

**PYTHON
PROGRAMS**

PYTHON PROGRAMS

- Write a python script to take input for a number calculate and print its square and cube?

```
1. a=int(input("Enter any no
   "))
2. b=a*a
3. c=a*a*a
4. print("Square = ",b)
5. print("cube = ",c)
```

Output:

```
Enter any no 10
Square = 100
cube = 1000
>>>
```

- Write a python script to take input for 2 numbers calculate and print their sum, product and difference?

```
1. a=int(input("Enter 1st no
   "))
2. b=int(input("Enter 2nd no
   "))
3. s=a+b
4. p=a*b
5. if(a>b):
6.     d=a-b
7. else:
8.     d=b-a
9. print("Sum = ",s)
10. print("Product = ",p)
11. print("Difference = ",d)
```

Output:

```
Enter 1st no 10
Enter 2nd no 20
Sum = 30
Product = 200
Difference = 10
>>>
```

- Write a Python script to take input for 3 numbers , check and print the largest number ?

```
1. a=int(input("Enter 1st no
   "))
2. b=int(input("Enter 2nd no
   "))
3. c=int(input("Enter 3rd no
   "))
4. if(a>b and a>c):
5.     m=a
6. else:
7.     if(b>c):
8.         m=b
9.     else:
10.        m=c
11. print("Max no = ",m)
```

Output:

```
Enter 1st no 25
Enter 2nd no 63
Enter 3rd no 24
Max no = 63
>>>
```

- Write a python script to take input for 2 numbers and an operator (+ , - , * , /). Based on the operator calculate and print the result?

```

1. a=int(input("Enter 1st no
2. b=int(input("Enter 2nd no
3. op=input("Enter the
operator (+,-,*,/) ")
4. if(op==""):
5.     c=a+b
6.     print("Sum = ",c)
7. elif(op=="*"):
8.     c=a*b
9.     print("Product = ",c)
10. elif(op=="-"):
11.     if(a>b):
12.         c=a-b
13.     else:
14.         c=b-a
15.     print("Difference =
",c)
16. elif(op=="/"):
17.     c=a/b
18.     print("Division =
",c)
19. else:
20.     print("Invalid
operator")

```

Output:

```

Enter 1st no 10
Enter 2nd no 20
Enter the operator (+,-,*,/) +
Sum = 30
>>>

```

Output:

```

Enter 1st no 10
Enter 2nd no 36
Enter the operator (+,-,*,/) -
Difference = 26
>>>

```

- Write a python script to take input for name and age of a person check and print whether the person can vote or not?

```

1. name=input("Enter name ")
2. age=int(input("Enter age
"))
3. if(age>=18):
4.     print("you can vote")
5. else:
6.     print("you cannot
vote")

```

- Write a python script to take input for a number and print its table?

```
1. n=int(input("Enter any no
   "))
2. i=1
3. while(i<=10):
4.     t=n*i
5.     print(n," * ",i," =
   ",t)
6.     i=i+1
```

Output:

```
Enter any no 5
5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50
>>>
```

- Write a python script to take input for a number and print its factorial?

```
1. n=int(input("Enter any no
   "))
2. i=1
3. f=1
4. while(i<=n):
5.     f=f*i
6.     i=i+1
7. print("Factorial = ",f)
```

Output:

```
Enter any no 5
Factorial = 120
>>>
```

- Write a python script to take input for a number check if the entered number is Armstrong or not.

```
1. n=int(input('Enter the
   number to check : '))
2. n1=n
3. s=0
4. while(n>0):
5.     d=n%10;
6.     s=s + (d *d * d)
7.     n=int(n/10)
8.     if s==n1:
9.         print('Armstrong
   Number')
10.    else:
11.        print('Not an
   Armstrong Number')
```

Output:

```
Enter the number to check : 153
Armstrong Number
>>>
```

Output:

```
Enter the number to check : 152
Not an Armstrong Number
>>>
```

- Write a python script to take input for a number and print its factorial using recursion?

```

1. #Factorial of a number
   using recursion.
2. def recur_factorial(n):
3.     if n == 1:
4.         return n
5.     else:
6.         return
           n*recur_factorial(n-1)
7.     #for fixed number
8.     num = 7
9.     #using user input
10.    num=int(input("Enter any
        no "))
11.    check if the number is
        negative
12.    if num < 0:
13.        print("Sorry, factorial
        does not exist for negative
        numbers")
14.    elif num == 0:
15.        print("The factorial of
        0 is 1")
16.    else:
17.        print("The factorial
        of", num, "is",
        recur_factorial(num))

