Python Assignment

Name : Ravi naulakha
Sec : U2
Roll No: 48

#Q. 1 Python Program for n-th Fibonacci number.

```
def Fibonacci(n):
        if n<= 0:
                print("Incorrect input")
        elif n == 1:
                return 0
        elif n == 2:
                return 1
        else:
                return Fibonacci(n-1)+Fibonacci(n-2)

print(Fibonacci(10))
```

Output

```
34
```

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

```
n=int(input("Enter the number: "))
c=0
a=1
b=1
if n==0 or n==1:
   print("Yes")
else:
   while c<n:
      c=a+b
      b=a
      a=c
   if c==n:
      print("Yes")
   else:
      print("No")
```

Output

```
1 is a Fibonacci Number
2 is a Fibonacci Number
3 is a Fibonacci Number
4 is a not Fibonacci Number
5 is a Fibonacci Number
6 is a not Fibonacci Number
7 is a not Fibonacci Number
8 is a Fibonacci Number
9 is a not Fibonacci Number
10 is a not Fibonacci Number
```

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

```
def findPosition(k, n):
        f1 = 0
        f2 = 1
        i =2;
        while i!=0:
                f3 = f1 + f2;
                f1 = f2;
                f2 = f3;
```

Output

```
Position of n'th multiple of k inFibonacci Series is 30
```

Python Assignment

```
            if f2%k == 0:
                return n*i

            i+=1

    return
# Multiple no.
n = 5;
# Number of whose multiple we are finding
k = 4;

print("Position of n\'th multiple of k in"
                        "Fibonacci Series is", findPosition(k,n));
```

Q 4 Program to print ASCII Value of a character.

```
c = 'p'
print("The ASCII value of '" + c + "' is", ord(c))
```

Output

```
The ASCII value of 'p' is 112
```

Q 5 python Program for Sum of squares of first n natural numbers.

```
def squaresum(n) :
    sm = 0
    for i in range(1, n+1) :
        sm = sm + (i * i)

    return sm

n = 4
print(squaresum(n))
```

Output:

```
RUN 1:
Enter value of N: 10
Sum of squares =  385

RUN 2:
Enter value of N: 12
Sum of squares =  650
```

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

```
e = 8
f = 9
e = (e & f) + (e | f)
f = e + (~f) + 1
e = e + (~f) + 1
print("value of e after swapping : ",e)
print("value of f after swapping : ",f)
```

output

```
Please Enter the First Value a: 10
Please Enter the Second Value b: 20
Before Swapping two Number: a = 10.0 an
After Swapping two Number: a = 20.0 and
```

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

```
ch = input("Please Enter Your Own Character : ")

if((ch >= 'a' and ch <= 'z') or (ch >= 'A' and ch <= 'Z')):
```

Python Assignment

```
    print("The Given Character ", ch, "is an Alphabet")
else:
    print("The Given Character ", ch, "is Not an Alphabet")
```

Output

```
Enter a character: *
* is not an alphabet
```

Q 8 Write a Python program to input any alphabet and check whether it is vowel or not.

```
def vowelOrConsonant(x):

        if (x == 'a' or x == 'e' or
                x == 'i' or x == 'o' or x == 'u'):
                print("Vowel")
        else:
                print("Consonant")

vowelOrConsonant('c')
vowelOrConsonant('e')
```

```
Consonant

Vowel
```

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

```
ch = input("Please Enter Your Own Character : ")

if((ch >= 'a' and ch <= 'z') or (ch >= 'A' and ch <= 'Z')):
    print("The Given Character ", ch, "is an Alphabet")
elif(ch >= '0' and ch <= '9'):
    print("The Given Character ", ch, "is a Digit")
else:
    print("The Given Character ", ch, "is a Special Character")
```

