# Practical No. 1

## Aim: Write a program to compute the GCD of two numbers using Python.

## Code:

```
import math

def gdc_calc( num1, num2 ):
        return math.gcd( num1, num2)

if __name__ == '__main__':

        print(" *** Greatest Common Divisor Calculater ***\n")

        num1 = int(input(" Enter the first number?  "))
        num2 = int(input(" Enter the second number? "))

        result = gdc_calc( num1, num2 )

        print("\n Greatest Common Divisor of given number is ", str(result))
```

**Output for Practical No.1**

```
C:\WINDOWS\py.exe
*** Greatest Common Divisor Calculater ***

Enter the first number?  65
Enter the second number? 15

Greatest Common Divisor of given number is  5
```

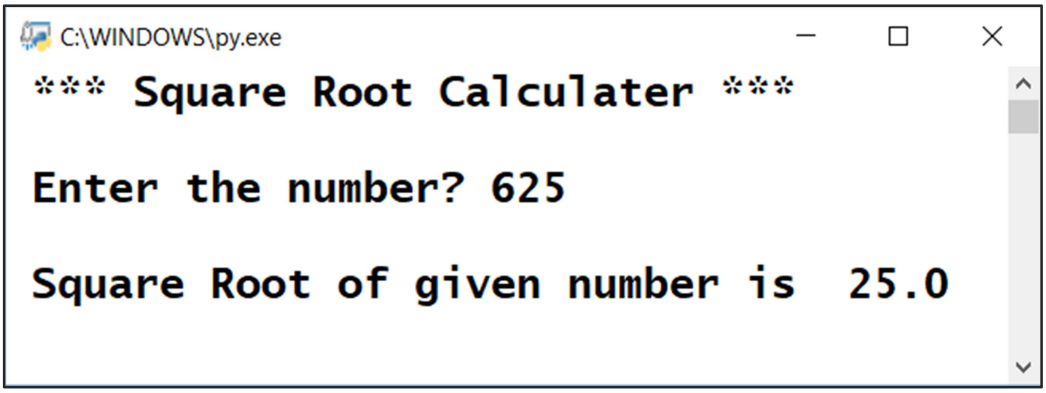
# Practical No. 2

## Aim: Write a program to find Square Root of number.

## Code:

```
import math

def sqrt_calc(num):
        return math.sqrt( num )

if __name__ == '__main__':

        print(" *** Square Root Calculater ***\n")

        num = int(input(" Enter the number? "))
        result = sqrt_calc( num )

        print("\n Square Root of given number is ", str(result))
```

**Output for Practical No.2**



# Practical No. 3

## Aim: Write a program to find Exponential of number using Python Programming.

## Code:

```
import math

def exp_calc(num):
        return math.exp( num )

if __name__ == '__main__':

        print(" *** Exponential Calculater ***\n")

        num = int(input(" Enter the number? "))
        result = exp_calc( num )

        print("\n Exponential of given number is %.5f" % result)
```

**Output for Practical No.3**

```
C:\WINDOWS\py.exe
*** Exponential Calculater ***

Enter the number? 6

Exponential of given number is 403.42879
```

# Practical No. 4

## Aim: Write a program to find the maximum of the list of numbers.

## Code:

```
def max_calc( list ):

    max = -100000                    #minimum value of an element

    for i in list:

        if(i > max):
            max = i

    return max

if __name__ == '__main__':

    print(" *** Maximum valued Element Finder ***\n")

    size_list = int(input(" Enter the size of the list? "))

    list = []

    print(" Enter the elements of the list?")

    for i in range(0, size_list):
        list.append(int(input("\t")))

    print(" Given List : ", list)

    result = max_calc( list )

    print(" Maximum valued Element in the list is ", str( result ))
```

