Assignment-03

Python Programming

BCSG-1001

Submitted by-

Name: Piyush Gupta

Course: Btech CSE

Section: G (2)

University Roll no.: 2215001229

Class Roll no.: 73

Submitted to-

Dr. Manoj Varshney

1. Python Program for n-th Fibonacci number.

Answer:

```
n=int(input('Enter the nth number:'))
n1=0
n2=1
n3=0
for i in range(1,n-1):
    if i==1:
        print(n1,n2,sep=" ",end=" ")
    n3=n1+n2
    n1=n2
    n2=n3
    print(n3,end=" ")
```

Output:

```
Enter the nth number:10
0 1 1 2 3 5 8 13 21 34
```

2. Python Program for How to check if a given number is Fibonacci number?

Answer:

```
n=int(input("Enter the number: "))
n1=0
n2=1
n3=1
if n==0 or n==1:
    print("Yes")
else:
    while n1<n:
        n1=n2+n3
        n3=n2
        n2=n1
    if n1==n:
        print("Yes")
    else:
        print("No")
```

Output:

```
Enter the number: 34
Yes

Enter the number: 10
No
```

Question 3: Python Program for n\'th multiple of a number in Fibonacci Series

Answer:

```
n1=int(input('Enter the number:'))
n2=int(input('Enter the nth:'))
f1 = 0
f2 = 1
i =2;
while i!=0:
    f3 = f1 + f2;
    f1 = f2;
    f2 = f3;
    if f2%n1 == 0:
        print(n2*i)
    i+=1
```

Output:

```
Enter the number:4
Enter the nth:5
30
```

Question 4: Program to print ASCII Value of a character.

Answer:

```
x=input('Enter any Character:')
n=ord(x)
print('The ASCII value of given character is',n)
```

Output:

```
Enter any Character:P
The ASCII value of given character is 80
```

Question 5: Python Program for Sum of squares of first n natural numbers.

Answer:

```
x=int(input('Enter a number:'))
i=1
sum=0
while(i<=x):
    k=i*i
    print(k,end=" ")
    sum=sum+k
    i+=1
print('\nThe sum of squares of natural nos.is',sum)
```

Output:

```
Enter a number:5
1 4 9 16 25
The sum of squares of natural nos.is 55
```

Question 6: Write a Python program to swap two numbers using bitwise operator.

Answer:

```
x=int(input('Enter the 1st number:'))
y=int(input('Enter the 2nd number:'))
x=x^y
y=x^y
x=x^y
print(x,y)
```

Output:

```
Enter the 1st number:5
Enter the 2nd number:6
6 5
```

Question 7: Write a Python program to check whether a character is alphabet or not.

Answer:

```
x=input('Enter a Character:')
if x>='a' and x<='z':
    print("It is an alphabet")
elif x>='A' and x<='z':
    print("It is an alphabet")
else:
    print("It is not an alphabet")
```

Output:

```
Enter a Character:a
It is an alphabet
```

```
Enter a Character:4
It is not an alphabet
```

Question 8: Write a Python program to input any alphabet and check whether it is vowel or consonant.

Answer:

```
x=input('Enter a Character:')
if(x=='a' or x=='e' or x=='i' or x=='o' or x=='u'):
    print('Entered character is vowel')
elif(x=='A' or x=='E' or x=='I' or x=='O' or x=='U'):
    print('Entered character is vowel')
else:
    print('Entered character is consonant')
```

Output:

```
Enter a Character:a
Entered character is vowel
```

```
Enter a Character:K
Entered character is consonant
```

Question 9: Write a Python program to input any character and check whether it is alphabet, digit or special character.