Output :

```
Special Character
```

Q 10 .Write a Python program

wer

```
sub1=int(input("Enter marks of the first subject: "))
sub2=int(input("Enter marks of the second subject: "))
sub3=int(input("Enter marks of the third subject: "))
sub4=int(input("Enter marks of the fourth subject: "))
sub5=int(input("Enter marks of the fifth subject: "))
avg=(sub1+sub2+sub3+sub4+sub4)/5
if(avg>=90):
    print("Grade: A")
elif(avg>=80):
    print("Grade: B")
elif(avg>=70):
    print("Grade: C")
elif(avg>=60):
    print("Grade: D")
elif(avg>=40):
    print("Grade: E")
else:
```

of five subjects Physics, Chem
Mathematics and Computer. C
percentage and grade accordi
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

Python Assignment

Answer.

```
    print("Grade: F")

# Q. 11
basic_salary = float(input("Enter basic salary: "))

if basic_salary <= 10000:
    hra = 0.2 * basic_salary
    da = 0.8 * basic_salary
elif basic_salary <= 20000:
    hra = 0.25 * basic_salary
    da = 0.9 * basic_salary
else:
    hra = 0.3 * basic_salary
    da = 0.95 * basic_salary

gross_salary = basic_salary + hra + da

print(f"Gross salary is: {gross_salary}")
```

Q11 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%.

Output:

```
Total gross pay: Rs.5500.00
```

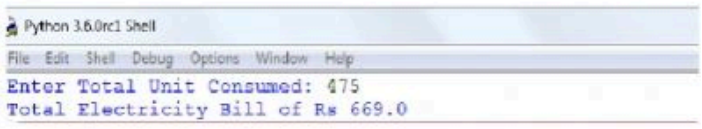
Q. 12 Write a Python program to input electricity unit charges and calculate total electricity
bill according to the given condition:
For first 50 units Rs. 0.50/unit
For next 100 units Rs. 0.75/unit
For next 100 units Rs. 1.20/unit
For unit above 250 Rs. 1.50/unit
An additional surcharge of 20% is added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

```
# Q. 12
# Input the electricity unit charges
unit_charges = int(input("Enter the electricity unit charges: "))

# Calculate the total electricity bill
if unit_charges <= 50:
    total_bill = unit_charges * 0.50
elif unit_charges <= 150:
    total_bill = 25 + ((unit_charges - 50) * 0.75)
elif unit_charges <= 250:
    total_bill = 100 + ((unit_charges - 150) * 1.20)
else:
    total_bill = 220 + ((unit_charges - 250) * 1.50)

# Add a 20% surcharge to the total bill
total_bill += (total_bill * 0.20)

# Print the total electricity bill
print(f"Total electricity bill is: {total_bill}")
```




```
# Q 13    Write a Python program to print all alphabets from a to z. – using while Loop
def printLowercase():
    i = 0
    while i < 26:
        print(chr(97 + i), end = " ")
```

Output

```
The Alphabets from A to Z are:
A B C D E F G H I J K L M N O P Q R S T
The Alphabets from a to z are:
a b c d e f g h i j k l m n o p q r s t
```

```
        i = i + 1

printLowercase()
```

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

```
number = 1247

number = str(number)

first_digit = int(number[0])
last_digit = int(number[-1])

addition = first_digit + last_digit

print('Addition of first and last digit of the number i
          addition)
```

```
Starting day of 2010 is Friday.
```

Time Complexity: O(1)

Space Complexity: O(1)

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

```
def getSum(n):
    sum = 0
    for digit in str(n):
        sum += int(digit)
    return sum

n = 12345
print(getSum(n))
```

Output

```
Enter Number: 12345
15
```

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

```
num = int(input("enter a number"))

n = num

product = 1

while n != 0:

    rem = n % 10

    product = product * rem

    n = n // 10

print(product)
```

Output

```
60
```

Python Assignment

```
# Q 17      Write a Python program to enter a number and print its reverse.
given_num = 12345

reverse_number = 0

while (given_num > 0):
   remainder = given_num % 10
   reverse_number = (reverse_number * 10) + remainder
   given_num = given_num // 10

print("The reversed number =", reverse_number)
```

