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

A. # define a function to check if a number is a Disarium number

def is\_disarium\_number(num):

# convert the number to a string to count the digits

num\_str = str(num)

# calculate the sum of the digits raised to their respective positions

sum = 0

for i in range(len(num\_str)):

sum += int(num\_str[i])\*\*(i+1)

# check if the sum is equal to the original number

if sum == num:

return True

else:

return False

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

A. # define a function to check if a number is a Disarium number

def is\_disarium\_number(num):

# convert the number to a string to count the digits

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# calculate the sum of the digits raised to their respective positions

sum = 0

for i in range(len(num\_str)):

sum += int(num\_str[i])\*\*(i+1)

# check if the sum is equal to the original number

if sum == num:

return True

else:

return False

# loop over numbers from 1 to 100 and print the Disarium numbers

for i in range(1, 101):

if is\_disarium\_number(i):

print(i)

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

A. # define a function to check if a number is a Happy number

def is\_happy\_number(num):

# keep track of previously seen numbers to detect cycles

seen = set()

# loop until we reach 1 (a happy number) or detect a cycle

while num != 1 and num not in seen:

seen.add(num)

# square each digit and sum the squares

num = sum(int(digit)\*\*2 for digit in str(num))

# return True if we reached 1, False if we detected a cycle

return num == 1

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

A. # define a function to check if a number is a Happy number

def is\_happy\_number(num):

# keep track of previously seen numbers to detect cycles

seen = set()

# loop until we reach 1 (a happy number) or detect a cycle

while num != 1 and num not in seen:

seen.add(num)

# square each digit and sum the squares

num = sum(int(digit)\*\*2 for digit in str(num))

# return True if we reached 1, False if we detected a cycle

return num == 1

# loop over numbers from 1 to 100 and print the Happy numbers

for i in range(1, 101):

if is\_happy\_number(i):

print(i)

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

A. # define a function to check if a number is a Harshad number

def is\_harshad\_number(num):

# calculate the sum of the digits of the number

digit\_sum = sum(int(digit) for digit in str(num))

# check if the number is divisible by the sum of its digits

return num % digit\_sum == 0

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

A. # loop over numbers from 1 to 100 and print the pronic numbers

for i in range(1, 101):

# check if i is a pronic number

if i == 0:

continue

for j in range(1, int(i \*\* 0.5) + 1):

if i % j == 0 and i / j == j + 1:

print(i)

break