**Output for Practical No.4**

```
C:\WINDOWS\py.exe
*** Maximum valued Element Finder ***

Enter the size of the list? 10
Enter the elements of the list?
       54
       52
       18
       69
       32
       8
       24
       90
       25
       86
Given List :  [54, 52, 18, 69, 32, 8, 24, 90, 25, 86]
Maximum valued Element in the list is  90
```

# Practical No. 5

## Aim: Write a program to find the value using Linear Search in Python program.

## Code:

```
def lnr_srch(list, length, num):
    for i in range(0, length):
        if(list[i] == num):
            return i + 1
    return -1


if __name__ == '__main__':

    print(" *** Linear Search ***\n")

    size_list = int(input(" Enter the size of the list? "))

    list = []

    print(" Enter the elements of the list?")
    for i in range(0, size_list):
        list.append(int(input("\t")))

    print(" Given list : ", list)

    element = int(input("\n Enter the elements to be search in the given list? "))

    result = lnr_srch(list, size_list, element)

    if (result == -1):
        print(" Element not found in the given List !!")
    else:
        print(" Element is found and it is at location : ", str(result))
```

**Output for Practical No.5**

```
C:\WINDOWS\py.exe
*** Linear Search ***

Enter the size of the list? 10
Enter the elements of the list?
       75
       65
       1
       2
       48
       63
       45
       92
       24
       10
Given list :  [75, 65, 1, 2, 48, 63, 45, 92, 24, 10]

Enter the elements to be search in the given list? 100
Element not found in the given List !!
```

```
C:\WINDOWS\py.exe
*** Linear Search ***

Enter the size of the list? 10
Enter the elements of the list?
       85
       54
       56
       26
       21
       10
       23
       75
       43
       91
Given list :  [85, 54, 56, 26, 21, 10, 23, 75, 43, 91]

Enter the elements to be search in the given list? 23
Element is found and it is at location :  7
```

# Practical No. 6

## Aim: Write a program to find the value using Binary Search in Python program.

## Code:

```
def bnry_srch(list, length, num):
    beg = 0;
    end = length - 1
    mid = int((beg + end) / 2)
    while list[mid] != num and beg <= end:
        if (num > list[mid]):
            beg = mid + 1
        else:
            end = mid - 1
        mid = int((beg + end) / 2)
    if (list[mid] == num):
        return mid + 1
    else:
        return -1

if __name__ == '__main__':

    print(" *** Binary Search ***\n")

    size_list = int(input(" Enter the size of the list? "))
    list = []

    print(" Enter the elements of the list?")
    for i in range(0, size_list):
        list.append(int(input("\t")))

    print(" Given list : ", sorted(list))
    element = int(input("\n Enter the elements to be search in the given list? "))

    result = bnry_srch(sorted(list), size_list, element)

    if (result == -1):
        print(" Element not found in the given List !!")
    else:
        print(" Element is found and it is at location : ", str(result))
```

## Output for Practical No.6

```
C:\WINDOWS\py.exe
*** Binary Search ***

Enter the size of the list? 10
Enter the elements of the list?
       45
       12
       78
       89
       56
       23
       25
       58
       74
       41
Given list :  [12, 23, 25, 41, 45, 56, 58, 74, 78, 89]

Enter the elements to be search in the given list? 74
Element is found and it is at location :  8
```

```
C:\WINDOWS\py.exe
*** Binary Search ***

Enter the size of the list? 10
Enter the elements of the list?
       20
       15
       48
       75
       95
       53
       26
       34
       15
       13
Given list :  [13, 15, 15, 20, 26, 34, 48, 53, 75, 95]

Enter the elements to be search in the given list? 22
Element not found in the given List !!
```

# Practical No. 7

## Aim: Write a program to sort the list of elements using Selection Sort.

## Code:

```
from pygorithm.sorting import selection_sort

if __name__ == '__main__':

    print(" *** Selection Sort ***\n")

    size_list = int(input(" Enter the size of the list? "))

    list = []

    print(" Enter the elements of the list?")

    for i in range(0, size_list):
        list.append(int(input("\t")))

    print(" Given List  : ", list)

    sorted_list = selection_sort.sort( list )

    print(' Sorted List : ', sorted_list)
```

