A PRACTICAL FILE ON

COMPUTER SCIENCE

SESSION: 2023-24

Submitted by:

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program 1

Write a program to input a number and test if it is a prime number.

```
number=int(input("Enter any number: "))
if number > 1:
    for i in range(2, number):
        if (number % i) == 0:
            print(number, "is not a prime number")
            break
    else:
        print(number, "is a prime number")
else:
    print(number, "is not a prime number)
```

output:

```
Python 3.11.5 (tags/v3.11.5:cce6ba9, Aug 24 2023, 14:38:34) [MSC v.1936 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:/Users/Hamagi/pp.py
Enter any number: 89
89 is a prime number

========== RESTART: C:/Users/Hamagi/pp.py ==========
Enter any number: 90
90 is not a prime number
```

Program 2

Write a program to calculate and print the sums of even and odd integers of the first n natural numbers maximum

```
Maximum=int(input(" Please Enter the Maximum Value : "))

even_total = 0

odd_total = 0

 for number in range(1, maximum + 1):

   if(number % 2 == 0):

      even_total = even_total + number

   else:

      odd_total = odd_total + number

 print("The Sum of Even Numbers from 1 to {0} = {1}".format(number,
even_total))

print("The Sum of Odd Numbers from 1 to {0} = {1}".format(number, odd_total))
```

output:

```
Python 3.11.5 (tags/v3.11.5:cce6ba9, Aug 24 2023, 14:38:34) [MSC v.1936
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:/Users/Hamagi/pp.py
 Please Enter the Maximum Value : 67
The Sum of Even Numbers from 1 to 67 = 1122
The Sum of Odd Numbers from 1 to 67 = 1156
```

progam 3

Write a program to calculate the factorial of a number.

```
num = int(input("Enter a number: "))
factorial = 1
if num < 0:
   print(" Factorial does not exist for negative numbers")
elif num == 0:
   print("The factorial of 0 is 1")
else:
   for i in range(1,num + 1):
       factorial = factorial*i
   print("The factorial of",num,"is",factorial)
```

output:

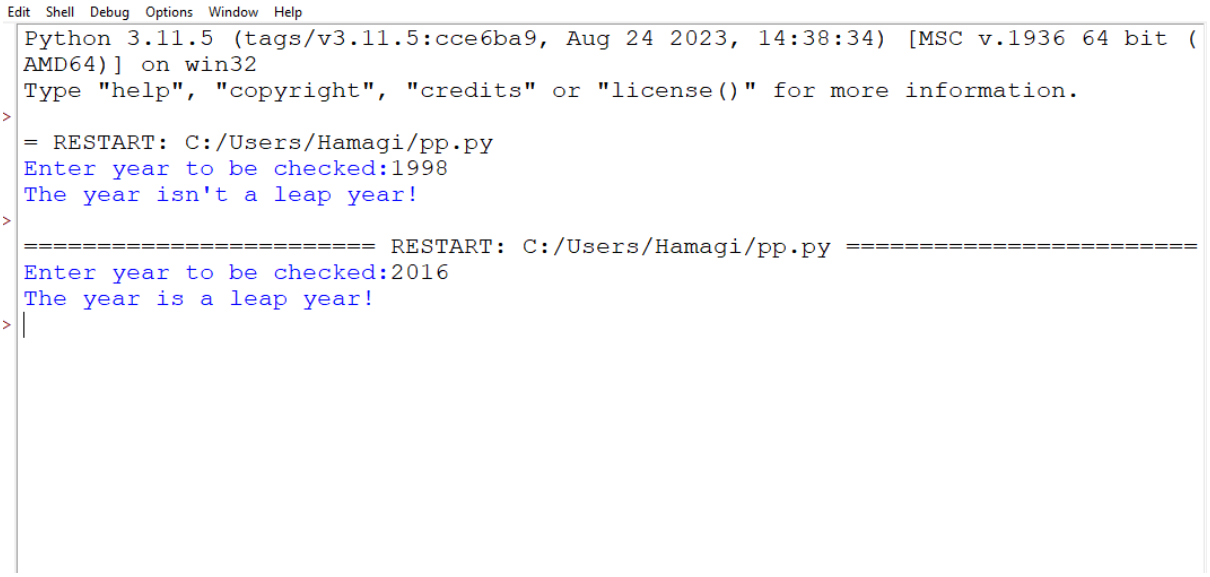
```
Python 3.11.5 (tags/v3.11.5:cce6ba9, Aug 24 2023, 14:38:34) [MSC v.1936 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:/Users/Hamagi/pp.py
Enter a number: 6
The factorial of 6 is 720

========== RESTART: C:/Users/Hamagi/pp.py ==========
Enter a number: 89
The factorial of 89 is 1650795516090846108121691926245361930983966623649654185491
3520707833171034378509739399912570787600662729080382999756800000000000000000000
```