Answer:

```
x=input("Please Enter Your Own Character : ")
if(ord(x)>=48 and ord(x)<=57):
    print("The Given Character",x,"is a Digit")
elif((ord(x)>=65 and ord(x)<=90) or (ord(x)>=97 and ord(x)<=122)):
    print("The Given Character",x,"is an Alphabet")
else:
    print("The Given Character",x,"is a Special Character")
```

Output:

```
Please Enter Your Own Character : P
The Given Character P is an Alphabet
Please Enter Your Own Character : @
The Given Character @ is a Special Character
```

Question 10: Write a Python program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to

following:

Percentage >= 90% : Grade A

Percentage >= 80% : Grade B

Percentage >= 70% : Grade C

Percentage >= 60% : Grade D

Percentage >= 40% : Grade E

Percentage < 40% : Grade F

Answer:

```
phy=float(input('Enter the marks of Physics:'))
math=float(input('Enter the marks of Mathematics:'))
chem=float(input('Enter the marks of Chemistry:'))
bio=float(input('Enter the marks of Biology:'))
comp=float(input('Enter the marks of Computer:'))
obt_marks=phy+math+chem+bio+comp
P=(obt_marks/500)*100
print('The percentage is',P)
if(P>=90):
    print("Grade A")
elif(P>=80):
    print("Grade B")
elif(P>=70):
    print("Grade C")
elif(P>=60):
    print("Grade D")
elif(P>=40):
    print("Grade E")
else:
    print("Grade F")
```

Output:

```
Enter the marks of Physics:95
Enter the marks of Mathematics:57
Enter the marks of Chemistry:68
Enter the marks of Biology:87
Enter the marks of Computer:78
The percentage is 77.0
Grade C
```

Question 11: Write a Python program to input basic salary of an employee and calculate its Gross salary according to following: Basic Salary <= 10000 : HRA = 20%, DA = 80% Basic Salary <= 20000 : HRA = 25%, DA = 90% Basic Salary > 20000 : HRA = 30%, DA = 95%.

Answer:

```
sal=float(input('Enter the basic salary:'))
if(sal<=10000):
    hra=0.2*sal
    da=0.8*sal
    Salary=sal+hra+da
elif(sal<=20000):
    hra=0.25*sal
    da=0.9*sal
    Salary=hra+da+sal
else:
    hra=0.3*sal
    da=0.95*sal
    Salary=hra+da+sal
print('The gross salary is',Salary)
```

Output:

```
Enter the basic salary:25000
The gross salary is 56250.0
```

Question 12: Write a Python program to input electricity unit charges and calculate total electricity bill according to the given condition: For first 50 units Rs. 0.50/unit For next 100 units Rs. 0.75/unit For next 100 units Rs. 1.20/unit For unit above 250 Rs. 1.50/unit An additional surcharge of 20% is added to the bill.

Answer:

```
x=float(input('Enter the electricity unit'))
if(x<=50):
    bill=0.5*x
if(x>50 and x<=150):
    bill=50*0.5+(x-50)*0.75
if(x>150 and x<=250):
    bill=50*0.5+100*0.75+(x-150)*1.20
if(x>250):
    bill=50*0.5+100*0.75+100*1.2+(x-250)*1.5
Total=bill+0.2*bill
print('Total bill after surcharge is',Total)
```

Output:

```
Enter the electricity unit350
Total bill after surcharge is 444.0
```

Question 13: Write a Python program to print all alphabets from a to z. – using while Loop.

Answer:

```
i=97
while(i<=122):
    print(chr(i),end=" ")
    i+=1
```

Output: a b c d e f g h i j k l m n o p q r s t u v w x y z

Question 14: Write a Python program to find first and last digit of a number.

Answer:

```
x=int(input('Enter the number:'))
rem=x%10
while(x>10):
    R=x//10
    x/=10
print('Last digit', rem)
print('First digit',R)
```

Output:

```
Enter the number:34567
Last digit 7
First digit 3.0
```

Question 15: Write a Python program to calculate sum of digits of a number.

Answer:

```
x=int(input('Enter the number:'))
sum=0
while(x>0):
    rem=x%10
    sum=sum+rem
    x//=10
print('The sum of digit of a number is',sum)
```

Output:

```
Enter the number:123456
The sum of digit of a number is 21
```

Question 16: Write a Python program to calculate product of digits of a number.

