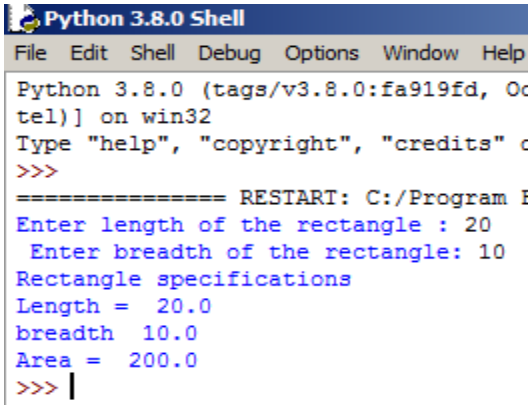
COMPUTER SCIENCE
PYTHON PRACTICAL PROGRAMS

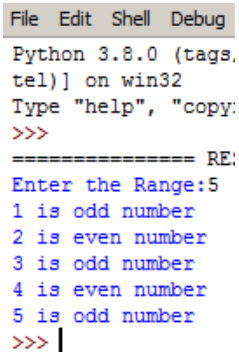
1. Program to obtain length and breadth of a rectangle and calculate its area.
   Solution.

```
#to input length and breadth of a rectangle and calculate its area
    length = float( input("Enter length of the rectangle : "))
    breadth= float( input (" Enter breadth of the rectangle: "))
    area=length * breadth
    print ("Rectangle specifications ")
    print ("Length = ", length)
    print ("breadth ", breadth)
    print ("Area = ", area)
```



2. Write a program in python to display even and odd numbers from 1 to N.
   Solution.

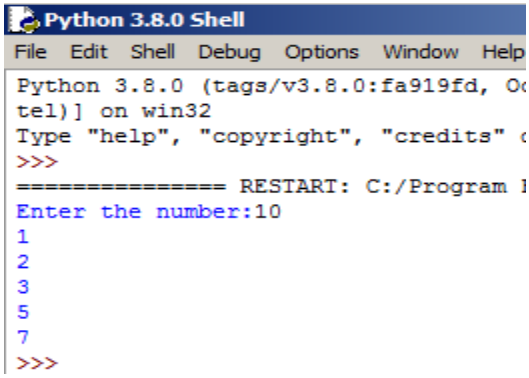
```
num=int(input("Enter the Range:"))
for i in range(1,num+1):
   if i%2==0:
      print(i, "is even number")
   else:
      print(i,"is odd number")
```



3. Write a program in python to all print prime number from 1 to n.
   Solution.

```
num=int(input("Enter the number:"))
for val in range(1,num + 1):
  # If num is divisible by any number
  # between 2 and num, it is not prime
```

```
    if num > 1:
        for n in range(2, val):
            if (val % n) == 0:
                break
        else:
            print(val)
```

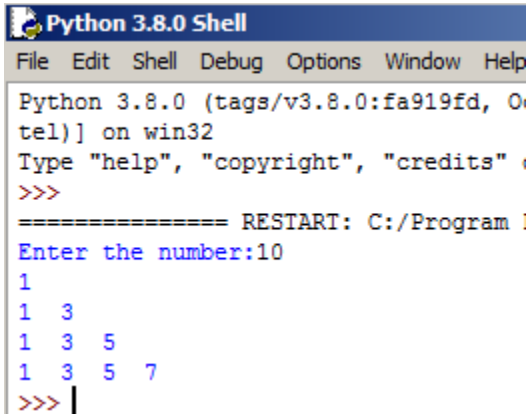


4. Write Python script to print the following for n numbers pattern:

```
1
1 3
1 3 5
1 3 5 7
```

Solution.

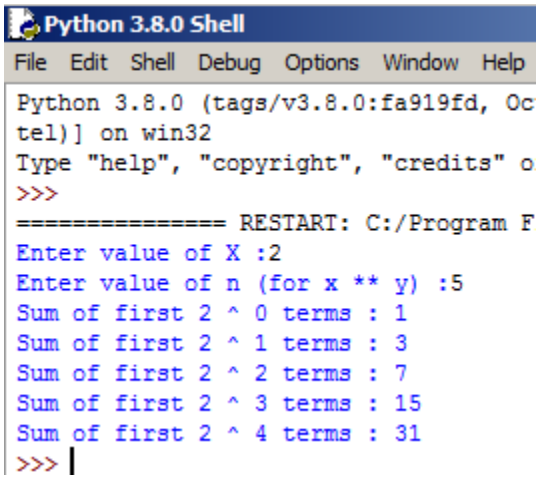
```
num=int(input("Enter the number:"))
for a in range (2, num, 2):
    for b in range (1, a, 2):
        print (b, end =('  '))
    print ()
```



