P.DILLI BABU

192472284

PYTHON PROGRAMMING

CSA0815

SLOT-B

1).

```
def insertionSort(arr):
    n = len(arr)
    if n <= 1:
        return
    for i in range(1, n):
        key = arr[i]
        j = i-1
        while j >= 0 and key < arr[j]:
            arr[j+1] = arr[j]
            j -= 1
        arr[j+1] = key  #
arr = [12, 11, 13, 5, 6]
insertionSort(arr)
print(arr)
```

```
[5, 6, 11, 12, 13]

=== Code Execution Successful ===
```

2).

```
def merge(arr, l, m, r):
    n1 = m - l + 1
    n2 = r - m
    L = [0] * (n1)
    R = [0] * (n2)
    for i in range(0, n1):
        L[i] = arr[l + i]

    for j in range(0, n2):
        R[j] = arr[m + 1 + j]
    i = 0
    j = 0
    k = l
    while i < n1 and j < n2:
        if L[i] <= R[j]:
            arr[k] = L[i]
            i += 1
        else:
            arr[k] = R[j]
            j += 1
        k += 1
    while i < n1:
        arr[k] = L[i]
        i += 1
        k += 1
    while j < n2:
        arr[k] = R[j]
        j += 1
        k += 1
def mergeSort(arr, l, r):
    if l < r:
        m = l+(r-l)//2
        mergeSort(arr, l, m)
        mergeSort(arr, m+1, r)
        merge(arr, l, m, r)
arr = [12, 11, 13, 5, 6, 7]
n = len(arr)
print("Given array is")
```

```
for i in range(n):
    print("%d" % arr[i],end=" ")

mergeSort(arr, 0, n-1)
print("\n\nSorted array is")
for i in range(n):
    print("%d" % arr[i],end=" ")
```

```
Given array is
12 11 13 5 6 7

Sorted array is
5 6 7 11 12 13
=== Code Execution Successful ===
```

3).

```
import numpy as np
x = np.random.normal(50, 10,50)
print(x)
```

```
[59.55490924 40.27153411 38.68291338 40.96254881 32.74889709 57
    .97152001
 37.89460926 36.56698868 36.24021014 61.52230649 43.11735198 70
    .32220158
 46.97749084 64.93519947 50.01621094 57.06953379 49.86678337 65.3635393
 42.85420103 62.2951595  58.01452849 46.77383442 38.19040241 51
    .47291755
 42.08630456 53.25158228 61.01016868 51.58697906 37.38805011 51
    .78598192
 57.15212966 61.81402405 60.13872757 59.85469603 55.58129743 45
    .86794302
 47.7052499  36.93174037 44.17300201 42.54100335 49.29728995 47
    .47628819
 54.3754124  56.33450484 43.70000223 56.3024812  42.62049771 51
    .11940113
 35.81131831 56.50846192]

=== Code Execution Successful ===
```

4).

```
f = open("demofile.txt", "r")

print(f.read())
```

```
Hello! Welcome to demofile.txt
This file is for testing purposes.
Good Luck!
```

```
with open("demofile.txt", "r") as f:
  print(f.read())
```

```
Hello! Welcome to demofile.txt
This file is for testing purposes.
Good Luck!
```

```
f = open("demofile.txt", "r")

print(f.readline())

f.close()
```

```
Hello! Welcome to demofile.txt
```

```
with open("demofile.txt", "r") as f:
  print(f.read(5))
```

```
Hello
```

```
with open("demofile.txt") as f:
  print(f.readline())
```

```
Hello! Welcome to demofile.txt
```

```
with open("demofile.txt", "a") as f:
  f.write("Now the file has more content!")

#open and read the file after the appending:
with open("demofile.txt") as f:
  print(f.read())
```

```
Hello! Welcome to demofile2.txt
This file is for testing purposes.
Good Luck!Now the file has more content!
```