Answer:

```
x=int(input('Enter the number:'))
prod=1
while(x>0):
    rem=x%10
    prod=prod*rem
    x//=10
print('The product of digits of a number is',prod)
```

Output:

```
Enter the number:12345
The product of digits of a number is 120
```

Question 17: Write a Python program to enter a number and print its reverse.

Answer:

```
x=int(input('enter the number:'))
t=0
num=x
while(x>0):
    rem=x%10
    t=t*10+rem
    x//=10
print('the reverse of %d is %d'%(num,t))
```

Output:

```
enter the number:1345
the reverse of 1345 is 5431
```

Question 18: Write a Python program to check whether a number is palindrome or not.

Answer:

```
x=int(input('enter the number:'))
t=0
num=x
while(x>0):
    rem=x%10
    t=t*10+rem
    x//=10
print('the reverse of %d is %d'%(num,t))
if(t==num):
    print('the number is pallindrome')
else:
    print('not pallindrome')
```

Output:

```
enter the number:12321
the reverse of 12321 is 12321
the number is pallindrome
```

Question 19: Write a Python program to find all factors of a number.

Answer:

```
x=int(input('Enter the number:'))
i=1
print('The factors of %d are'%x,end=" ")
while(i<x):
    if(x%i==0):
        print(i,end=" ")
    i+=1
```

Output:

```
Enter the number:36
The factors of 36 are 1 2 3 4 6 9 12 18
```

Question 20: Write a Python program to calculate factorial of a number.

Answer:

```
x=int(input('Enter the number:'))
i=1
fac=1
while(i<=x):
    fac=fac*i
    i+=1
print('The factorial of %d is %d'%(x,fac))
```

Output:

```
Enter the number:7
The factorial of 7 is 5040
```

Question 21: Write a Python program to find HCF (GCD) of two numbers.

Answer:

```
x=int(input('Enter the 1st number:'))
y=int(input('Enter the 2nd number:'))
if(x>y):
    small=y
else:
    small=x
for i in range(1,small+1):
    if(x%i==0 and y%i==0):
        hcf=i

print('The HCF of %d and %d is %d'%(x,y,hcf))
```

Output:

```
Enter the 1st number:36
Enter the 2nd number:84
The HCF of 36 and 84 is 12
```

Question 22: Write a Python program to find LCM of two numbers.

Answer:

```
x=int(input('Enter the 1st number:'))
y=int(input('Enter the 2nd number:'))
if(x>y):
    small=y
else:
    small=x
for i in range(1,small+1):
    if(x%i==0 and y%i==0):
        hcf=i

print('The HCF of %d and %d is %d'%(x,y,hcf))
lcm=(x*y)/hcf
print('The LCM of %d and %d is %d'%(x,y,lcm))
```

Output:

```
Enter the 1st number:5
Enter the 2nd number:4
The HCF of 5 and 4 is 1
The LCM of 5 and 4 is 20
```

Question 23: Write a Python program to check whether a number is Prime number or not.

Answer:

```
x=int(input('Enter the number:'))
count=1
for i in range(1,((x//2)+1)):
    if(x%i==0):
        count+=1
if(count==2):
    print('%d is Prime number'%x)
else:
    print('%d is not Prime number'%x)
```

Output:

```
Enter the number:10
10 is not Prime number
```

```
Enter the number:3
3 is Prime number
```

Question 24: Write a Python program to print all Prime numbers between 1 to n.

Answer:

```
k=int(input('Enter the number:'))
for n in range (1,k+1):
    count = 0
    for i in range(2, (n//2 + 1)):
        if(n%i==0):
            count=count + 1
            break

    if (count==0 and n!=1):
        print("%d"%n,end=',')
```

Output:

```
Enter the number:100
2,3,5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73,79,83,89,97,
```

Question 25: Write a Python program to find sum of all prime numbers between 1 to n.