5. Write a program to find sum of the series: $S=1+ X + X^2 +X^3+....X^n$

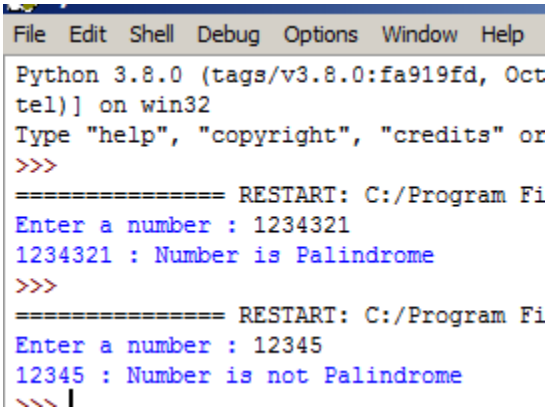
Solution.

```
x = int ( input ( "Enter value of X :" ) )
n= int (input( "Enter value of n (for x ** y) :" ))
s=0
for a in range(n):
    s += x ** a
print ("Sum of first" , x,'^',a , "terms :", s)
```



6. Write a program to check a number whether it is palindrome or not.

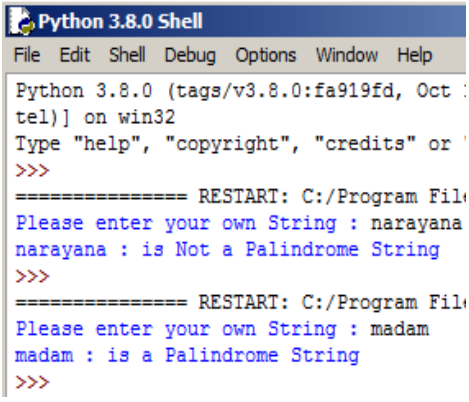
```
num=int(input("Enter a number : "))
n=num
res=0
while num>0:
    rem=num%10
    res=rem+res*10
    num=num//10
if res==n:
    print(n,": Number is Palindrome")
else:
    print(n, ": Number is not Palindrome")
```



7. Write a program to test if a string is palindrome or not.

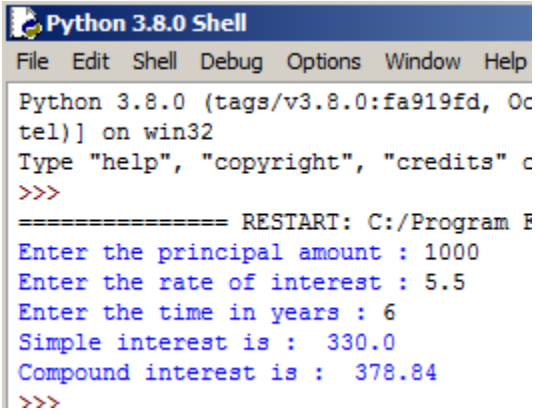
SOURCE CODE:

```
string = input("Please enter your own String : ")
if(string == string[:: - 1]):
  print(string, ": is a Palindrome String")
else:
  print(string, ": is Not a Palindrome String")
```



8. Write a program to calculate Simple and compound interest.

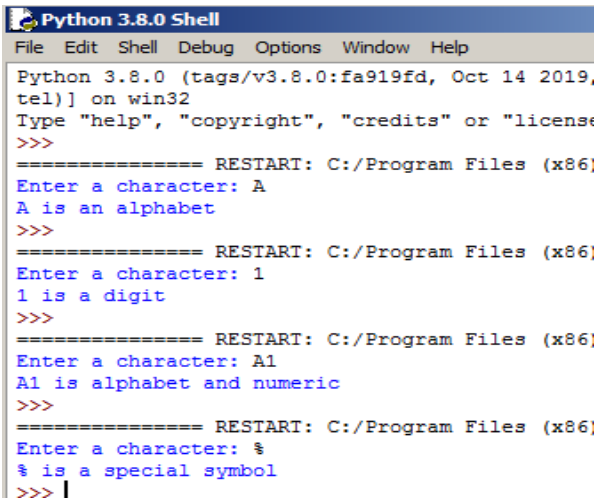
```
p=float(input("Enter the principal amount : "))
r=float(input("Enter the rate of interest : "))
t=float(input("Enter the time in years : "))
SI=(p*t*r)/100
x=(1+r/100)**t
CI= p*x-p
print("Simple interest is : ", round(SI,2))
print("Compound interest is : ", round(CI,2))
```



9. Write a program to input a character and to print whether a given character is an alphabet, digit or any other character.

