Assignment:-1

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1.Python Program for n-th Fibonacci number

```
1.  n=int(input("enter a number"))
2.  t1=0
3.  t2=1
4.  print(t1,t2)
5.  next_term=t1+t2
6.  while(next_term<=n):
7.      print(next_term)
8.      t1=t2
9.      t2=next_term
10.     next_term=t1+t2
```

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

```
n=int(input("enter a number"))
t1=0
t2=1
next_term=t1+t2
while(next_term<n):
    t1=t2
    t2=next_term
    next_term=t1+t2
if(next_term==n):
        print("yes it is a fabonacci number")
else:
        print("no it is not a fabonacci number")
```

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

4. Program to print ASCII Value of a character.

```
print("ASCIIcharacter")
for i in range(256):
    ch=chr(i)
    print(i,"\t",ch)
```

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

```
n = int(input())
sum =0
for i in range(1,n+1):
    sum=sum+(i*i)
print(sum)
```

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

```
a=int(input("enter number"))
b=int(input("enter number"))
a=a^b
b=a^b
a=a^b
print("value of a after swapping",a)
print("value of b after swapping",b)
```

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

```
print("enter character")
ch=input()
if((ch>='a'and ch<='z')or(ch>='A' and ch<='Z')):
        print("character is alphabet")
else:
        print("character is not alphabet")
```

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

```
print("enter alphabet")
alp=input()
if(alp=='A'or alp=='a'or alp=='E'or alp=='e'or alp=='I'or alp=='i'or alp=='O'or
alp=='o'or alp=='U'or alp=='u'):
    print("alphabet is vowel")
else:
    print("alphabet is consonant")
```

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

```
print("enter character")
ch=input()
if((ch>='a' and ch<='z')or(ch>='A'and ch<='Z')):
    print("character is alphabet")
elif(ch>='0' and ch<='9'):
    print("character is digit")
else:
    print("character is special character")
```

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

```
#converts to percentage into letter grade
math=int(input("enter marks of math"))
```

```
ec=int(input("enter marks of electronics"))
c=int(input("enter marks of computer programming"))
chem=int(input("enter marks of chemistry"))
eng=int(input("enter marks of english"))
print(math)
print(ec)
print(c)
print(chem)
print(eng)
total_marks=math+ec+c+chem+eng
print("total marks:" ,total_marks)
percent=(total_marks)/5
print("percentage:",percent)
if(percent>=90):
    print("grade:A+")
elif(percent>=80):
    print("grade:A")
elif(percent>=70):
    print("grade:C")
elif(percent>=60):
    print("grade:D")
elif(percent>=40):
    print("grade:E")
elif(percent<40):
    print("grade:F")
else:
    print("invalid grade")
```

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%

```
bs=int(input("enter basic salary"))
if(bs<=10000):
    da=0.20*bs
    hra=0.80*bs
    gross_sal=da+hra+bs
    print("gross_salary :", gross_sal)
elif(bs<=20000):
    da=0.90*bs
    hra=0.25*bs
    gross_sal=da+hra+bs
    print("gross_salary :", gross_sal)
elif(bs>20000):
    da=0.95*bs
    hra=0.30*bs
    gross_sal=da+hra+bs
    print("gross_salary :", gross_sal)
```

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

```
u=int(input("enter unit of eb"))
if(u<50):
    am=u*0.50
elif(u<=150):
    am=(100*0.50)+(u-50)*0.75
elif(u<=250):
    am=(100*0.50)+(100*0.75)+(u-100)*1.20
elif(u>250):
    am=(100*0.50)+(100*.75)+(100*1.20)+(u-250)*1.50
sc=0.20*am
tot_bill=am+sc
print(sc)
print(tot_bill)
```

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

```
print("alphabet is")
i=65
while(i<=90):
    ch=chr(i)
    print(ch)
    i=i+1
```

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

```
#find first and last digit of a number
n=input("enter a number")
for i in range (len(n)):
    if(i==0):
        print("your first digit is",n[0])
    elif(i==len(n)-1):
        print("your last digit is",n[-1])
```

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

```
n=int(input("enter number"))
sum=0
while(n>0):
    dig=n%10
    sum=sum+dig
    n=n//10
print("the total sum of all digit of a number is",sum)
```

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

```
n=int(input("enter a number"))
mul=1
while(n>0):
    dig=n%10
```

```
    mul=mul*dig
    n=n//10
print("the product of all digit of a number is ",mul)
```

