**Programming Assignment-9**

1. **Write a Python program to check if the given number is a Disarium Number?**

def calculateLength(n):

length = 0;

while(n != 0):

length = length + 1;

n = n//10;

return length;

num = 175;

rem = sum = 0;

len = calculateLength(num);

#Makes a copy of the original number num

n = num;

#Calculates the sum of digits powered with their respective position

while(num > 0):

rem = num%10;

sum = sum + int(rem\*\*len);

num = num//10;

len = len - 1;

#Checks whether the sum is equal to the number itself

if(sum == n):

print(str(n) + " is a disarium number");

else:

print(str(n) + " is not a disarium number");

1. **Write a Python program to print all disarium numbers between 1 to 100?**

def length\_calculation(my\_val):

len\_val = 0

while(my\_val != 0):

len\_val = len\_val + 1

my\_val = my\_val//10

return len\_val

def digit\_sum(my\_num):

remaining = sum\_val = 0

len\_fun = length\_calculation(my\_num)

while(my\_num > 0):

remaining = my\_num%10

sum\_val = sum\_val + (remaining\*\*len\_fun)

my\_num = my\_num//10

len\_fun = len\_fun - 1

return sum\_val

ini\_result = 0

print("The disarium numbers between 1 and 100 are : ")

for i in range(1, 101):

ini\_result = digit\_sum(i)

if(ini\_result == i):

print(i)

1. **Write a Python program to check if the given number is Happy Number?**

#isHappyNumber() will determine whether a number is happy or not

def isHappyNumber(num):

rem = sum = 0;

#Calculates the sum of squares of digits

while(num > 0):

rem = num%10;

sum = sum + (rem\*rem);

num = num//10;

return sum;

num = 82;

result = num;

while(result != 1 and result != 4):

result = isHappyNumber(result);

#Happy number always ends with 1

if(result == 1):

print(str(num) + " is a happy number");

#Unhappy number ends in a cycle of repeating numbers which contain 4

elif(result == 4):

print(str(num) + " is not a happy number");

1. **Write a Python program to print all happy numbers between 1 and 100?**

def isHappyNumber(num):

rem = sum = 0;

#Calculates the sum of squares of digits

while(num > 0):

rem = num%10;

sum = sum + (rem\*rem);

num = num//10;

return sum;

#Displays all happy numbers between 1 and 100

print("List of happy numbers between 1 and 100: ");

for i in range(1, 101):

result = i;

#Happy number always ends with 1 and

#unhappy number ends in a cycle of repeating numbers which contains 4

while(result != 1 and result != 4):

result = isHappyNumber(result);

if(result == 1):

print(i),

print(" ")

1. **Write a Python program to determine whether the given number is a Harshad Number?**

num = 156;

rem = sum = 0;

#Make a copy of num and store it in variable n

n = num;

#Calculates sum of digits

while(num > 0):

rem = num%10;

sum = sum + rem;

num = num//10;

#Checks whether the number is divisible by the sum of digits

if(n%sum == 0):

print(str(n) + " is a harshad number");

else:

print(str(n) + " is not a harshad number");

1. **Write a Python program to print all pronic numbers between 1 and 100?**

def isPronicNumber(num):

flag = False;

for j in range(1, num+1):

#Checks for pronic number by multiplying consecutive numbers

if((j\*(j+1)) == num):

flag = True;

break;

return flag;

#Displays pronic numbers between 1 and 100

print("Pronic numbers between 1 and 100: ");

for i in range(1, 101):

if(isPronicNumber(i)):

print(i),

print(" ")