SOURCE CODE:

```
ch=input("Enter a character: ")
if ch.isalpha():
   print(ch, "is an alphabet")
elif ch.isdigit():
   print(ch, "is a digit")
elif ch.isalnum():
   print(ch, "is alphabet and numeric")
else:
   print(ch, "is a special symbol")
```



10. Program to count frequency of a given element in a list of numbers

SOURCE CODE:

```
Lst=eval(input ( " Enter list :"))
length=len(Lst)
element=int(input( " Enter element :"))
count=0
for i in range(0, length):
   if element==Lst [i]:
      count += 1
if count == 0:
      print (element, "not found in given list")
else:
   print(element, "has frequency as", count, "in given list")
```

```
========== RESTART: C:/Program Files
 Enter list :[10,20,30,20,50,20]
 Enter element :20
20 has frequency as 3 in given list
>>>
```

11. Program to create a dictionary containing names of competition winner students as key number of their wins as values

SOURCE CODE:

```
n=int(input("How many students? "))
winners ={ }
for a in range(n):
   key=input("Name of the student : ")
   value=int(input ("Number of competitions won : "))
   winners [key]=value
print ("The dictionary now is : ")
print (winners)
```

```
=============== RESTART: C:/Program Fil
How many students? 3
Name of the student : Adi
Number of competitions won : 5
Name of the student : Sunny
Number of competitions won : 3
Name of the student : Prajwal
Number of competitions won : 4
The dictionary now is :
{'Adi': 5, 'Sunny': 3, 'Prajwal': 4}
>>>
```

12. Write a program to calculate the factorial of an integer using recursion.

SOURCE CODE:

```
def factorial(n):
   if n == 1:
      return n
   else:
      return n*factorial(n-1)
num=int(input("enter the number: "))
if num < 0:
   print("Sorry, factorial does not exist for negative numbers")
elif num == 0:
   print("The factorial of 0 is 1")
else:
   print("The factorial of ",num," is ", factorial(num))
```

```
=============== RESTART: C:/Program Files
enter the number: 5
The factorial of  5  is  120
>>>
```

13.Write a program to print fibonacci series using recursion.

SOURCE CODE:

```
def fibonacci(n):
    if n<=1:
        return n
    else:
        return(fibonacci(n-1)+fibonacci(n-2))
num=int(input("How many terms you want to display: "))
for i in range(1,num+1):
    print(fibonacci(i)," ", end=" ")
```

```
=============== RESTART: C:/Program Files
How many terms you want to display: 10
1   1   2   3   5   8   13   21   34   55
>>>
```

14.To write a Python program to find the maximum of a list of numbers.

```
n=int(input("Enter the list size:"))
a=[]
for i in range(n):
    num=int(input("Enter the number"))
    a.append(num)
    print (a)
max=a[0]
for i in range(n):
    if(max<a[i]):
        max=a[i]
print ("maximum",max)
```

```
=============== RESTART: C:/Program Files
Enter the list size:5
Enter the number20
[20]
Enter the number30
[20, 30]
Enter the number10
[20, 30, 10]
Enter the number50
[20, 30, 10, 50]
Enter the number40
[20, 30, 10, 50, 40]
maximum 50
>>>
```

15.Write a program for linear search.

SOURCE CODE:

```
L=int(input("Enter the list size:"))
a=[]
loc=-1
for i in range(L):
   num=int(input("Enter the number"))
   a.append(num)
   print (a)
n=len(a)
item=eval(input("Enter the element that you want to search : "))
for i in range(n):
   if a[i]==item:
      loc=i+1
      break
if loc > -1:
    print("Element found at the position :", i+1)
else:
   print("Element not Found")
```

```
=============== RESTART: C:/Program Files (x86)
Enter the list size:5
Enter the number20
[20]
Enter the number30
[20, 30]
Enter the number10
[20, 30, 10]
Enter the number40
[20, 30, 10, 40]
Enter the number50
[20, 30, 10, 40, 50]
Enter the element that you want to search : 40
Element found at the position : 4
>>>
```

16.Write a program for bubble sort.

