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

ANS: def calculateLength(n):

len = 0

while(n != 0):

len = len + 1

n = n // 10

return len

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

digit = sum = 0

len = calculateLength(num);

# Makes a copy of the original number

temp = num

# Calculates the sum of digits powered to their respective position

while(temp > 0):

digit = temp % 10

sum = sum + int(digit \*\* len)

temp = temp // 10

len = len - 1

# Checks whether the sum is equal to the number itself

if sum == num :

print(num, "is a Disarium Number!!!")

else:

print(num, "is not a Disarium Number!!!")

Enter Number 89

89 is a Disarium Number!!!

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

ANS: #calculateLength() will count the digits present in a number

def calculateLength(n):

length = 0;

while(n != 0):

length = length + 1;

n = n//10;

return length;

#sumOfDigits() will calculates the sum of digits powered with their respective position

def sumOfDigits(num):

rem = sum = 0;

len = calculateLength(num);

while(num > 0):

rem = num%10;

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

num = num//10;

len = len - 1;

return sum;

result = 0;

#Displays all disarium numbers between 1 and 100

print("Disarium numbers between 1 and 100 are");

for i in range(1, 101):

result = sumOfDigits(i);

if(result == i):

print(i),

Disarium numbers between 1 and 100 are:

1

2

3

4

5

6

7

8

9

89

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

ANS: def check\_happy\_num(my\_num):

remaining = sum\_val = 0

while(my\_num > 0):

remaining = my\_num%10

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

my\_num = my\_num//10

return sum\_val;

my\_num = 86

my\_result = my\_num

while(my\_result != 1 and my\_result != 4):

my\_result = check\_happy\_num(my\_result);

print("The number is being checked")

if(my\_result == 1):

print(str(my\_num) + " is a happy number");

elif(my\_result == 4):

print(str(my\_num) + " isn't a happy number");

The number is being checked

86 is a happy number

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

ANS: #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;

#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

7

10

13

19

23

28

31

32

44

49

68

70

79

82

86

91

94

97

100

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

ANS: 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");

156 is a harshad number

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

ANS: #isPronicNumber() will determine whether a given number is a pronic number or not

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(" "),

Pronic numbers between 1 and 100:

2

6

12

20

30

42

56

72

90