

Machine Problem No. 5
FUNCTIONS

1. Write a program that takes a set of examination scores of a student. It then uses two functions calcSum() and calcAverage() to calculate the sum and average of the data set.

Your program must use the following functions:

1. A value-returning function, calcSum(), to determine the sum of the test scores. Use a loop to read and sum the test scores. The function does not output the sum of the test scores. This task must be done in the main function.
2. A void function, calcAverage(), to determine the average of the test scores. The function does not output the average test score. This task must be done in the main function.

Hint: Use pass by reference for average variable.

2. Write a function that displays a message indicating the number of times it gets called: For instance **“The function has been called three times”**. Write a program that **calls this function 10 times** from int main(). You will need to use a **global variable** to store the count.

Note: All variables declared inside a function are local variables. Their value is lost once the function ends.

3. If **Pop** is the population of the first day of the year, **BD** is the birth rate and **DD** is the death rate, the estimated population at the end of the year is given by formula:
- $$\text{Pop}_n + (\text{BD} * \text{Pop}_n) / 100 - (\text{DD} * \text{Pop}_n) / 100$$

The population growth rate is given by the formula:

$$\text{BD} - \text{DD}$$

Write a program that prompts the user to enter the starting population, birth and death rates and **n**, the number of years. The program should then calculate and print the estimated population after **n** years. Your program must contain the following functions:

GrowthRate: This function takes as its parameters the birth and death rates and returns the population growth rate.

Estimated Population: This function takes as its parameters the current population, population growth rate and **n**, the number of years. It returns the estimated population after **n** years. Your program should not accept negative birth rate, negative death rate or population less than 2.