**Output for Practical No.7**

```
C:\WINDOWS\py.exe
*** Selection Sort ***

Enter the size of the list? 10
Enter the elements of the list?
       79
       46
       13
       20
       51
       84
       95
       62
       30
       76
Given List  :  [79, 46, 13, 20, 51, 84, 95, 62, 30, 76]
Sorted List :  [13, 20, 30, 46, 51, 62, 76, 79, 84, 95]
```

# Practical No. 8

## Aim: Write a program to sort the list of elements using Insertion Sort.

## Code:

```
from pygorithm.sorting import insertion_sort

if __name__ == '__main__':

    print(" *** Insertion Sort ***\n")

    size_list = int(input(" Enter the size of the list? "))

    list = []

    print(" Enter the elements of the list?")

    for i in range(0, size_list):
        list.append(int(input("\t")))

    print(" Given List  : ", list)

    sorted_list = insertion_sort.sort( list )

    print(' Sorted List : ', sorted_list)
```

**Output for Practical No.8**

```
C:\WINDOWS\py.exe
*** Insertion Sort ***

Enter the size of the list? 10
Enter the elements of the list?
       15
       53
       24
       26
       48
       86
       59
       75
       50
       06
Given List  :  [15, 53, 24, 26, 48, 86, 59, 75, 50, 6]
Sorted List :  [6, 15, 24, 26, 48, 50, 53, 59, 75, 86]
```

# Practical No. 9

## Aim: Write a program to sort the list of elements using Merge Sort.

## Code:

```
from pygorithm.sorting import merge_sort

if __name__ == '__main__':

    print(" *** Merge Sort ***\n")

    size_list = int(input(" Enter the size of the list? "))

    list = []

    print(" Enter the elements of the list?")

    for i in range(0, size_list):
        list.append(int(input("\t")))

    print(" Given List  : ", list)

    sorted_list = merge_sort.sort( list )

    print(' Sorted List : ', sorted_list)
```

**Output for Practical No.9**

```
C:\WINDOWS\py.exe
*** Merge Sort ***

Enter the size of the list? 10
Enter the elements of the list?
       34
       39
       27
       29
       16
       91
       38
       80
       92
       67
Given List  :  [34, 39, 27, 29, 16, 91, 38, 80, 92, 67]
Sorted List :  [16, 27, 29, 34, 38, 39, 67, 80, 91, 92]
```

# Practical No. 10

## Aim: Write a program to find word and lines in Command Line Arguments.

## Code:

```
import sys

if __name__ == '__main__':

    print("\n *** Command Line Arguments Reader ***\n")

    print(" Line indicating the Command Line Arguments\n")
    print(" ", end="")
    for i in sys.argv:
        print(i, end=" ")

    print("\n\n where ")
    print(" Length of Command Line Arguments is ", len(sys.argv))
    print(" Name of the Python Script is ", sys.argv[0])
    if len(sys.argv) > 1:
        print("\n Other Arguments are :")
        for i in range(1, len(sys.argv) ):
            print("\t{0}. {1}".format( i, sys.argv[i] ))
```

## Output for Practical No.10

```
Command Prompt
Microsoft Windows [Version 10.0.16299.492]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\gallery>f:

F:\>cd python_pgms\python prgm

F:\python_pgms\python prgm>python prac10.py Om Prakash 1611151017

 *** Command Line Arguments Reader ***

 Line indicating the Command Line Arguments

 prac10.py Om Prakash 1611151017

 where
 Length of Command Line Arguments is  4
 Name of the Python Script is  prac10.py

 Other Arguments are :
        1. Om
        2. Prakash
        3. 1611151017

F:\python_pgms\python prgm>_
```