

## Module 10 Example: Integrated Activity: Functions, Text Files and Arrays

A T-shirt manufacturer is designing a new T-shirt in just one size. The manufacturer conducts a sample survey of the market to reveal what would be the best T-shirt size to manufacture. (*T-shirt* sizes could be any number in the range: 3 to 10)

The names of the participants in the survey will be stored in an array **names** and their sizes will be stored in corresponding positions in array **sizes**.

### 1. Create the following functions:

- 1.1 Write a function **Calculate** to determine the number of participants with a T-shirt size above the average T-shirt size.
- 1.2 Write a function **Best** to determine the best size to manufacture. The best size is the size with the highest occurrence in the sizes list. Assume there is only one size with the highest occurrence in the survey. Print the best size.

### 2. Do the following in the main program:

- 2.1 Create array **names** to store the following values:  
`names=["Tom","Andile","Alonso","Lindi","Yasteele","Mary","Dudu","Avika","Bhengu","Rodney","James","Nzama","Akira","Nikiel","Zandile","Nomsa","Alessio","Gianni","Bob","Peter"]`
- 2.2 Create a text file **CustomerSizes.txt** using a text editor that will store the following values:  
`7 10 3 8 4 6 5 5 8 6 8 6 4 4 4 10 5 4 10`
- 2.3 Read the data stored in the **CustomerSizes.txt** file and store the values in array **sizes**.
- 2.4 Display the data stored in arrays **names** and **sizes** in columnar form.

Example of sample output:

Names	Sizes
Tom	7
Andile	10
Alonso	3
Lindi	8
Yasteele	4
Mary	6
...	

- 2.5 Display the number of participants with a T-shirt size above the average T-shirt size.
- 2.6 Write the names of the participants with a T-shirt size above the average T-shirt size to a text file **AboveNames.txt**.

2.7 Display the best size.



## Python Program

```
#Determine number of sizes above the average size
def calculate():
    global count, average
    sum=0
    for i in range(0,19):
        sum=sum+sizes[i]
    average=sum/20
    count=0
    for i in range(0,19):
        if sizes[i]>average:
            count=count+1

#Determines the most frequently occurring size
def best():
    frequent = sizes[0]
    high = 1
    for n in range(0, 19):
        ct = 1
        for x in range(n + 1, 20):
            if sizes[n] == sizes[x]:
                ct = ct + 1
        if ct > high:
            high = ct
            frequent = sizes[n]
    print("The mode is: ", frequent, " which occurs ", high, "
times")

#Main program
count=0
average=0
from array import *
names=["Tom", "Andile", "Alonso", "Lindi", "Yasteele", "Mary", "Dudu", "Av
ika", "Bhengu", "Rodney", "James", "Nzama", "Akira", "Nikiel", "Zandile", "
Nomsa", "Alessio", "Gianni", "Bob", "Peter"]
sizes=[]
sizes=[0]*20
c=-1

# Data read from a text file and stored in array sizes
try:
    fsizes=open("CustomerSizes.txt", "r")
    for line in fsizes:
        c=c+1
        sizes[c]=int(line)
    fsizes.close()
except FileNotFoundError:
    print("File not found")

# data from both arrays displayed in columnar form
print("%20s %5s" % ("Names", "Sizes"))
for c in range(0,19):
    print("%20s %5s" % (names[c], sizes[c]))

# call calculate function and display results
print()
```



```

calculate()
print("Number of participants with T-shirt size above average:
",count)

#writing names of participants with T-shirt size above the average
size to a textfile AboveNames
fAboveNames=open("AboveNames.txt","w")
for c in range(0,19):
    if sizes[c]>average:
        fAboveNames.write(names[c]+"\\n")
fAboveNames.close()

```

### Output

Names	Sizes
Tom	7
Andile	10
Alonso	3
Lindi	8
Yasteele	4
Mary	6
Dudu	5
Avika	5
Bhengu	8
Rodney	6
James	8
Nzama	6
Akira	4
Nikiel	4
Zandile	4
Nomsa	10
Alessio	5
Gianni	4
Bob	10

Number of participants with T-shirt size above average: 10

The mode is: 4 which occurs 5 times

