Programming Assignment_9

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

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•[12]:

```
def length_calculation(num_val):
    length = 0
    while(num_val != 0):
        length = length + 1
        num_val = num_val//10
    return length ## count no of length of a number

my_num = int(input('enter a number to check disarium number : '))
remaining = sum_val = 0
len_val = length_calculation(my_num) #3store length value or total length of a number
print("A copy of the original number is being made...")

num_val = my_num # entered value stored in another place
while(my_num > 0):
    remaining = my_num%10 # last digit
    sum_val = sum_val + int(remaining**len_val) #calculate power by given length num
    my_num = my_num//10 ##extract remaing num
    len_val = len_val - 1 # decrease length number

if(sum_val == num_val):
    print(str(num_val) + " is a disarium number !")
else:
    print(str(num_val) + " isn't a disarium number")
```

```
enter a number to check disarium number :  89
A copy of the original number is being made...
89 is a disarium number !
```

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

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[28]:
```
#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;

#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); ## take one by one num and store in result
    if(result == i):  # compare if outcome result equals to input data then disarium
        print(i, end = ' , ')
```

```
Disarium numbers between 1 and 100 are
1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 89 ,
```

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

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[1]:
```
##32 + 22 = 13, 12 + 32 = 10, 12 + 02 = 1 -->the result is 1, so the given number 32 is Happy number
def check_happy_num(my_num): ##processing
    remaining = sum_val = 0
    while(my_num > 0):
        remaining = my_num%10
        sum_val = sum_val + (remaining*remaining)
        my_num = my_num//10
    return sum_val;

num = int(input('enter a number : ')) #take input
my_result = num
while(my_result != 1 and my_result != 4): ## while input not equals to 1 and 4 go to functn
    my_result = check_happy_num(my_result); #3 it continues while is false

print("The number is being checked") ##output
if(my_result == 1):
    print(str(num) + " is a happy number");
elif(my_result == 4):
    print(str(num) + " isn't a happy number");
```

```
enter a number :  82
The number is being checked
82 is a happy number
```

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

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[2]:
```
def check_happy_num(my_num):
    remaining = sum_val = 0
    while(my_num > 0):
        remaining = my_num%10
        sum_val = sum_val + (remaining*remaining)
        my_num = my_num//10
    return sum_val

print("The list of happy numbers between 1 and 100 are : ")
for i in range(1, 101):
    my_result = i
    while(my_result != 1 and my_result != 4):
        my_result = check_happy_num(my_result)
        if(my_result == 1):
            print(i, end = ' , ')
```

```
The list of happy numbers between 1 and 100 are :
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?

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•[3]:
```
#Suppose, the number given as an input is 20.
#Digits sum is = 2 + 0 = 2.
#2 is a divisor of 20. So, 20 is a Harshad number.
Number = int(input("Enter the Number to Check Harshad Number = "))
Sum = 0
rem = 0

Temp = Number
while Temp > 0:
    rem = Temp % 10 ##last digit
    Sum = Sum + rem
    Temp = Temp // 10 ##extract remain digit

print("The Sum of the Digits = %d" %Sum)
if Number % Sum == 0: ## num is divisible by sum then = harshad number
    print("\n%d is a Harshad Number." %Number)
else:
    print("%d is Not a Harshad Number." %Number)
```

```
Enter the Number to Check Harshad Number =  20
The Sum of the Digits = 2

20 is a Harshad Number.
```

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

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[4]:
```
#6 = 2(2+1)= n(n+1),
#72 =8(8+1) = n(n+1)
def isPronicNumber(num):
    flag = False; ## boolean variable flag and set its value to false.
    for j in range(1, num+1): # check between those range
        #Checks for pronic number by multiplying consecutive numbers
        if((j*(j+1)) == num): #if result == input num
            flag = True; ##then break d loop and out
            break;
    return flag;

#Displays pronic numbers between 1 and 100
print("Pronic numbers between 1 and 100: ");
for i in range(1, 101):  #take input
    if(isPronicNumber(i)):  #put into check function
          print(i, end = ' , ')
```

```
Pronic numbers between 1 and 100:
2 , 6 , 12 , 20 , 30 , 42 , 56 , 72 , 90 ,
```