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

```
n=int(input("enter a num"))
temp=n
sum=0
while(n>0):
    rem=n%10
    sum=sum*10+rem
    n=n//10
print(“reverse number is “,sum)
```

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

```
n=int(input("enter a num"))
temp=n
sum=0
while(n>0):
    rem=n%10
    sum=sum*10+rem
    n=n//10
if(sum==temp):
    print('palindrome')
else:
    print('not palindrome')
```

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

```
n=int(input("enter number"))
for i in range(1,n//2+1):
    if (n%i==0):
        print(i)
print(n)
```

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

```
num=int(input("enter a number"))
f=1
for i in range(1,num):
    f=f*i
    print("the factorial of number is :",f)
```

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

```
n1=int(input("enter first number"))
n2=int(input("enter second number"))
for i in range(1,n1+1):
    if(n1%i==0 and n2%i==0):
        hcf=i
    lcm=(n1*n2)/hcf
    print("hcf",hcf,"lcm",lcm)
```

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

```
n1=int(input("enter first number"))
n2=int(input("enter second number"))
for i in range(1,n1+1):
    if(n1%i==0 and n2%i==0):
        hcf=i
    lcm=(n1*n2)/hcf
    print("lcm",lcm)
```

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

```
n=int(input('enter a number'))
count=0
for i in range(1,n+1):
    if(n%i==0):
        count=count+1
if(count==2):
    print('it is a prime number')
else:
    print('it is not a prime number')
```

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

```
n=int(input("enter number"))
for i in range(2,n+1):
    count=0
    for j in range(2,i):
        if(i%j==0):
            count=count+1
    if(count==0):
        print(i)
print(n)
```

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

```
n = int(input())
sum=0
for i in range(2,n+1):
    count =0
    for j in range(2,i):
        if i%j==0:
            count +=1
            break
    if count==0:
        sum+=i
print(sum)
```

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

```
n=int(input("enter number"))
c=[]
for i in range (2,n//2):
    if(n%i==0):
```

```
        c.append(i)
print(c)
```

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

```
n=int(input("enter anumber"))
temp=n
b=len(str(n))
sum=0
while(n!=0):
    rem=n%10
    sum=sum+rem**b
    n=n//10
if(sum==temp):
    print(sum)
    print("it is armstrong")
else:
    print("it is not armstrong")
```

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

```
n=int(input("enter anumber"))
temp=n
b=len(str(n))
sum=0
while(n!=0):
    rem=n%10
    sum=sum+rem**b
    n=n//10
    print("nth Armstrong:”,sum)
```

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

```
n=int(input('enter a number'))
sum=0
for i in range(1,n):
    if(n%i==0):
        sum=sum+1
if(sum==n):
    print('it is a perfect number')
else:
    print('it is not a perfect number')
```

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

```
import math
n=int(input("enter a number"))
temp=n
sum=0
while(n>0):
    rem=n%10
    sum=sum+math.factorial(rem)
```

```
    n=n//10
if(sum==temp):
        print(sum)
        print("it is a strong number")
else:
        print('it is not strong number')
```

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

```
a=input("enter a string :")
b=a[-1::-1]
if(a==b):
    print("string is pelindrome")
else:
    print("string is not pelindrome")
```

32. Reverse words in a given String in Python

```
a='my name is anukalp'
word=a.split()
word=list(reversed(word))
print(' '.join(word))
```

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

```
a='anukalpraj'
print('original string'+a)
res_a=a[:2]+a[3:]
print("removal ith :" +res_a)
```

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

35. Python program to count words frequency in String Shorthands

```
from collections import Counter
test_str = 'Gfg is best . Geeks are good and Geeks like Gfg'
print("The original string is : " + str(test_str))
res = Counter(test_str.split())
print("The words frequency : " + str(dict(res)))
```

36. Python program to convert snake case to pascal case

```
test_str = 'geeksforgeeks_is_best'
print("The original string is : " + test_str)
res = test_str.replace("_", " ").title().replace(" ", "")
print("The String after changing case : " + str(res))
```

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

```
'''str = "geeks"
print(len(str))'''

'''def findLen(str):
    counter = 0
    for i in str:
```

```
        counter += 1
    return counter


str = "geeks"
print(findLen(str))'''

'''def findLen(str):
    counter = 0
    while str[counter:]:
        counter += 1
    return counter

str = "geeks"
print(findLen(str))'''
```