```

Output:

```

Enter any no 5
The factorial of 5 is 120
>>>

```

➤ Write a python script to Display Fibonacci Sequence Using Recursion?

```

1. #Python program to display
   the Fibonacci sequence
2. def recur_fibo(n):
3.     if n <= 1:
4.         return n
5.     else:
6.
           return(recur_fibo(n-1) +
           recur_fibo(n-2))
7. nterms = 10
8. #check if the number of
   terms is valid
9. if (nterms <= 0):
10.    print("Plese enter a
        positive integer")
11. else:
12.    print("Fibonacci
        sequence:")
13.    for i in range(nterms):
14.
           print(recur_fibo(i))

```

Output:

Fibonacci sequence:

```

0
1
1
2
3
5
8
13
21
34
>>>

```

- Write a python program to maintain book details like book code, book title and price using stacks data structures? (implement push(), pop() and traverse() functions)

```

1.  """
2.  push
3.  pop
4.  traverse
5.  """
6.  book=[]
7.  def push():
8.      bcode=input("Enter
9.  bcode ")
10.     btitle=input("Enter
11.  btitle ")
12.     price=input("Enter
13.  price ")
14.     bk=
15.     (bcode,btitle,price)
16.     book.append(bk)
17.  def pop():
18.     if(book==[]):
19.         print("Underflow /
20.  Book Stack in empty")
21.     else:
22.         bcode,btitle,price=book.pop()
23.         print("popped elemen
24.  is ")
25.         print("bcode
26.  ",bcode," btitle ",btitle,"
27.  price ",price)
28.  def traverse():
29.     if not (book==[]):
30.         n=len(book)
31.         for i in
32.         range(n-1,-1,-1):
33.             print(book[i])
34.     else:
35.         print("Empt
36.  , No book to display")
37.  while True:
38.     print("1. Push")
39.     print("2. Pop")
40.     print("3.
41.  Traversal")
42.     print("4. Exit")
43.     ch=int(input("Enter
44.  your choice "))
45.     if(ch==1):
46.         push()
47.     elif(ch==2):
48.         pop()
49.     elif(ch==3):
50.         traverse()
51.     elif(ch==4):
52.         print("End"
53.         break
54.     else:
55.         print("Invalid choice")

```

Output:

1. Push

2. Pop

3. Traversal

4. Exit

Enter your choice 1

Enter bcode 101

Enter btitle python

Enter price 254

1. Push

2. Pop

3. Traversal

4. Exit

Enter your choice 3

('101', 'python', '254')

1. Push

2. Pop

3. Traversal

4. Exit

Enter your choice

- Write a python program to maintain employee details like empno,name and salary using Queues data structure? (implement insert(), delete() and traverse() functions)

```

1. #queue implementation (usin
   functions)
2. #program to create a queue
   employee(empno,name,sal).
3. """
4. add employee
5. delete employee
6. traverse / display all
   employees
7. """
8. employee=[]
9. def add_element():
10.     empno=input("Enter
empno ")
11.     name=input("Enter
name ")
12.     sal=input("Enter sa
")
13.     emp=(empno,name,sal)
14.     employee.append(emp)
15. def del_element():
16.     if(employee==[]):
17.
18.     print("Underflow / Employee
Stack in empty")
19.     else:
20.     empno,name,sal=employee.pop()
21.     print("pope
element is ")
22.     print("empn
",empno," name ",name," sal
",sal)
23. def traverse():
24.     if not (employee==
[]):
25.     n=len(employee)
26.     for i in
range(0,n):
27.     print(employee[i])
28.     else:
29.     print("Empt
. No employee to display")
30. while True:
31.     print("1. Add
employee");
32.     print("2. Delete
employee");
33.     print("3. Traversal
print("4. Exit")
34.     ch=int(input("Enter
your choice "))
35.     if(ch==1):
36.         add_element
37.     elif(ch==2):
38.
39.     del_element():
40.     elif(ch==3):
41.         traverse()
42.     elif(ch==4):
43.         print("End"
break
44.     else:
45.
print("Invalid choice")

```

Output:

1. Add employee
 2. Delete employee
 3. Traversal
 4. Exit
- Enter your choice 1
Enter empno 101
Enter name Amit
Enter sal 45000
1. Add employee
 2. Delete employee
 3. Traversal
 4. Exit
- Enter your choice 3
('101', 'Amit', '45000')
1. Add employee
 2. Delete employee
 3. Traversal
 4. Exit
- Enter your choice

