1. Write a Python program to check if the given number is a Disarium Number?
2. Write a Python program to print all disarium numbers between 1 to 100?
3. Write a Python program to check if the given number is Happy Number?
4. Write a Python program to print all happy numbers between 1 and 100?
5. Write a Python program to determine whether the given number is a Harshad Number?
6. Write a Python program to print all pronic numbers between 1 and 100?

**Solution: 1**

import math

def disarium\_check(n):

digit\_count = len(str(n))

sum=0

x=n

while(x!=0):

r = x%10

sum = int(sum + math.pow(r, digit\_count))

digit\_count = digit\_count-1

x = x//10

if sum==n:

return 1

else:

return 0

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

if(disarium\_check(number) == 1):

print("{0} is disarium number ".format(number))

else:

print("{0} is not a disarium number ".format(number))

**Solution: 2**

import math

def disarium\_check(n):

digit\_count = len(str(n))

sum=0

x=n

while(x!=0):

r = x%10

sum = int(sum + math.pow(r, digit\_count))

digit\_count = digit\_count-1

x = x//10

if sum==n:

return 1

else:

return 0

for i in range(1, 100):

if(disarium\_check(i) == 1):

print(i)

else:

pass

**Solution: 3**

def num\_sqaure\_sum(num):

sqauresum= 0

x = num

while(x!=0):

r = x%10

sqauresum += r\*\*2

x = int(x//10)

return sqauresum

def isHappyNumber\_check(n):

slow = n

fast = n

while(True):

slow = num\_sqaure\_sum(slow)

fast = num\_sqaure\_sum(num\_sqaure\_sum(fast))

if(slow!=fast):

continue

else:

break

return (slow==1)

n= int(input("Enter a number "))

if(isHappyNumber\_check(n)):

print("Happy number")

else:

print("Not a Happy number")

**Solution: 4**

def num\_sqaure\_sum(num):

sqauresum= 0

x = num

while(x!=0):

r = x%10

sqauresum += r\*\*2

x = int(x//10)

return sqauresum

def isHappyNumber\_check(n):

slow = n

fast = n

while(True):

slow = num\_sqaure\_sum(slow)

fast = num\_sqaure\_sum(num\_sqaure\_sum(fast))

if(slow!=fast):

continue

else:

break

return (slow==1)

for i in range(1, 100):

if(isHappyNumber\_check(i)):

print(i)

else:

pass

**Solution: 5**

def checkHarshad(n):

# Converting integer to string

st = str(n)

# Initialising sum to 0

sum = 0

length = len(st)

# Traversing through the string

for i in st:

# Converting character to int

sum = sum + int(i)

# Comparing number and sum

if (n % sum == 0):

print("{0} is Harshad number ".format(n))

else:

print("{0} is not Harshad number ".format(n))

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

# passing this number to get result function

print(checkHarshad(number))

**Solution : 6**

import math

def checkPronic (x) :

i = 0

while ( i <= (int)(math.sqrt(x)) ) :

if ( x == i \* (i + 1)) :

return True

i = i + 1

return False

i = 0

while (i <= 100 ) :

if checkPronic(i) :

print(i,end=" ")

i = i + 1