Assignment 9 Solutions

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

In [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()
```

```
Enter a Number: 135
135 is a Disarium Number
Enter a Number: 100
100 is a Not Disarium Number
```

2. Write a Python Program to print all Disarium numbers between 1 to 100 ?

In [5]:
```
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)
```

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

3. Write a Python Program to check if the given number is Happy Number ?

In [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()
```

```
Enter a Number: 7
7 is a Happy Number
Enter a Number: 10
10 is a Happy Number
```

4. Write a Python Program to print all Happy numbers between 1 and 100 ?

In [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)
```

```
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]
```

5. Write a Python Program to determine whether the given number is a Harshad Number ?

In [2]:

```
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()
```

```
Enter a Number: 4320
4320 is a Harshad Number
Enter a Number: 10
10 is a Harshad Number
```

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

In [3]:

```
def printPronicNumbers(start=0,end=100):
    outputList = []
    for ele in range(start,end+1):
        outputList.append((ele)*(ele+1))
    print(outputList)

printPronicNumbers()
```

```
[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]
```

In [ ]: