")
insert_position=int(input("Enter The Index for Inserting Element: "))
first_list.insert(insert_position,insert_element)
print(first_list)
print("  ")
index_number=input("Which Element Indexing You want to know: ")
index=first_list.index(index_number)
print("You Entered Element is present on",index,"Index")
print("  ")
count_number=input("Which Element itration do you want to count: ")
count=first_list.count(count_number)
print("You Entered Element is present",count,"Times")
print("  ")
remove_element=input("Enter The element that you want to remove: ")
first_list.remove(remove_element)
print("After Removing The Remaining List Is: ",first_list)
first_list.reverse()
print("After Reverse: ",first_list)
first_list.sort()
print("After Sorting: ",first_list)
first_list.pop()
print("After pop: ",first_list)
second_list = first_list
print("Are the two lists equal?", operator.eq(first_list, second_list))
print("First List is greater then Second List?", operator.gt(first_list, second_li
print("First List is less then Second List?", operator.lt(first_list, second_list)
```

Array In Python

In [50]:

```
import numpy as np

number= np.array([[2, 3, 4],[5,6,7],[8,9,10], [1,3,4]])
print(number)

print("  ")

zero=np.zeros(4)
print(zero)

print("  ")

one=np.ones(3)
print(one)

print("  ")

empty=np.empty(1)
print(empty)
```

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

[0. 0. 0. 0.]

[1. 1. 1.]

[1.]
```

1-D Array

In [72]:

```
array_range=np.arange(1,20)
print(array_range)

print("  ")

range_with_space=np.arange(1,20,3)
print(range_with_space)

print("  ")

interval=np.linspace(0,20,num=6)
print(interval)

print("  ")

name=np.array(["fahad","furqan","ijaz"])
print(name)
```

```
[ 1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19]

[ 1  4  7 10 13 16 19]

[ 0.  4.  8. 12. 16. 20.]

['fahad' 'furqan' 'ijaz']
```

2-D Array

In [55]:

```
zero=np.zeros((3,3))
print(zero)

print("  ")

one=np.ones((3,3))
print(one)

print("  ")

empty=np.empty((3,3))
print(empty)
```

```
[[0. 0. 0.]
 [0. 0. 0.]
 [0. 0. 0.]]

[[1. 1. 1.]
 [1. 1. 1.]
 [1. 1. 1.]]

[[1. 1. 1.]
 [1. 1. 1.]
 [1. 1. 1.]]
```

3-D Array

In [70]:

```
range_array_3d=np.arange(18).reshape(2,3,3)
print(range_array_3d)

print("  ")

second_range_array_3d=np.arange(48).reshape(3,4,4)
print(second_range_array_3d)
```

```
[[[ 0  1  2]
  [ 3  4  5]
  [ 6  7  8]]

 [[ 9 10 11]
  [12 13 14]
  [15 16 17]]]

[[[ 0  1  2  3]
  [ 4  5  6  7]
  [ 8  9 10 11]
  [12 13 14 15]]

 [[16 17 18 19]
  [20 21 22 23]
  [24 25 26 27]
  [28 29 30 31]]

 [[32 33 34 35]
  [36 37 38 39]
  [40 41 42 43]
  [44 45 46 47]]]
```