SOURCE CODE:

```
L=int(input("Enter the list size:"))
a=[]
loc=-1
```

```
for i in range(L):
   num=int(input("Enter the number"))
   a.append(num)
   print (a)
n=len(a)
for p in range(0,n-1):
        for i in range(0,n-1):
              if a[i]>a[i+1]:
                    t=a[i]
                    a[i]=a[i+1]
                    a[i+1]=t
                    print("The sorted list is : ", a)
```

```
================ RESTART: C:/Program Files (x8
Enter the list size:5
Enter the number10
[10]
Enter the number40
[10, 40]
Enter the number50
[10, 40, 50]
Enter the number20
[10, 40, 50, 20]
Enter the number30
[10, 40, 50, 20, 30]
The sorted list is :  [10, 40, 20, 50, 30]
The sorted list is :  [10, 40, 20, 30, 50]
The sorted list is :  [10, 20, 40, 30, 50]
The sorted list is :  [10, 20, 30, 40, 50]
>>>
```

17. Program to input two numbers and print their LCM and HCF.

SOURCE CODE:

```
X=int(input("Enter first number:"))
Y= int (input("Enter second number:"))
if X >Y:
    smaller = Y
else:
    smaller = X
for i in range(1, smaller + 1):
    if((X % i==0) and (Y % i == 0) ) :
          hcf = i
lcm=(X* Y) / hcf
print("The H.C.F. of", X, "and ", Y, "is", hcf)
print("The L.C.M. of", X, "and ", Y, "is", lcm)
```

```
=============== RESTART: C:/Progr
Enter first number:5
Enter second number:4
The H.C.F. of 5 and  4 is 1
The L.C.M. of 5 and  4 is 20.0
>>>
```

18. Write a python function sin(x, n) to calculate the value of sin(x) using its taylor series expansion up to n terms.

SOURCE CODE:

```
import math
def fact(k):
    if k<=1:
        return 1
    else:
        return k*fact(k-1)
step=int(input("How many terms : "))
x=int(input("Enter the value of x :"))
sum=0
for i in range(step+1):
    sum+=(math.pow(-1,i)*math.pow(x,2*i+1))/fact(2*i+1)
print("The result of sin",'(', x, ')', "is :", sum)
```

```
=============== RESTART: C:/Program
How many terms : 4
Enter the value of x :1
The result of sin ( 1 ) is : 1.0
The result of sin ( 1 ) is : 0.833
The result of sin ( 1 ) is : 0.842
The result of sin ( 1 ) is : 0.841
The result of sin ( 1 ) is : 0.841
>>>
```

19. Write a program to display ASCII code of a character and vice versa.

SOURCE CODE:

```
var=True
while var:
    choice=int(input("Press-1 to find the ordinal value of a character
    \nPress-2 to find a character of a value\n"))
    if choice==1:
        ch=input("Enter a character : ")
        print(ord(ch))
    elif choice==2:
        val=int(input("Enter an integer value: "))
        print(chr(val))
    else:
        print("You entered wrong choice")
    print("Do you want to continue? Y/N")
    option=input()
    if option=='y' or option=='Y':
        var=True
    else:
        var=False
```

```
== RESTART: C:/Users/ADI/AppData/Local/Programs/P
Press-1 to find the ordinal value of a character
Press-2 to find a character of a value
1
Enter a character : A
65
Press-1 to find the ordinal value of a character
Press-2 to find a character of a value
2
Enter an integer value: 65
A
Press-1 to find the ordinal value of a character
Press-2 to find a character of a value
3
You entered wrong choice
Do you want to continue? Y/N
n
>>>
```

SQL Program

SQL PROGRAMS
PART-B

Exp A: CREATE A STUDENT DATABASE AND COMPUTE THE RESULT.

FIELD NAME	DATA TYPE
StudentID	Number(4)
Studentname	Varchar(15)
Computer	Number(4)
Maths	Number(4)
Physics	Number(4)
Chem	Number(4)

1) Create a student database and compute the result.