pogram 4

Write a program that asks the user for a year and prints out whether it is a leap year or not.

```
year=int(input("Enter year to be checked:"))
if(year%4==0 and year%100!=0 or year%400==0):
    print("The year is a leap year!")
else:
    print("The year isn't a leap year!")
```

output



Program 5

Write a program to find the sum of digits of an integer number, input by the user.

```
n=int(input("Enter a number:"))
tot=0
while(n>0):
    dig=n%10
    tot=tot+dig
    n=n//10
```

print("The total sum of digits is:",tot)

output:

```
Python 3.11.5 (tags/v3.11.5:cce6ba9, Aug 24 2023, 14:38:34) [MSC v.1936 64 bit
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

========== RESTART: C:/Users/Hamagi/pop.py ==========
Enter a number:789
The total sum of digits is: 24
```

Program 6

Write a program that read three numbers and print them in ascending order a = float(input("Enter a: "))

b = float(input("Enter b: "))

c = float(input("Enter c: "))

if a > c:

    a = a + c

    c = a - c

```
    a = a - c
if a > b:
    a = a + b
    b = a - b
    a = a - b
if b > c:
    b = b + c
    c = b - c
    b = b - c
print (a, "<", b, "<", c)
```

output

```
Python 3.11.5 (tags/v3.11.5:cce6ba9, Aug 24 2023, 14:38:34) [MSC v.1936 64 bit
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>
========== RESTART: C:/Users/Hamagi/pop.py ==========
Enter a number:789
The total sum of digits is: 24
>
========== RESTART: C:/Users/Hamagi/pop.py ==========
Enter a: 8
Enter b: 9
Enter c: 10
8.0 < 9.0 < 10.0
>
```

Program7

Write a program to input three angles of a triangle. Then check if these angles will from a triangle or not.

```
a = int(input('Please Enter the First Angle of a Triangle: '))
b = int(input('Please Enter the Second Angle of a Triangle: '))
c = int(input('Please Enter the Third Angle of a Triangle: '))
```

```
# checking Triangle is Valid or Not
total = a + b + c


if total == 180:
    print("\nThis is a Valid Triangle")
else:
    print("\nThis is an Invalid Triangle")
```

output:

```
Python 3.11.5 (tags/v3.11.5:cce6ba9, Aug 24 2023, 14:38:34) [MSC v.1936 64 bit
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

= RESTART: C:/Users/Hamagi/pop.py
Please Enter the First Angle of a Triangle: 30
Please Enter the Second Angle of a Triangle: 100
Please Enter the Third Angle of a Triangle: 50

This is a Valid Triangle
```