- Write a python program to read a file named "article.txt", count and print total alphabets in the file?

```

1. def count_alpha():
2.     lo=0
3.     with open("story.txt")
4.     as f:
5.         while True:
6.             c=f.read(1)
7.             if not c:
8.                 break
9.
10.        print(c,end='')
11.        if((c>='A' and
12.        c<='Z') or (c>='a' and
13.        c<='z')):
14.            lo=lo+1
15.            print("total lower
16.            case alphabets ",lo)
17.        #function calling
18.        count_alpha()

```

Output:

```

Hello how are you
12123
bye
total lower case alphabets 17
>>>

```

- Write a python program to read a file named "article.txt", count and print the following:

- length of the file(total characters in file)
- total alphabets
- total upper case alphabets
- total lower case alphabets.
- total digits
- total spaces
- total special characters

```

1. def count():
2.     a=0
3.     ua=0
4.     la=0
5.     d=0
6.     sp=0
7.     spl=0
8.     with open("story.txt")
9.     as f:
10.        while True:
11.            c=f.read(1)
12.            if not c:
13.                break
14.
15.            print(c,end='')
16.            if((c>='A' and
17.            c<='Z') or (c>='a' and
18.            c<='z')):
19.                a=a+1
20.
21.            if((c>='A' and c<='Z') or
22.            (c>='a' and c<='z')):
23.                ua=ua+1
24.
25.            if(c>='0' and c<='9'):
26.                d=d+1
27.
28.            if(c==' '):
29.                sp=sp+1
30.
31.            else:
32.                spl=spl+1
33.
34.            print("total
35.            alphabets ",a)
36.            print("total
37.            upper case alphabets ",ua)
38.            print("total
39.            lower case alphabets ",la)
40.            print("total
41.            digits ",d)
42.            print("total
43.            spaces ",sp)
44.            print("total
45.            special characters ",spl)
46.        # function calling
47.        count()

```

```

21.
22.
23.
24.
25.
26.
27.
28.
29.
30.
31.
32.
33.
34.
35.

```

- Write a python program to read a file named “story.txt”, count and print total words starting with “a” or “A” in the file?

```
1. def count_words():
2.     w=0
3.     with open("story.txt")
4.     as f:
5.         for line in f:
6.             for word in
7.             line.split():
8.                 if(word[0]=="a" or
9.                 word[0]=="A"):
10.                    print(word)
11.                    w=w+1
12.                    print("total words
13.                    starting with 'a' are ",w)
14. # function calling
15. count_words()
```

Output:

```
are
Ankur
Amit
Aman
total words starting with 'a' are 4
>>>
```

SQL QUERIES

SQL QUERIES USING ONE TABLE / 2 TABLE

```
CREATE TABLE student
(
stu_id varchar(10),
stu_name varchar(20),
branch varchar(20)
);
```

```
SQLQuery1.sql - LA..HLBPKV\lokes (61))* * X
CREATE TABLE student
(
  stu_id varchar(10),
  stu_name varchar(20),
  branch varchar(20),
);

133 %
Messages
Commands completed successfully.
Completion time: 2021-06-03T00:36:56.8845885+05:30
```

```
CREATE TABLE branch_details
(
branch_name varchar(10),
subjects INT
);
```

```
SQLQuery1.sql - LA..HLBPKV\lokes (61))* * X
CREATE TABLE branch_details
(
  branch_name varchar(10),
  subjects INT
);

133 %
Messages
Commands completed successfully.
Completion time: 2021-06-03T00:42:49.8872935+05:30
```

```
CREATE TABLE credit_details
(
branch varchar(20),
max_credits INT,
min_credits_required INT
);
```

```
SQLQuery1.sql - LA..HLBPKV\lokes (61))* * X
CREATE TABLE credit_details
(
  branch varchar(20),
  max_credits INT,
  min_credits_required INT
);

133 %
Messages
Commands completed successfully.
Completion time: 2021-06-03T00:56:11.0536869+05:30
```

❖ Using n number of tables

Using SELECT statement for n tables:

SYNTAX:

