Assignment - 9

1A.

```
#calculateLength() will count the digits present in a number
def calculateLength(n):
   length = 0;
   while(n != 0):
      length = length + 1;
      n = n//10;
   return length;

num = 175;
rem = sum = 0;
len = calculateLength(num);

#Makes a copy of the original number num
n = num;

#Calculates the sum of digits powered with their respective position
while(num > 0):
   rem = num%10;
   sum = sum + int(rem**len);
   num = num//10;
   len = len - 1;
```

```
#Checks whether the sum is equal to the number itself
if(sum == n):
   print(str(n) + " is a disarium number");
else:
   print(str(n) + " is not a disarium number");
```

2A.

```
def calculateLength(n):
   length = 0;
   while(n != 0):
      length = length + 1;
      n = n//10;
   return length;

#sumOfDigits() will calculates the sum of digits powered with their respective position
def sumOfDigits(num):
   rem = sum = 0;
   len = calculateLength(num);

   while(num > 0):
      rem = num%10;
      sum = sum + (rem**len);
      num = num//10;
      len = len - 1;
```

```
    return sum;


result = 0;


#Displays all disarium numbers between 1 and 100
print("Disarium numbers between 1 and 100 are")
for i in range(1, 101):
    result = sumOfDigits(i)


    if(result == i):
        print(i)
```

3A.

```
def calculateLength(n):
    length = 0;
    while(n != 0):
        length = length + 1;
        n = n//10;
    return length;


#sumOfDigits() will calculates the sum of digits powered with their respective position
def sumOfDigits(num):
    rem = sum = 0;
    len = calculateLength(num);
```

```
    while(num > 0):
        rem = num%10;
        sum = sum + (rem**len);
        num = num//10;
        len = len - 1;
    return sum;

result = 0;

#Displays all disarium numbers between 1 and 100
print("Disarium numbers between 1 and 100 are")
for i in range(1, 101):
    result = sumOfDigits(i)

    if(result == i):
        print(i)
```

4A.
```
def isHappyNumber(num):
    rem = sum = 0;

    #Calculates the sum of squares of digits
    while(num > 0):
        rem = num%10;
        sum = sum + (rem*rem);
```

```
        num = num//10;
    return sum;

num = 82;
result = num;

while(result != 1 and result != 4):
    result = isHappyNumber(result);

if(result == 1):
    print(str(num) + " is a happy number");
elif(result == 4):
    print(str(num) + " is not a happy number");
```

5A.

```
num = 156;
rem = sum = 0;

#Make a copy of num and store it in variable n
n = num;

#Calculates sum of digits
while(num > 0):
    rem = num%10;
    sum = sum + rem;
```

```
    num = num//10;

#Checks whether the number is divisible by the sum of digits
if(n%sum == 0):
    print(str(n) + " is a harshad number");
else:
    print(str(n) + " is not a harshad number");
```

6A.

```
def isPronicNumber(num):
    flag = False;

    for j in range(1, num+1):
        #Checks for pronic number by multiplying consecutive numbers
        if((j*(j+1)) == num):
            flag = True;
            break;
    return flag;

#Displays pronic numbers between 1 and 100
print("Pronic numbers between 1 and 100: ");
for i in range(1, 101):
    if(isPronicNumber(i)):
        print(i),
```