



Trace Tables

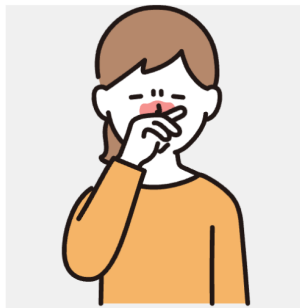
Teams of programmers and other developers work on coding **modules**.

These modules need to be **integrated** into the system being designed.

However, they need to be thoroughly **tested** before integration.

Read the Unit page and answer these questions.

1. Write each team member's name and position in the boxes:



2. Test data has been identified to test the module designed by Jeff.

For each item of test data¹, choose **normal**, **abnormal**, **extreme**.

10	150	15	1000	20	-1
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3. Write down the names of the features in Jack's Java code that he chose to trace in his trace table:

total						
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4. Can you identify another feature that Jack could have traced from his code?

5. When calculating the average value, the code performs **integer division**.

Java

```
double avg = totalTax/count;
```

¹ Remember, acceptable input data is 50-1000 inclusive.

Integer division will in Java produces an integer result eg:

$$5/3 = 1$$

However, we want the **avg** result to be a **double**. So, we should **cast** one of the integers to be a double:

Java

```
double avg = (double)totalTax/count;
```

This is a neat trick in Java. We are converting `totalTax` to be a double so that we no longer have **integer division**!

Make a prediction. Check each of the boxes that you think would produce the same result:

- ☐ `double avg = totalTax/(double)count;`
- ☐ `double avg = double(totalTax/count);`
- ☐ `double avg = (double)totalTax/(double)count;`

6. Explain why Jack's code produces the incorrect result.

7. Here is an algorithm written in Java.

```
Java

public static void main(){
    int[] nums = getNums();

    int sum = 0;

    for(int i = 0; i<nums.length; i++){
        if(nums[i]>0 && nums[i]<=10){
            sum = sum+nums[i];
        }
    }

    System.out.println(sum);
}

public static int[] getNums(){
    return {10, -5, 5, 4, -6, 1, -3};
}
```

Complete the trace table for the main function code.

[illegible]