1. def checkDisariumNumber():

in\_num = input('Enter a Number: ')

sum = 0

for item in range(len(in\_num)):

sum = sum + int(in\_num[item])\*\*(item+1)

if sum == int(in\_num):

print(f'{in\_num} is a Disarium Number')

else:

print(f'{in\_num} is a Not Disarium Number')

checkDisariumNumber()

checkDisariumNumber()

Output:

Enter a Number: 135

135 is a Disarium Number

Enter a Number: 100

100 is a Not Disarium Number

1. def printDisariumNumbers(start=0,end=100):

output\_num = []

for number in range(start,end+1):

sum = 0

for item in range(len(str(number))):

sum = sum + int(str(number)[item])\*\*(item+1)

if sum == number:

output\_num.append(number)

return output\_num

printDisariumNumbers(1,1000)

Output:

[1, 2, 3, 4, 5, 6, 7, 8, 9, 89, 135, 175, 518, 598]

1. def checkHappyNumber():

in\_num = input('Enter a Number: ')

in\_num\_duplicate = in\_num

trackNumber = set()

while True:

if in\_num != '1' and str(in\_num) not in trackNumber:

trackNumber.add(in\_num)

sum = 0

for ele in range(len((in\_num))):

sum = sum + int(in\_num[ele])\*\*2

in\_num = str(sum)

elif str(in\_num) in trackNumber:

print(f'{in\_num\_duplicate} is not a Happy Number')

break

else:

print(f'{in\_num\_duplicate} is a Happy Number')

break

checkHappyNumber()

checkHappyNumber()

Output:

Enter a Number: 7

7 is a Happy Number

Enter a Number: 10

10 is a Happy Number

1. def checkHappyNumber(start=0,end=100):

happyNumbersList = []

for in\_num in range(start,end+1):

in\_num = str(in\_num)

inum\_holder = in\_num

trackNumber = set()

while True:

if in\_num != '1' and str(in\_num) not in trackNumber:

trackNumber.add(in\_num)

sum = 0

for ele in range(len((in\_num))):

sum = sum + int(in\_num[ele])\*\*2

in\_num = str(sum)

elif str(in\_num) in trackNumber:

break

else:

happyNumbersList.append(int(inum\_holder))

break

print(f'The Happy Numbers between {start} and {end} are {happyNumbersList}')

checkHappyNumber(0,100)

Output:

The Happy Numbers between 0 and 100 are [1, 7, 10, 13, 19, 23, 28, 31, 32, 44, 49, 68, 70, 79, 82, 86, 91, 94, 97, 100]

1. def checkHarshadNumber():

in\_num = input('Enter a Number: ')

sum = 0

for item in range(len(in\_num)):

sum = sum + int(in\_num[item])

if int(in\_num)%sum == 0:

print(f'{in\_num} is a Harshad Number')

else:

print(f'{in\_num} is a Not Harshad Number')

checkHarshadNumber()

checkHarshadNumber()

Output:

Enter a Number: 6804

6804 is a Harshad Number

Enter a Number: 20

20 is a Harshad Number

1. def printPronicNumbers(start=0,end=100):

outputList = []

for ele in range(start,end+1):

outputList.append((ele)\*(ele+1))

print(outputList)

printPronicNumbers()

Output:

[0, 2, 6, 12, 20, 30, 42, 56, 72, 90, 110, 132, 156, 182, 210, 240, 272, 306, 342, 380, 420, 462, 506, 552, 600, 650, 702, 756, 812, 870, 930, 992, 1056, 1122, 1190, 1260, 1332, 1406, 1482, 1560, 1640, 1722, 1806, 1892, 1980, 2070, 2162, 2256, 2352, 2450, 2550, 2652, 2756, 2862, 2970, 3080, 3192, 3306, 3422, 3540, 3660, 3782, 3906, 4032, 4160, 4290, 4422, 4556, 4692, 4830, 4970, 5112, 5256, 5402, 5550, 5700, 5852, 6006, 6162, 6320, 6480, 6642, 6806, 6972, 7140, 7310, 7482, 7656, 7832, 8010, 8190, 8372, 8556, 8742, 8930, 9120, 9312, 9506, 9702, 9900, 10100]