



# **SNS COLLEGE OF ENGINEERING**

**Kurumbapalayam(Po), Coimbatore – 641 107**

**Accredited by NAAC-UGC with 'A' Grade**

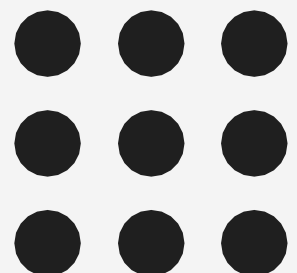
**Approved by AICTE, Recognized by UGC & Affiliated to Anna University, Chennai**

**Department of Artificial Intelligence and  
Data Science**

**Course Name – Computational Thinking and  
Python Programming**

**I Year / I Semester**

**Unit 3-CONTROL FLOW, FUNCTIONS**





## ILLUSTRATIVE PROGRAMS:

### Square root using newtons method:

```
def newtonsqrt(n):  
    root=n/2  
    for i in range(10):  
        root=(root+n/root)/2  
    print(root)  
n=eval(input("enter number to find Sqrt: "))  
newtonsqrt(n)
```

#### Output:

```
enter number to find Sqrt: 9  
3.0
```

### GCD of two numbers

```
n1=int(input("Enter a number1:"))  
n2=int(input("Enter a number2:"))  
for i in range(1,n1+1):  
    if(n1%i==0 and n2%i==0):  
        gcd=i  
print(gcd)
```

#### output

```
Enter a number1:8  
Enter a number2:24  
8
```

### Exponent of number

```
def power(base,exp):  
    if(exp==1):  
        return(base)  
    else:  
        return(base*power(base,exp-1))  
base=int(input("Enter base: "))  
exp=int(input("Enter exponential value:"))  
result=power(base,exp)  
print("Result:",result)
```

#### Output:

```
Enter base: 2  
Enter exponential value:3  
Result: 8
```

### sum of array elements:

```
a=[2,3,4,5,6,7,8]  
sum=0  
for i in a:  
    sum=sum+i  
print("the sum is",sum)
```

#### output:

```
the sum is 35
```



## Linear search

```
a=[20,30,40,50,60,70,89]
print(a)
search=eval(input("enter a element to search:"))
for i in range(0,len(a),1):
    if(search==a[i]):
        print("element found at",i+1)
        break
else:
    print("not found")
```

### output

```
[20, 30, 40, 50, 60, 70, 89]
enter a element to search:30
element found at 2
```

## Binary search

```
a=[20, 30, 40, 50, 60, 70, 89]
print(a)
search=eval(input("enter a element to search:"))
start=0
stop=len(a)-1
while(start<=stop):
    mid=(start+stop)//2
    if(search==a[mid]):
        print("elemrnt found at",mid+1)
        break
    elif(search<a[mid]):
        stop=mid-1
    else:
        start=mid+1
else:
    print("not found")
```

### output

```
[20, 30, 40, 50, 60, 70, 89]
enter a element to search:30
element found at 2
```