Output

```
4321
```

```
# Q 18      Write a Python program to check whether a number is palindrome or not.
import math

def rev(num):
        return int(num != 0) and ((num % 10) * \
                        (10**int(math.log(num, 10))) + \
                                                rev(num // 10))

test_number = 9669669

print ("The original number is : " + str(test_number))

res = test_number == rev(test_number)

print ("Is the number palindrome ? : " + str(res))
```

```
Case 1
Enter number:121
The number is a palindrome!

Case 2
Enter number:567
The number isn't a palindrome!
```



```
# Q 19      Write a Python program to find all factors of a number.
num = int(input("Enter a number: "))

print("The factors of {} are,".format(num))

for i in range(1,num+1):
   if num % i == 0:
      print(i)
```

```
Enter the Number:
12

Factors of 12
1
2
3
4
6
12
```

```
# Q 20      Write a Python program to calculate factorial of a number.
num = 7
factorial = 1

if num < 0:
  print("Sorry, factorial does not exist for negative numbers")
elif num == 0:
```

Output

```
The factorial of 7 is 5040
```

Python Assignment

```
  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)

# Q 21    Write a Python program to find HCF (GCD) of two numbers.
import math

print("The gcd of 60 and 48 is : ", end="")
print(math.gcd(60, 48))
```

```
The H.C.F. is 6
```

```
# Q 22    Write a Python program to find LCM of two numbers.
def compute_lcm(x, y):

  if x > y:
    greater = x
  else:
    greater = y

  while(True):
    if((greater % x == 0) and (greater % y == 0)):
      lcm = greater
      break
    greater += 1

  return lcm

num1 = 54
num2 = 24

print("The L.C.M. is", compute_lcm(num1, num2))
```

Output

```
LCM of 12 and 14 is 84
```

```
# Q 23    Write a Python program to check whether a number is Prime number or not.
num = 11
if num > 1:
        for i in range(2, int(num/2)+1):
                if (num % i) == 0:
                        print(num, "is not a prime number")
                        break
        else:
                print(num, "is a prime number")
else:
        print(num, "is not a prime number")
```

Output

```
Enter a positive integer: 29
29 is a prime number.
```

Python Assignment

```
# Q 24      Write a Python program to print all Prime numbers between 1 to n.
upto = int(input("Find prime numbers upto : "))

print("\nAll prime numbers upto", upto, "are : ")

for num in range(2, upto + 1):
   i = 2

   for i in range(2, num):
      if(num % i == 0):
         i = num
         break;

   if(i != num):
      print(num, end=" ")
```

Output

```
Find prime numbers upto : 100
All prime numbers upto 100 are :
3 5 7 11 13 17 19 23 29 31 37 41 43
47 53 59 61 67 71 73 79 83 89 97
```

```
# Q. 25      Write a Python program to find sum of all prime numbers between 1 to n.
n = int(input("Enter a number: "))
sum = 0

for num in range(2, n+1):
   if all(num%i != 0 for i in range(2, int(num**0.5)+1)):
      sum += num

print("The sum of all prime numbers between 1 and", n, "is:", sum)
```

```
28
```

```
# Q. 26      Write a Python program to find all prime factors of a number..
num = int(input("Enter a number: "))

# function to find all prime factors
def prime_factors(n):
   factors = []
   i = 2
   while i <= n:
      if n % i == 0:
         factors.append(i)
         n = n / i
      else:
         i += 1
   return factors

# printing the prime factors
```

Output

```
3 3 5 7
```

Python Assignment

```
print("Prime factors of", num, "are:", prime_factors(num))

# Q. 27    Write a Python program to check whether a number is Armstrong number or not.
# take input from user
num = int(input("Enter a number: "))

# initialize sum and order variable
sum = 0
order = len(str(num))

# calculate sum of nth power of each digit
temp = num
while temp > 0:
   digit = temp % 10
   sum += digit ** order
   temp //= 10

# check if the number is Armstrong or not
if num == sum:
   print(num, "is an Armstrong number")
else:
   print(num, "is not an Armstrong number")
```

