Programming Assignment-9

1. **Write a Python program to check if the given number is a Disarium 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");
```

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

```
def length_calculation(my_val):
  len_val = 0
  while(my_val != 0):
    len_val = len_val + 1
    my_val = my_val//10
  return len_val
def digit_sum(my_num):
  remaining = sum_val = 0
  len_fun = length_calculation(my_num)
  while(my_num > 0):
    remaining = my_num%10
    sum_val = sum_val + (remaining**len_fun)
    my_num = my_num//10
    len_fun = len_fun - 1
  return sum_val
```

```
ini_result = 0
print("The disarium numbers between 1 and 100 are : ")
for i in range(1, 101):
  ini_result = digit_sum(i)
  if(ini_result == i):
    print(i)
```

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

```
#isHappyNumber() will determine whether a number is happy or not
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);

#Happy number always ends with 1
if(result == 1):
   print(str(num) + " is a happy number");
#Unhappy number ends in a cycle of repeating numbers which contain 4
elif(result == 4):
   print(str(num) + " is not a happy number");
```

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

```
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;

#Displays all happy numbers between 1 and 100
print("List of happy numbers between 1 and 100: ");
for i in range(1, 101):
   result = i;

   #Happy number always ends with 1 and
```

```
    #unhappy number ends in a cycle of repeating numbers which contains 4
    while(result != 1 and result != 4):
        result = isHappyNumber(result);

    if(result == 1):
        print(i),
        print(" ")
```

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

```
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");
```

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

```
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),
        print(" ")
```