1. Write a program that reads an array of integers and an integer value from the user and checks if this value exists in the array or not. The program prints the location numbers at which this value was found otherwise it prints Not Found.

Input:

Array = [34, 22, 35, 34, 99, 54, 34, 99]

User Input = 34

Output:

Value is found at:

1

4

7

1. Write a program to read an array of students’ grades from the user and do the following:
   1. Check each array element if it is a valid grade (valid range is from 0 to 100). For each grade, the program displays either Valid or Invalid. Count number of invalid grades.
   2. Check each array element if it is a valid grade (valid range is from 0 to 100). Produce a corresponding array (same size as the grades array) that has 1 or 0 in the same grade position; 1 if the grade is valid and 0 if it is invalid.

A grade array [90 -10 50 130 -2] will produce an output array [1 0 1 0 0]

* 1. Calculate and display the average grade.
  2. Find and display the highest and lowest grades and specify their locations.
  3. Allocate and display students having grades greater than 85%, and display their count.
  4. Allocate and display students having grades greater than average, and display their count.

Sample input:

[90 -10 50 130 -2]

Output:

Student 1 grade (90) is 'valid'

and his grade is above 85

Student 2 grade (-10) is 'invalid'

Student 3 grade (50) is 'valid'

Student 4 grade (130) is 'invalid'

Student 5 grade (-2) is 'invalid'

G =

90 -10 50 130 -2

val =

1 0 1 0 0

Number of invalid grades is 3

Student 1 has highest grade which is 90

Student 3 has lowest grade which is 50

Average grade: 70

Number of students above 85%: 1

Student 1 has above average grade

Number of students above average: 1

1. A sound engineer has recorded a sound signal from a microphone. The sound signal was “sampled,” meaning that values at discrete intervals were recorded (rather than a continuous sound signal). The units of each data sample are volts. The microphone was not on at all times, however, so the data samples that are below a certain threshold are considered to be data values that were samples when the microphone was not on, and therefore not valid data samples. The sound engineer would like to know the average voltage of the sound signal. Write a script that will ask the user for the threshold and the number of data samples, and then for the individual data samples. The program will then print the average and a count of the valid data samples, or an error message if there were no valid data samples. An example of what the input and output would look like in the Command Window is shown here.

Input:

Please enter the threshold below which samples will be considered to be invalid: 3.0

Please enter the number of data samples to enter: 7

Please enter a data sample: 0.4

Please enter a data sample: 5.5

Please enter a data sample: 5.0

Please enter a data sample: 2.1

Please enter a data sample: 6.2

Please enter a data sample: 0.3

Please enter a data sample: 5.4

Output:

Valid samples

4

Average

5.53