

**Part I. Introduction to “while” Repetition Statement**

Compile and run the following program. Analyze the output.

```
#include <stdio.h>

int main()
{
    int counter;
    int grade;
    int total;
    int average;

    total = 0;
    counter = 1;

    while (counter <= 10)
    {
        printf("Enter Grade: ");
        scanf("%d", &grade);

        total = total + grade;
        counter = counter + 1;
    }

    average = total / 10;

    printf("Class average is %d\n", average);

    return 0;
}
```

**Part II. Nested Control Structures**

Modify the code above so that

- it only calculates the grades between 0 and 100.
- If the user enters a grade below 0 (except “-1”), or above 100, the program should warn user with a message such as “Illegal grade entered!”.
- The program should ask grades from user ‘till the user enters -1.

**Part III. Do It Yourself**

Write a program that

- takes three grades (first midterm, second midterm, final) from user,
- and then calculates the total grade of the student according to the following formulation:
 
$$\text{Total Grade} = \text{First Midterm} * 0.25 + \text{Second Midterm} * 0.25 + \text{Final} * 0.5$$
- after calculating the total grade of the student, convert it to the letter form using following table,
- print the letter equivalent of the students grade to the screen.
- Use nested-if structure

Grade (0-100)	Letter Equivalent
90-100	AA
85-89	BA
75-84	BB
70-74	CB
60-69	CC
55-59	DC
45-54	DD
25-44	FD
0-24	FF

**Part IV. Do It Yourself**

Modify the previous program as;

- Numer of students is 10
- Report as

Student 1 got 50 --> DD

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Class average is .....

**Part V. Do It Yourself**

Write a complete C program to do following tasks:

- Given that product=2
- Find the number of repetitions when the test condition is product <=1000. (you will need to use a *while* loop control structure)