# Assignment 9

#### 1.Write a Python Program to check if the given number is a Disarium Number ?

***Answer:***

**def** checkDisariumNumber():  
 in\_num = input('Enter a Number: ')  
 sum = 0  
 **for** item **in** range(len(in\_num)):  
 sum = sum + int(in\_num[item])\*\*(item+1)  
 **if** sum == int(in\_num):  
 print(f'{in\_num} is a Disarium Number')  
 **else**:  
 print(f'{in\_num} is a Not Disarium Number')   
  
checkDisariumNumber()  
checkDisariumNumber()

Enter a Number: 135  
135 is a Disarium Number  
Enter a Number: 100  
100 is a Not Disarium Number

#### 2.Write a Python Program to print all Disarium numbers between 1 to 100 ?

***Answer:***

def printDisariumNumbers(start=0,end=100):  
 output\_num = []  
 for number in range(start,end+1):  
 sum = 0  
 for item in range(len(str(number))):  
 sum = sum + int(str(number)[item])\*\*(item+1)  
 if sum == number:  
 output\_num.append(number)  
 return output\_num  
   
   
printDisariumNumbers(1,1000)

[1, 2, 3, 4, 5, 6, 7, 8, 9, 89, 135, 175, 518, 598]

#### 3.Write a Python Program to check if the given number is Happy Number ?

***Answer:***

def checkHappyNumber():  
 in\_num = input('Enter a Number: ')  
 in\_num\_duplicate = in\_num  
 trackNumber = set()   
 while True:  
 if in\_num != '1' and str(in\_num) not in trackNumber:  
 trackNumber.add(in\_num)  
 sum = 0  
 for ele in range(len((in\_num))):  
 sum = sum + int(in\_num[ele])\*\*2  
 in\_num = str(sum)  
 elif str(in\_num) in trackNumber:  
 print(f'{in\_num\_duplicate} is not a Happy Number')  
 break  
 else:  
 print(f'{in\_num\_duplicate} is a Happy Number')  
 break  
  
checkHappyNumber()  
checkHappyNumber()

Enter a Number: 7  
7 is a Happy Number  
Enter a Number: 10  
10 is a Happy Number

#### 4.Write a Python Program to print all Happy numbers between 1 and 100 ?

***Answer:***

def checkHappyNumber(start=0,end=100):  
 happyNumbersList = []  
 for in\_num in range(start,end+1):  
 in\_num = str(in\_num)  
 inum\_holder = in\_num  
 trackNumber = set()   
 while True:  
 if in\_num != '1' and str(in\_num) not in trackNumber:  
 trackNumber.add(in\_num)  
 sum = 0  
 for ele in range(len((in\_num))):  
 sum = sum + int(in\_num[ele])\*\*2  
 in\_num = str(sum)  
 elif str(in\_num) in trackNumber:  
 break  
 else:  
 happyNumbersList.append(int(inum\_holder))  
 break  
 print(f'The Happy Numbers between {start} and {end} are {happyNumbersList}')  
   
checkHappyNumber(0,100)

The Happy Numbers between 0 and 100 are [1, 7, 10, 13, 19, 23, 28, 31, 32, 44, 49, 68, 70, 79, 82, 86, 91, 94, 97, 100]

#### 5.Write a Python Program to determine whether the given number is a Harshad Number ?

***Answer:***

def checkHarshadNumber():  
 in\_num = input('Enter a Number: ')  
 sum = 0  
 for item in range(len(in\_num)):  
 sum = sum + int(in\_num[item])  
 if int(in\_num)%sum == 0:  
 print(f'{in\_num} is a Harshad Number')  
 else:  
 print(f'{in\_num} is a Not Harshad Number')  
   
checkHarshadNumber()  
checkHarshadNumber()

Enter a Number: 6804  
6804 is a Harshad Number  
Enter a Number: 20  
20 is a Harshad Number

#### 6.Write a Python Program to print all pronic numbers between 1 and 100 ?

***Answer:***

def printPronicNumbers(start=0,end=100):  
 outputList = []  
 for ele in range(start,end+1):  
 outputList.append((ele)\*(ele+1))  
 print(outputList)  
   
printPronicNumbers()

[0, 2, 6, 12, 20, 30, 42, 56, 72, 90, 110, 132, 156, 182, 210, 240, 272, 306, 342, 380, 420, 462, 506, 552, 600, 650, 702, 756, 812, 870, 930, 992, 1056, 1122, 1190, 1260, 1332, 1406, 1482, 1560, 1640, 1722, 1806, 1892, 1980, 2070, 2162, 2256, 2352, 2450, 2550, 2652, 2756, 2862, 2970, 3080, 3192, 3306, 3422, 3540, 3660, 3782, 3906, 4032, 4160, 4290, 4422, 4556, 4692, 4830, 4970, 5112, 5256, 5402, 5550, 5700, 5852, 6006, 6162, 6320, 6480, 6642, 6806, 6972, 7140, 7310, 7482, 7656, 7832, 8010, 8190, 8372, 8556, 8742, 8930, 9120, 9312, 9506, 9702, 9900, 10100]