Sample Output:

```
Input  a number: 153
153 is an Armstrong number.
```

```
# Q. 28    Write a Python program to print all Armstrong numbers between 1 to n.
n = int(input("Enter a number: "))

for num in range(1, n+1):
   order = len(str(num))
   sum = 0
   temp = num
   while temp > 0:
      digit = temp % 10
      sum += digit ** order
      temp //= 10
   if num == sum:
      print(num)
```

Output

```
All Armstrong number between 1 and 1000 a

1 2 3 4 5 6 7 8 9 153 370 371 407
```

```
# Q. 29    Write a Python program to check whether a number is Perfect number or not.
num = int(input("Enter a number: "))

divisors = []
for i in range(1, num):
   if num % i == 0:
      divisors.append(i)
```

Output

```
The number is a Perfect number
```

Python Assignment

```
if sum(divisors) == num:
    print(num, "is a perfect number")
else:
    print(num, "is not a perfect number")
```

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

```
num = int(input("Enter a number: "))

factorials = [1 if x == 0 else x * factorials[x - 1] for x in map(int, str(num))]

sum_factorials = sum(factorials)

if sum_factorials == num:
    print(f"{num} is a strong number")
else:
    print(f"{num} is not a strong number")
```

Output:

```
Enter a number: 145
Given number is a strong number.
```

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

```
string = "racecar"

if string == string[::-1]:
    print("Palindrome")
else:
    print("Not Palindrome")
```

Output

```
The entered string is palindrome
The entered string is symmetrical
```

Q. 32 Reverse words in a given String in Python.

```
string = "Hello world"

words = string.split()

words = words[::-1]

new_string = " ".join(words)

print(new_string)
```

Output

```
much very program this like i
```

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

```
s = "example"

s = s[:2] + s[3:]
print(s)
```

```
geek
```

Python Assignment

```
s = s[1:]
print(s)

s = s[:-1]
print(s)
```

```
# Q. 34    Python program to Check if a Substring is Present in a Given String.
string = "hello world"
substring = "world"

if substring in string:
   print("Substring found in the string.")
else:
   print("Substring not found in the string.")
```

Output

```
Yes! it is present in the string
```

```
 # Q. 35    Python program to count words frequency in String Shorthands.
s = "this is a sample string with several words and some of these words are repeated"

word_freq = {word: s.count(word) for word in set(s.split())}

print(word_freq)
```

Output :

```
The original string is : Gfg is best . Geeks are good and Geeks like Gfg The words frequency : {'Gfg': 2, 'is': 1, 'best': 1, '.': 1, 'Geeks': 2, 'are': 1, 'good': 1, 'and': 1, 'like': 1}
```

```
# Q. 36    Python program to convert snake case to pascal case.
snake_case_str = "my_foo_bar_variable"

words = snake_case_str.split('_')
pascal_case_str = ''.join([word.capitalize() for word in words])

print(pascal_case_str)
```

Output :

```
The original string is : geeksforgeeks_i
The String after changing case : Geeksfo
```

```
# Q. 37    Find length of a string in python (4 ways).
#Using the len() function:
s = "Hello, World!"
print(len(s))

s = "Hello, World!"
count = 0
for char in s:
   count += 1
print(count)

s = "Hello, World!"
print(sum(1 for char in s))
```