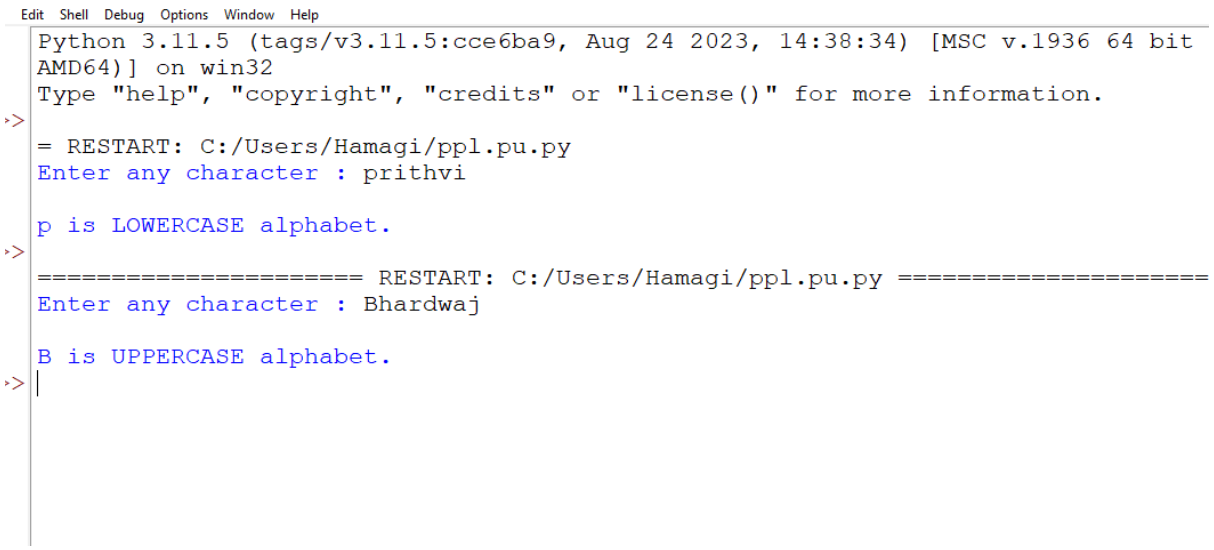
Program 8

Program to print whether a given character is an uppercase or a lowercase character or a digit or any other character.

```
ch = input("Enter any character : ")[0]
if ch.isupper() :
    print("\n" + ch, "is UPPERCASE alphabet.")


elif ch.islower() :
```

```
    print("\n" + ch, "is LOWERCASE alphabet.")


else :
    print("\n" + ch, "is not an alphabet.")
```

output

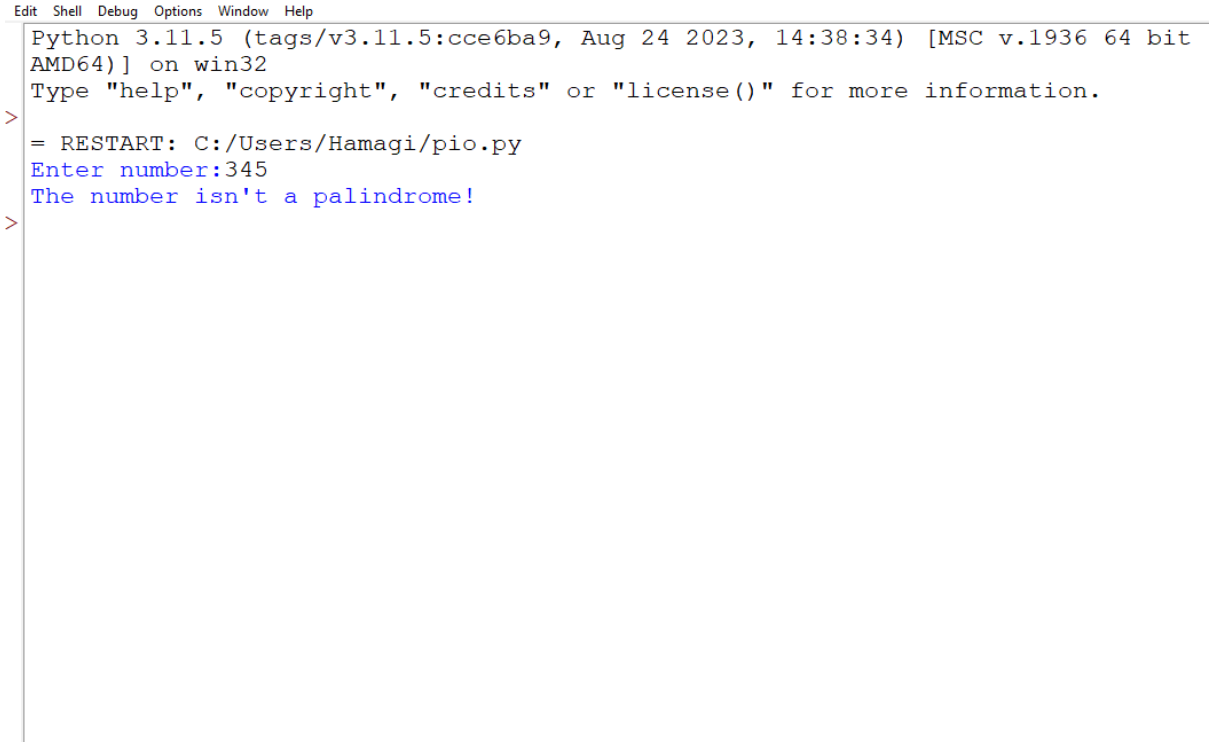


Program 9

```
n=int(input("Enter number:"))
temp=n
rev=0
while(n>0):
    dig=n%10
    rev=rev*10+dig
    n=n//10
```

```
if(temp==rev):
    print("The number is a palindrome!")
else:
  print("The number isn't a palindrome!")
```

output



PROBLEM 10

Write a program to print Fibonacci series.

CODE:-

```
num=int(input("Enter the limit:"))
x=0
y=1
print(x)
print(y)
for i in range(0,num):
    z=x+y
    print(z)
    x,y=y,z
```

OUTPUT:-

```
Enter the limit:7
0
1
1
2
3
5
8
13
21
```

PROBLEM 11

Write a menu driven program to implement a simple calculator for two input numbers.