SELECT columns

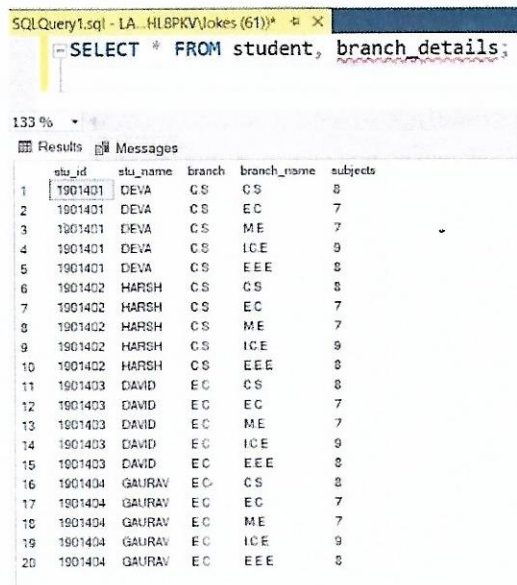
FROM table_1, table_2,...table_n

WHERE condition;

❖ Using 2 number of table

Using SELECT statements for 2 tables student, branch_details:

```
SELECT * FROM student, branch_details;
```



The screenshot shows a SQL query window with the following text:

```
SQLQuery1.sql - LA_HL8PKV\lokes (61) * X  
SELECT * FROM student, branch_details;
```

Below the query, the results are displayed in a table with 5 columns: stu_id, stu_name, branch, branch_name, and subjects. The table contains 20 rows of data.

stu_id	stu_name	branch	branch_name	subjects
1901401	DEVA	CS	CS	8
1901401	DEVA	CS	EC	7
1901401	DEVA	CS	ME	7
1901401	DEVA	CS	ICE	9
1901401	DEVA	CS	EEE	8
1901402	HARSH	CS	CS	8
1901402	HARSH	CS	EC	7
1901402	HARSH	CS	ME	7
1901402	HARSH	CS	ICE	9
1901402	HARSH	CS	EEE	8
1901403	DAVID	EC	CS	8
1901403	DAVID	EC	EC	7
1901403	DAVID	EC	ME	7
1901403	DAVID	EC	ICE	9
1901403	DAVID	EC	EEE	8
1901404	GAURAV	EC	CS	8
1901404	GAURAV	EC	EC	7
1901404	GAURAV	EC	ME	7
1901404	GAURAV	EC	ICE	9
1901404	GAURAV	EC	EEE	8

This table contains $4 \times 5 = 20$ rows.

DATABASE CONNECTIVITY

❖ Python interface with MySQL

- Write a function to search a record stored in table using python and MySQL interface

```
def search_roll():
    import mysql.connector
    db =
mysql.connector.connect(host="localhost",user="root",passwd="admin",databa
se="test")
    try:
        z=0
        roll=int(input("Enter roll no to search "))
        c = db.cursor()
        sql='select * from student;'
        c.execute(sql)
        countrow=c.execute(sql)
        print("number of rows : ",countrow)
        data=c.fetchall()
        for eachrow in data:
            r=eachrow[0]
            n=eachrow[1]
            p=eachrow[2]
            if(r==roll):
                z=1
                print(r,n,p)
            if(z==0):
                print("Record is not present")
    except:
        db.rollback()
        db.close()
# function calling
search_roll()
```

Output-

```
Enter roll no to search 101
number of rows : 2
101 amit 97
>>>
```


- Write a function to display all the records stored in a table using python and MySQL interface.

```
def display_all():
    import mysql.connector
    db =
mysql.connector.connect(host='localhost',user='root',passwd='admin',database='test4')
    try:
        c = db.cursor()
        sql='select * from student;'
        c.execute(sql)
        countrow=c.execute(sql)
        print("number of rows : ",countrow)
        data=c.fetchall()
        print("=====")
        print("Roll No Name Per ")
        print("=====")
        for eachrow in data:
            r=eachrow[0]
            n=eachrow[1]
            p=eachrow[2]
            print(r, ' ',n, ' ',p)
            print("=====")
    except:
        db.rollback()
        db.close()
# function calling
display_all()
```

Output:

```
number of rows : 2
=====
Roll No Name Per
=====
102 aaa 99
101 amit 97
=====
>>>
```

- Write a function to insert a record in table using python and MySQL interface.

```
def insert_data():
#take input for the details and then save the record in the database
#to insert data into the existing table in an existing database
    import mysql.connector
    db =
mysql.connector.connect(host="localhost",user="root",password="admin")
    c = db.cursor()
    r=int(input("Enter roll no "))
    n=input("Enter name ")
    p=int(input("Enter per "))
    try:
        c.execute("insert into student (roll,name,per) values
(%s,%s,%s)", (r,n,p))
        db.commit()
        print("Record saved")
    except:
        db.rollback()
        db.close()
# function calling
insert_data()
```

Output:

```
Enter roll no 101
Enter name amit
Enter per 97
Record saved
>>>
```