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

```
def PrintEvenLengthWord(itr,list1):
  if itr == len(list1):
    return
  if len(list1[itr])%2 == 0:
    print(list1[itr])
  PrintEvenLengthWord(itr+1,list1)
  return
str = "geeks for geek"
l=[i for i in str.split()]
PrintEvenLengthWord(0,l)
```

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

```
def check(string):
    if len(set(string.lower()).intersection("aeiou")) >= 5:
        return ('accepted')
    else:
        return ("not accepted")
if __name__ == "__main__":
    string = "geeksforgeeks"
    print(check(string))
```

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

```
def count(s1, s2):
    c=0 #counter variable
    j=0
    for i in s1:
        if s2.find(i)>-0 and j==s1.find(i):
            c=c+1
        j=j+1
    print("Matching char: ",c)

s1="aabcdefk12"
s2="b2acdefk1"
count(s1,s2)
```

41. Remove all duplicates from a given string in Python

```
string="geeksforgeeks"
p=""
for char in string:
    if char not in p:
        p=p+char
print(p)
k=list("geeksforgeeks")
```

42. Python programs to count Least Frequent Character in String

```
from collections import Counter
test_str = "GeeksforGeeks"
print ("The original string is : " + test_str)
res = Counter(test_str)
res = min(res, key = res.get)
print ("The minimum of all characters in GeeksforGeeks is : " + str(res))
```

43. Python programs to count maximum frequency character in String

```
test_str = "GeeksforGeeks"
print ("The original string is : " + test_str)
all_freq = {}
for i in test_str:
 if i in all_freq:
  all_freq[i] += 1
 else:
  all_freq[i] = 1
res = max(all_freq, key = all_freq.get)
print ("The maximum of all characters in GeeksforGeeks is : " + str(res))
```

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

```
sing namespace std;

bool hasSpecialChar(string s) {
    for (char c : s) {
        if (!(isalpha(c) || isdigit(c) || c == ' ')) {
            return true;
        }
    }
    return false;
}

int main() {
    string s = "Hello World";
    if (hasSpecialChar(s)) {
        cout << "The string contains special characters." << endl;
```

```
    } else {
        cout << "The string does not contain special characters." << endl;
    }

    s = "Hello@World";
    if (hasSpecialChar(s)) {
        cout << "The string contains special characters." << endl;
    } else {
        cout << "The string does not contain special characters." << endl;
    }

    return 0;
}
```

45. Python program to split and join a string

```
import re
s = 'Geeks for Geeks'
print(re.findall(r'[a-zA-Z]+', s))
print("-".join(re.findall(r'[a-zA-Z]+', s)))
```

46. Python program to find uncommon words from two Strings

```
import operator as op

def UncommonWords(A, B):
    A = A.split()
    B = B.split()
    x = []
    for i in A:
        if op.countOf(B, i) == 0:
            x.append(i)
    for i in B:
        if op.countOf(A, i) == 0:
            x.append(i)
    x = list(set(x))
    return x
A = "Geeks for Geeks"
B = "Learning from Geeks for Geeks"
print(UncommonWords(A, B))
```

47. Python program to replace duplicate occurrence in string

```
test_str = 'Gfg is best . Gfg also has Classes now. Classes help
understand better . '
print("The original string is : " + str(test_str))
```

```
repl_dict = {'Gfg': 'It', 'Classes': 'They'}
words = test_str.split()
seen = set()
res = [repl_dict[word] if word in repl_dict and word not in seen and not
seen.add(word) else word for word in words]
res = ' '.join(res)
print("The string after replacing : " + str(res))
```

48. String slicing in Python to rotate a string

```
def rotate(str1,n):
    temp = str1 + str1
    l1 = len(str1)
    l2 = len(temp)
    Lfirst = temp[n  : l1+n]
    Lfirst = temp[l1-n : l2-n]
    print ("Left Rotation : ", Lfirst)
    print ("Right Rotation : ", Lfirst )
if __name__ == "__main__":
    input = 'GeeksforGeeks'
    d=2
    rotate(input,d)
```

49. Find all duplicate characters in string

```
def find_dup_char(input):
    x=[]
    for i in input:
        if i not in x and input.count(i)>1:
            x.append(i)
    print(" ".join(x))
if __name__ == "__main__":
    input = 'geeksforgeeks'
    find_dup_char(input)
```

50. Replace all occurrences of a substring in a string

```
input_string = "geeksforgeeks"
s1 = "geeks"
s2 = "abcd"
input_string = input_string.replace(s1, s2)
print(input_string)
```