Output:

```
5
```

Python Assignment

```
from functools import reduce
s = "Hello, World!"
print(reduce(lambda x, _: x+1, s, 0))

# Q. 38  Python program to print even length words in a string.
s = "This is a sample string containing several words with different lengths"

words = s.split()

for word in words:
    if len(word) % 2 == 0:
        print(word)

# Q. 39  Python program to accept the strings which contains all vowels.
s = input("Enter a string: ")
vowels = {'a', 'e', 'i', 'o', 'u'}

if all(v in s.lower() for v in vowels):
    print(f"The string '{s}' contains all vowels.")
else:
    print(f"The string '{s}

# Q. 40  Python progr                                                    of string.
s1 = "Hello"
s2 = "World"
count = 0

for c in set(s1):
    count += min(s1.count(c), s2.count(c))

print(f"The number of matching characters in '{s1}' and '{s2}' is {count}.")


# Q. 41  Remove all duplicates from a given string in Python.
s = "Hello, World!"
s_unique = ''.join(set(s))
print(s_unique)

# Q. 42  Python programs to count Least Frequent Character in String.
from collections import Counter

string= "pppppghhhijeuupffe"
print(string)
```

Output

```
this
is
test
string
```

OUTPUT:

```
AeBIdeffoBUw

Accepted
```

OUTPUT:

```
hgfjiufguij

Least frequent character: h
```

Input

```
"bbabcaaccdbaababababc"
```

Output

```
"bacd"
```

Output :

```
No. of matching characters are : 5
```

Python Assignment

```
result= Counter(string)
result= min(result, key=result.get)

print("Least frequent character: ",result)
```

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

```
s = "Hello, World!"

freq = {}
for c in s:
    freq[c] = s.count(c)

max_freq = max(freq.values())
max_char = [k for k, v in freq.items() if v == max_freq]

if len(max_char) == 1:
    print(f"The maximum frequency character in the string '{s}' is '{max_char[0]}', which appears
{max_freq} times.")
else:
    print(f"There are multiple maximum frequency characters in the string '{s}', which are {',
'.join(max_char)} and appear {max_freq} times each.")
```

Output :

```
The original string is : GeeksforGeeks
The maximum of all characters in Geeksfo
```

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

```
import string

def has_special_chars(s):
    special_chars = set(string.punctuation)
    return any(char in special_chars for char in s)

s1 = "Hello, World!"
s2 = "Hello@World!"

print(has_special_chars(s1))
print(has_special_chars(s2))
```

Output

```
String is not accepted.
```

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

```
s = "Hello, World!"

words = s.split()

joined_s = " ".join(words)

print(joined_s)
```

Output

```
['Geeks', 'for', 'Geeks']
Geeks-for-Geeks
```

Python Assignment

```
# Q. 46    Python program to find uncommon words from two Strings.
s1 = "hello world"
s2 = "world is beautiful"

s1_words = s1.split()
s2_words = s2.split()

s1_set = set(s1_words)
s2_set = set(s2_words)

uncommon_words = s1_set.symmetric_difference(s2_set)

print(uncommon_words)
```

Output

```
['Learning', 'from']
```

```
# Q. 47    Python program to replace duplicate occurrence in string.
s = "hello world"
new_s = ""

for i in range(len(s)):
    if s[i] not in new_s:
        new_s += s[i]
    else:
        new_s += "*"

print(new_s)
```

```
 Duplicate characters in a given string:
r
e
t
s
i
```

```
#Q. 48    String slicing in Python to rotate a string.
s = "hello world"
n = 3

rotated_s = s[n:] + s[:n]

print(rotated_s)
```

Output

```
Enter String ::> pythonprogram
Left Rotation: thonprogrampy
Right Rotation: ampythonprogr
```

```
# Q. 49    Find all duplicate characters in string
string = "hello world"
duplicates = {}

for char in string:
    if char in duplicates:
        duplicates[char] += 1
    else:
        duplicates[char] = 1
```

Output

```
shalalala
The duplicate characters are ['a', 'l']
```

Python Assignment

```
for char, count in duplicates.items():
    if count > 1:
        print(char, end=" ")

# Q. 50     Replace all occurrences of a substring in a string.
string_a = input("Enter a string: ")
to_replace = input("Enter a string to remove: ")
to_replace_with = input("Enter a string to replace with: ")
string_b = string_a.replace(to_replace, to_replace_with)
print(string_a)
print(string_b)
```

Output

```
abcdforabcd
```