Query 1:

- Create table student(stud_id number(4), stud_name varchar2(20), Computer number(3), Maths number(3), Physics number(3), Chem number(3));

2) Add record into the table for 5 students, using insert command.

Query 2:

- insert into student values('101','arun','69','70','55','90');
- insert into student values('102','Sunny','39','50','58','67');
- insert into student values('103','Prajwal','67','40','59','89');
- insert into student values('104','Satish','20','30','56','45');
- insert into student values('105','Rekha','19','70','89','40');

3) Display the description of the fields in table using desc command.

Query3:

- desc table student;
- desc student;

4) Display all records form the Student table using select command:

Query4:

- Select * from student;

5) Add to new fields to the table :

*total number(3)

Query5:

- Alter table student add (total number (3));

6) Calculate total Marks.

Query6:

- Update student set total=Comp+Maths+Physics+Chem;

7) Find the min, max, sum, and average of the marks in a student marks table.

Query7:

- SELECT min(total) FROM student;
- SELECT max(total) FROM student;
- SELECT sum(total) FROM student;
- SELECT avg(total) FROM student;

8) Add to new fields to the table:

*percentage number(3)

*result varchar2(10)

Query8:

- Alter table student add (percentage number (3), result varchar2(10));

(9) Calculate Percentage Marks.

Query9:

- Update student set percentage=total/4 where studentid>0;

10)Compute the result as "pass" or "fail" by checking if the student has scored more than 35 marks in each subject.

Query10(a):

- Update student set result='pass' where Comp>=35 and Maths>=35 and Physics>=35 and Chem>=35;

Query 10(b):

- Update student set result='fail' where Comp<35 or Maths<35 or Physics<35 or Chem<35;

11)Retrieve all the records of the table.

Query 11:

- Select * from student;

12) Retrieve only student_id and student_name of all the students.

Query 12:

- select student_id, student_name from student;

13) List the students who have the result as "pass".
Query 13:

- select * from student where result='pass';

14)List the students who have the result as "fail".
Query 14:

- select * from student where result='fail';

10)Count the number of students who have passed and failed.

- Query 10(a): select count (*) from student where result='pass';
- Query 11(b): select count (*) from student where result='fail';

Exp B: CONSIDER THE FOLOWING TABLE GAMES COMPUTE THE RESULT:
Table: **GAMES**

GCODE	GAMENAME	Type	NUMBER	PRIZE	SCHEDULE
101	CaromBoard	Indoor	2	5000	23-Jan-2019
102	Badminton	Outdoor	2	12000	12-Dec-2019
103	TableTennis	Indoor	4	8000	14-Feb-2019
104	Chess	Indoor	2	9000	01-Sep-2019
105	Cricket	Outdoor	4	25000	19-Mar-2019

Write SQL commands for the flowing statements:
1) Create a game database and compute the result.
Query 1:

- Create table games(gcode number(4), g_name varchar2(20), type varchar2(10),gnumber number(3), gprize number(10), schedule date);

2) Add record into the table games.
Query 2:

```
insert into game values(101,' CaromBoard',' Indoor ',2, 5000,'23-Jan-2019');
insert into game values(102,' Badminton ',' Outdoor ',2, 12000, '12-Dec-2019');
insert into game values(103,' TableTennis ',' Indoor ',4, 8000,'14-Feb-2019');
insert into game values(104,' Chess ',' Indoor ',2, 9000,'01-Sep-2019');
insert into game values(105,' Cricket ',' Outdoor ',4, 25000, '19-Mar-2019');
```

3) To display the name of all GAMES with their GCodes.
Query 3: select gcodes, gamename from games;

4) To display details of those GAMES which are scheduled between 02-Mar-2014 and 10-Dec-2019.
Query 4: select * from games where scheduledate between '02-mar-2019' and '10-dec-2019';

5) To display the content of the GAMES table in ascending order of Schedule Date.
Query 5: select * from games order by scheduledate;

6)To display sum of Prize Money for each Type of GAMES.
Query 6: select sum(prizemoney) from games order by type;

(B) Give the output of the following SQL queries:

1) select count(distinct number) from games;
OUTPUT 1:

```
count(distinct number)
----------------------
                     2
```

2) SELECT MAX(ScheduleDate),MIN(ScheduleDate) FROM GAMES;
OUTPUT 2:

```
max(scheduledate)        min(scheduledate)
-------------------      -----------------
    23-jan-2016              12-dec-2019
```