Answer:

```
k=int(input('Enter the number:'))
s=0
for n in range (1,k+1):
    count = 0
    for i in range(2, (n//2 + 1)):
        if(n%i==0):
            count=count + 1
            break
    if (count==0 and n!=1):
        print("%d"%n,end=',')
        s=s+n

print('\nThe sum of prime number in rage 1 to %d is %d'%(k,s))
```

Output:

```
Enter the number:20
2,3,5,7,11,13,17,19,
The sum of prime number in rage 1 to 20 is 77
```

Question 26: Write a Python program to find all prime factors of a number.

Answer:

```
n=int(input('Enter teh number;'))
print('The prime factors are:')
factors = []
i = 2
while i * i <= n:
    if n % i:
        i += 1
    else:
        n //= i
        print(i)
if n > 1:
    print(n)
```

Output:

```
Enter teh number;28
The prime factors are:
2
2
7
```

Question 27: Write a Python program to check whether a number is Armstrong number or not.

Answer:

```
n=int(input('Enter the number:'))
order = len(str(n))
sum = 0
temp=n
while temp>0:
   digit=temp % 10
   sum+=digit**order
   temp//=10

if n==sum:
   print(n,"is an Armstrong number")
else:
   print(n,"is not an Armstrong number")
```

Output:

```
Enter the number:407
407 is an Armstrong number
```

Question 28: Write a Python program to print all Armstrong numbers between 1 to n.

Answer:

```
lower = int(input("Enter lower range: "))
upper = int(input("Enter upper range: "))

for num in range(lower,upper + 1):
   sum = 0
   temp = num
   while temp > 0:
       digit = temp % 10
       sum += digit ** 3
       temp //= 10
       if num == sum:
            print(num)
```

Output:

```
Enter the number:1000
1
370
371
407
```

Question 29: Write a Python program to check whether a number is Perfect number or not.

Answer:

```
n = int(input("Enter any number: "))
sum1 = 0
for i in range(1, n):
    if(n % i == 0):
        sum1 = sum1 + i
if (sum1 == n):
    print("The number is a Perfect number!")
else:
    print("The number is not a Perfect number!")
```

Output:

```
Enter any number: 6
The number is a Perfect number!
```

Question 30: Write a Python program to check whether a number is Strong number or not (Also known as Robinson number/ Krishnamurthy Number / Peterson number.)

Answer:

```
x=int(input('enter the number:'))
sum=0
n=x
while(x>0):
    rem=x%10
    fac=1
    i=1
    while(i<=rem):
        fac=fac*i

        i=i+1
    sum=sum+fac
    x=x//10

if(n==sum):
    print('strong')
else:
    print('not')
```

Output:

```
enter the number:145
strong
```

Question 31: Python program to check whether the string is Symmetrical or Palindrome.

Answer:

```
s=input('Enter the sting:')
n=len(s)
i=0
flag=0
last=n-1
count=0
if(n%2==0):
    mid=n//2
else:
    mid=n//2+1
while(i<mid):
    if(s[i]==s[last]):
        i+=1
        last-=1
    else:
        flag=1
        break
if(flag==0):
    print('The string is Pallindrome')
else:
    print('The string is not Pallindrome')
while(i<mid and mid<n):
    if(s[i]==s[mid]):
        mid+=1
        i+=1
    else:
        count=1
        break
if(count==0):
    print('The string is symmetrical')
else:
    print('The string is not symmetrical')
```

Output:

```
Enter the sting:khokho
The string is not Pallindrome
The string is symmetrical
```

```
Enter the sting:abcba
The string is Pallindrome
The string is symmetrical
```

Question 32: Reverse words in a given String in Python.

Answer:

```
s=input('Enter the string-')
n=len(s)
last=n-1
print('The reverse of the string',s,'is')
while(last>=0):
    print(s[last],end="")
    last-=1
```

Output:

```
Enter the string-piyush
The reverse of the string piyush is
hsuyip
```

Question 33. Ways to remove i'th character from string in Python.

