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

Ans:

## to check for disarium number  
#user defined inputs  
num=(input("Please enter an integer"))  
num\_lis=list(num)  
sum\_dia=0  
#checking for disarium condition  
for i in range(len(num)):  
 sum\_dia+=(int(num\_lis[i]))\*\*(i+1)  
if (sum\_dia==int(num)):  
 print("the number input {} is a disarium number ".format(num))

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

Ans: ##to obtain disarium nos in 1 to 100  
dia=[]  
def disarium\_in\_range(dia):  
 sum\_dia=0  
 for i in range(1,100):  
 dia\_lis=str(i)  
 for j in range(len(dia\_lis)):  
 sum\_dia+=(int(dia\_lis[j]))\*\*(i+1)  
 if sum\_dia==int((dia\_lis)):  
 dia.append(int(dia\_lis))  
 return(dia)  
disarium\_in\_range(dia)  
print("the disarium in range of 1 to 100 : \n")  
print(dia)

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

Ans: ##check for happy no  
#user defined input  
num=input("enter an integer")  
k=int(input("enter the no of steps you want to perform to check "))  
  
def happy\_number(num,k):  
 temp=num  
 print("the steps details:")  
 for i in range(k):  
 hap\_sum=0  
 for j in str(temp):  
 hap\_sum+=(int(str(j))\*\*2)  
 print(hap\_sum)  
 if (hap\_sum==1):  
 print("the input number {} is a happy no ".format(num))  
 break  
 else:  
 temp=hap\_sum  
 continue  
 if (hap\_sum!= 1):  
 print("The input number {} is not a happy number with in {} steps".format(num, k))  
 print("you can increase the no of steps if wanted")  
happy\_number(num,k)

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

Ans: ##check for happy no  
#user defined input  
k=int(input("enter the no of steps you want to perform to check "))  
l=int(input("enter the lower limit of range : "))  
u=int(input("enter the upper limit of range : "))  
def happy\_number(k,l,u):  
 hap=[]  
 for n in range(l,u):  
 temp=n  
 for i in range(k):  
 hap\_sum=0  
 for j in str(temp):  
 hap\_sum+=int(j)\*\*2  
 if(hap\_sum==1):  
 hap.append(n)  
 break  
 else:  
 temp=hap\_sum  
 continue  
 print("the happy nos in range {} and {} with no of steps {} : ".format(l,u,k))  
 print(hap)  
  
happy\_number(k,l,u)  
print("you can increase no of steps if want to check for more happy nos")

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

##harshad no  
#user defined input  
num=input("enter an integer in base 10")  
def harshad(num):  
 sum=0  
 for i in num:  
 sum+= int(i)  
 if int(num)%sum==0:  
 print("the given input {} is harshad no ".format(num))  
 else:  
 print("the given input {} is not a harshad no ".format(num))  
harshad(num)

1. Write a Python program to print all pronic numbers between 1 and 100?
2. def fac(n,fact):  
    for i in range(1,n):  
    if n%i==0:  
    fact.append(i)  
    return(n,fact)  
   l=int(input("enter the lower limit of range : "))  
   u=int(input("enter the upper limit of range : "))  
   def pronic(l,u):  
    pronic=[]  
    for n in range(l,u):  
    fact=[]  
    fac(n,fact)  
    for j in range(len(fact)):  
    if(fact[j]\*(fact[j]+1)==n):  
    pronic.append(n)  
    print("the pronic nos in range {} and {}".format(l,u))  
    print(pronic)  
   pronic(l,u)