CODE:-

```
a=int(input("Enter the no:"))
b=int(input("Enter the no:"))
opr=int(input("Select operator from 1.addition, 2.subtraction and
3.multiplication"))

if opr==1:
    c=a+b
    print(c)

elif opr==2:
    d=a-b
    print(d)
elif opr==3:
    e=a*b
    print(e)
```

OUTPUT:-

```
Enter the no:3
Enter the no:3
Select operator from 1.addition, 2.subtraction and 3.multiplication3
9
PS C:\Users\Ayaan Abrol\Dropbox\PC\Downloads\cs exam> py test.py
Enter the no:4
Enter the no:2
Select operator from 1.addition, 2.subtraction and 3.multiplication2
2
PS C:\Users\Ayaan Abrol\Dropbox\PC\Downloads\cs exam> py test.py
Enter the no:4
Enter the no:4
Select operator from 1.addition, 2.subtraction and 3.multiplication1
8
```

PROBLEM 12:-

Write a program to read an integer >1000 and reverse the number.

```
num=int(input("enter a no greater than 1000:"))
rev=0

while num!=0:
    dig=num%10
    rev=rev*10+dig
    num//=10
print(rev)
```

OUTPUT:-

```
enter a no greater than 1000:2345
5432
```

PROBLEM 13:-

Write a program to display a menu for calculating area of a circle or perimeter of a circle.

CODE:-

```
num=int(input("enter the radius:"))
opt=int(input("Choose between perimeter(1) and Area of a circle(2):"))

if opt==1:
    perimeter=2*3.14*num
    print(perimeter)
elif opt==2:
    area=3.14*num*num
    print(area)
```

OUTPUT:-

```
enter the radius:5
Choose between perimeter(1) and Area of a circle(2):1
31.400000000000002
PS C:\Users\Ayaan Abrol\Dropbox\PC\Downloads\cs exam> py test.py
enter the radius:2
Choose between perimeter(1) and Area of a circle(2):2
12.56
PS C:\Users\Ayaan Abrol\Dropbox\PC\Downloads\cs exam>
```

PROBLEM 14

Write a program that searches for prime numbers from 15 through 25.

CODE:-

```
for a in range(15,25):
    k=0
    for i in range(2,a//2+1):
        if a%i==0:
            k=k+1
    if k==0:
        print(a)
```

OUTPUT:-

```
17
19
23
```

PROBLEM15

15	Program that reads a line and prints its statistics like: Number of uppercase letters: Number of lowercase letters: Number of alphabets: Number of digits: Number of symbols

CODE:-

```
word=input("enter word:")
lower=upper=0
digcount=alphacount=0
for a in word:
    if a.islower():
        lower+=1
    elif a.isupper():
        upper+=1
    elif a.isdigit():
        digcount+=1
    if a.isalpha():
        alphacount+=1
print("The number of uppercase is:",upper)
print("The number of lowercase is:",lower)
print("The number of digits are:",digcount)
print("The number of alphabets is:",alphacount)
```

OUTPUT:-

```
enter word:Ayaan
The number of uppercase is: 1
The number of lowercase is: 4
The number of digits are: 0
The number of alphabets is: 5
```

PROBLEM 16

Program that reads a line and a substring. It should then display the number of occurrences of the given substring in the line.

CODE:-

```
str="hello people. hello everyone"

sub="hello"
count=str.count(sub)

print("no of occurrences in a substring are",count)
```

OUTPUT:-

```
no of occurrences in a substring are 2
```

PROBLEM 17:-

Write a program that reads a string and then prints a string that capitalizes every other letter in the string e.g. passion becomes pAsSiOn.

CODE:-

```
string1=input("enter a string:")
len=len(string1)
string2=""
for i in range(0,len):
    if i%2==0:
        string2+=string1[i].upper()
    else:
        string2+=string1[i]

print(string2)
```

OUTPUT:-

```
enter a string:test
TeSt
```

PROBLEM 18

Write a program that reads a string and checks whether it is a palindrome string or not without using string slice.

CODE:-

```
str=(input("enter a word:"))
rev=""
count=len(str)
while count>0:
    rev+=str[count-1]
    count=count-1
if rev ==str:
    print("string is a palindrome")
else:
    print("string is not a palindrome")
```

OUTPUT:-

```
PS C:\Users\Ayaan Abrol\Dropbox\PC\Downloads\cs exam> py test.py
enter a word:racecar
string is a palindrome
PS C:\Users\Ayaan Abrol\Dropbox\PC\Downloads\cs exam> py test.py
enter a word:test
string is not a palindrome
PS C:\Users\Ayaan Abrol\Dropbox\PC\Downloads\cs exam>
```