Answer: {First way}

```
s=input('Enter the string:')
i=int(input('Enter ith character to remove from string:'))
new=s[:i]+s[i+1:]
print('The sring after removing ith character')
print(new)
```

Output:

```
Enter the string:piyush
Enter ith character to remove from string:3
The sring after removing ith character
piysh
```

{Second way}

```
s=input('Enter the string:')
i=int(input('Enter ith character to remove from string:'))
new=s.replace(s[i],'')
print('The sring after removing ith character')
print(new)
```

Output:

```
Enter the string:piyush
Enter ith character to remove from string:2
The sring after removing ith character
piush
```

{Third way}

```
s=input('Enter the string:')
i=int(input('Enter ith character to remove from string:'))
new=""
for k, c in enumerate(s):
    if k!=i:
        new+=c
print('The sring after removing ith character')
print(new)
```

Output:

```
Enter the string:piyush
Enter ith character to remove from string:5
The sring after removing ith character
piyus
```

Question 34. Python program to Check if a Substring is Present in a Given String.

Answer:

```
s=input('Enter the string:')
ss=input('Enter the substring:')
if ss in s:
    print('Yes,substring is present in string')
else:
    print('No,substring is not present in string')
```

Output:

```
Enter the string:jai gla
Enter the substring:gla
Yes,substring is present in string
```

Question 35. Python program to count words frequency in String Shorthand.

Answer:

```
s=input('Enter the shortthands:')
words = s.split()
word_freq={}
for word in words:
    if word in word_freq:
        word_freq[word] += 1
    else:
        word_freq[word] = 1
print(word_freq)
```

Output:

```
Enter the shortthands:hlo thx piy
{'hlo': 1, 'thx': 1, 'piy': 1}
```

Question 36. Python program to convert snake case to pascal case.

Answer:

```
s=input('Enter the string')
lwr=s.lower()
n=lwr.split()
snake_case='_'.join(n)
upr=lwr.upper()
k=upr.split()
pascal_case=''.join(k)
print('The string in Snake case is',snake_case)
print('The string in Pascak case is',pascal_case)
```

Output:

```
Enter the stringjai gla jai
The string in Snake case is jai_gla_jai
The string in Pascak case is JAIGLAJAI
```

Question 37. Find length of a string in python (4 ways).

Answer:{1}

```
s=input('Enter the string:')
length = len(s)
print(length)
```

Output:

```
Enter the string:piyush
6
```

{2}

```
s =input('Enter the string')
count=0
for char in s:
    count+=1
print(count)
```

Output:

```
Enter the stringkilling
7
```

{3}

```
s=input('Enter the string:')
count=0
while s[count:]:
    count+=1
print(count)
```

Output:

```
Enter the stringkilling
7
```

{4}

```
s=input('Enter the string:')
s = "Hello, World!"
length = s.__len__()
print(length)
```

Output:

```
Enter the stringkilling
7
```

Question 38. Python program to print even length words in a string.

Answer:

```
s=input('Enter the string:')
n=s.split()
print('Words of even length:')
for i in n:
    if len(i)%2==0:
        print(i)
```

Output:

```
Enter the string:fox on tree under nest
Words of even length:
on
tree
nest
```

Question 39. Python program to accept the strings which contains all vowels.

Answer:

```
string=input('Enter the string:')
string = string.replace(' ', '')
string = string.lower()
vowel = [string.count('a'), string.count('e'), string.count('i'), string.count('o'), string.count('u')]


if vowel.count(0) > 0:
    print('not accepted')
else:
    print('accepted')
```

Output:

```
Enter the string:a i oeuo
accepted
```

Question 40. Python program to count the Number of matching characters in a pair of string.

Answer:

```
s1=input('Enter the first string:')
s2=input('Enter the second string:')
S1=set(s1)
S2=set(s2)
m=S1&S2
print('The number of matching characters are',len(m))
```

Output:

```
Enter the first string:piyush
Enter the second string:piyus
The number of matching characters are 5
```

Question 41. Remove all duplicates from a given string in Python.

