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***SECTION: C***

***ROLL NO: 31***

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***QUESTIONS:***

**1.Write a Python class to get all possible unique subsets from a set of distinct integers**

**Input:[4,5,6]**

**Output : [[], [6], [5], [5, 6], [4], [4, 6], [4, 5], [4, 5, 6]]**

**2.Write a Python class to find a pair of elements (indices of the two numbers) from a given array whose sum equals a specific target number.**

**Input: numbers= [10,20,10,40,50,60,70], target=50**

**Output: 3, 4**

**3.Write a Python class to implement pow(x, n).**

**4.Write a Python class which has two methods get\_String and print\_String. get\_String accept a string from the user and print\_String print the string in upper case.**

***PYTHON APPLICATION:***

class PowerSet:

'''Calculates all possible subsets of a list'''

def \_\_init\_\_(self, arr):

self.arr = arr

def calculate(self, arr):

if(len(arr) == 0):

return [[]]

subpowset = self.calculate(arr[:-1])

powerset = []

for s in subpowset:

powerset.append(s)

powerset.append(s + [arr[-1]])

return powerset

def get\_powerset(self):

return self.calculate(self.arr)

class SumToTarget:

'''Gives the indices of the numbers that sum up to the target'''

def \_\_init\_\_(self, arr, target):

self.arr = arr

self.target = target

def get\_indices(self):

for a in range(len(self.arr)):

for b in range(a+1, len(self.arr)):

if(self.arr[a] + self.arr[b] == self.target):

return a, b

class Pow:

'''Gives the result of pow(x, n)'''

def \_\_init\_\_(self, x, n):

self.x = x

self.n = n

def calculate(self):

return self.x \*\* self.n

class ToUpper:

'''Gets string input from user and displays it in upper case'''

def \_\_init\_\_(self):

self.str = ""

def get\_String(self):

self.str = input("Enter the string: ")

def print\_String(self):

print("Output: ", self.str.upper())

def q1():

arr = [int(x) for x in input("Enter the array: ").split()]

S = PowerSet(arr)

print("Subset = ", S.get\_powerset())

def q2():

arr = [int(x) for x in input("Enter the array: ").split()]

target = int(input("Enter the target: "))

S = SumToTarget(arr, target)

print("Indices = ", S.get\_indices())

def q3():

x = int(input("Enter the base: "))

n = int(input("Enter the exponent: "))

P = Pow(x, n)

print(f"{x}^{n} = {P.calculate()}")

def q4():

U = ToUpper()

U.get\_String()

U.print\_String()

def main():

print( "====== Question 1 ======")

q1()

print("\n\n====== Question 2 ======")

q2()

print("\n\n====== Question 3 ======")

q3()

print("\n\n====== Question 4 ======")

q4()

if \_\_name\_\_ == "\_\_main\_\_":

main()

