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

Sol:- def is\_disarium(num):

# Calculate the number of digits in the given number

num\_str = str(num)

num\_digits = len(num\_str)

# Calculate the sum of digits raised to their respective positions

sum\_of\_digits = sum(int(num\_str[i])\*\*(i+1) for i in range(num\_digits))

# Check if the sum is equal to the original number

return sum\_of\_digits == num

# Test the function with some examples

print(is\_disarium(135)) # True

print(is\_disarium(175)) # True

print(is\_disarium(89)) # False

print(is\_disarium(518)) # True

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

Sol:- def is\_disarium(num):

# Calculate the number of digits in the given number

num\_str = str(num)

num\_digits = len(num\_str)

# Calculate the sum of digits raised to their respective positions

sum\_of\_digits = sum(int(num\_str[i])\*\*(i+1) for i in range(num\_digits))

# Check if the sum is equal to the original number

if sum\_of\_digits == num:

print(num)

for i in range(1,101):

is\_disarium(i)

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

Sol:- def is\_happy\_number(num):

"""Returns True if num is a Happy Number, else False."""

visited\_nums = set()

while num != 1:

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

if num in visited\_nums:

return False

visited\_nums.add(num)

return True

# Testing the function with some sample inputs

print(is\_happy\_number(19)) # Output: True

print(is\_happy\_number(12)) # Output: False

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

Sol:- def is\_happy\_number(num):

"""Returns True if num is a Happy Number, else False."""

visited\_nums = set()

happy\_number = num

while num != 1:

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

if num in visited\_nums:

break

visited\_nums.add(num)

print(happy\_number)

for i in range(1,101):

is\_happy\_number(i)

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

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

# Calculate the sum of digits

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

# Check if the number is divisible by the sum of digits

if num % sum\_digits == 0:

print(num, "is a Harshad Number")

else:

print(num, "is not a Harshad Number")

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

Sol:- for i in range(1, 101):

for j in range(1, i):

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

print(i)

break