Answer:

```
s=input('Enter the string:')
n=set(s)
j=''.join(n)
print('Remove all duplicates from a given string')
print(j)
```

Output:

```
Enter the string:jai jai jai
Remove all duplicates from a given string
jia
```

Question 42. Python programs to count Least Frequent Character in String.

Answer:

```
s=input('Enter the string:')
freq={}
for i in s:
    if i in freq:
        freq[i]+=1
    else:
        freq[i] = 1
res = min(freq,key=freq.get)
print ("The minimum of all characters in string is : " + str(res))
```

Output:

```
Enter the string:betty bought a bit of butter
The minimum of all characters in string is : y
```

Question 43. Python programs to count maximum frequency character in String.

Answer:

```
s=input('Enter the string:')
freq={}
for i in s:
    if i in freq:
        freq[i]+=1
    else:
        freq[i] = 1
res = max(freq,key=freq.get)
print("The maximum of all characters in GeeksforGeeks is : " + str(res))
```

Output:

```
Enter the string:betty bought a bit butter
The maximum of all characters in GeeksforGeeks is : t
```

Question 44. Python program to check if a string contains any special character.

Answer:

```
s=input('Enter the string:')
sp_char=['!','@','#','$','%','^','&','*']
found=0
for char in s:
    if char in sp_char:
        found+=1
        break
    else:
        found=0
if(found!=0):
    print('Yes,it contains special character')
else:
    print('No,it does not contains any special character')
```

Output:

```
Enter the string:qwerty@!
Yes,it contains special character
```

Question 45. Python program to split and join a string.

Answer:

```
s=input('Enter the string:')

sp=s.split()
jo=''.join(sp)
print('Splitting of string is',sp)
print('Joining of string is',jo)
```

Output:

```
Enter the string:jai gla jai
Splitting of string is ['jai', 'gla', 'jai']
Joining of string is jaiglajai
```

Question 46. Python program to find uncommon words from two Strings.

Answer:

```
s1=input('Enter the first string:')
s2=input('Enter the second string:')
S1=s1.split()
S2=s2.split()
print('The uncommn word in string are')

for i in S1:
    if(i not in S2):
        print(i,end=',')
for i in S2:
    if(i not in S1):
        print(i)
```

Output:

```
Enter the first string:hello buddy how are you
Enter the second string:buddy hello
The uncommn word in string are
how,are,you,
```

Question 47. Python program to replace duplicate occurrence in string.

Answer:

```
s=input('Enter the string:')
S=''
n=input('Enter the character you want to replace with:')
for i in s:
    if i not in S:
        S+=i
    else:
        S+=n
print('String after replacing all duplicate character:',S)
```

Output:

```
Enter the string:beety
Enter the character you want to replace with:&
String after replacing all duplicate character: be&ty
```

Question 48: String slicing in Python to rotate a string.

Answer:

```
s=input('Enter the string:')
n=int(input('Enter the number to rotate string by:'))
new=s[n:]+s[:n]
print('The string after rotation')
print(new)
```

Output:

```
Enter the string:piyush
Enter the number to rotate string by:4
The string after rotation
shpiyu
```

Question 49: Find all duplicate characters in string.

Answer:

```
s=input('Enter the string:')
fr={}
for i in s:
    if i in fr:
        fr[i]+=1
    else:
        fr[i]=1
print('Duplicate characters in string:')
for i in fr:
    if fr[i]>1:
        print(i)
```

Output:

```
Enter the string:beety bett
Duplicate characters in string:
b
e
t
```

Question 50: Replace all occurrences of a substring in a string.

Answer:

```
s=input('Enter the string:')
s1=input('Enter the substring to replace:')
s2=input('Enter the replacement:')
n=s.replace(s1,s2)
print('String after replacement:')
print(n)
```

Output:

```
Enter the string:hello fox bear
Enter the substring to replace:fox
Enter the replacement:bee
String after replacement:
hello bee bear
```