Name: Muhammad Saad

Reg No: 20MDELE163

Submitted To: Engr.Jawad Ali

Section: B

Department of Electrical Engineering

EE-112L-Programming Fundamentals Lab

LAB REPORT # 04

Title: Nested If/Else Algorithms

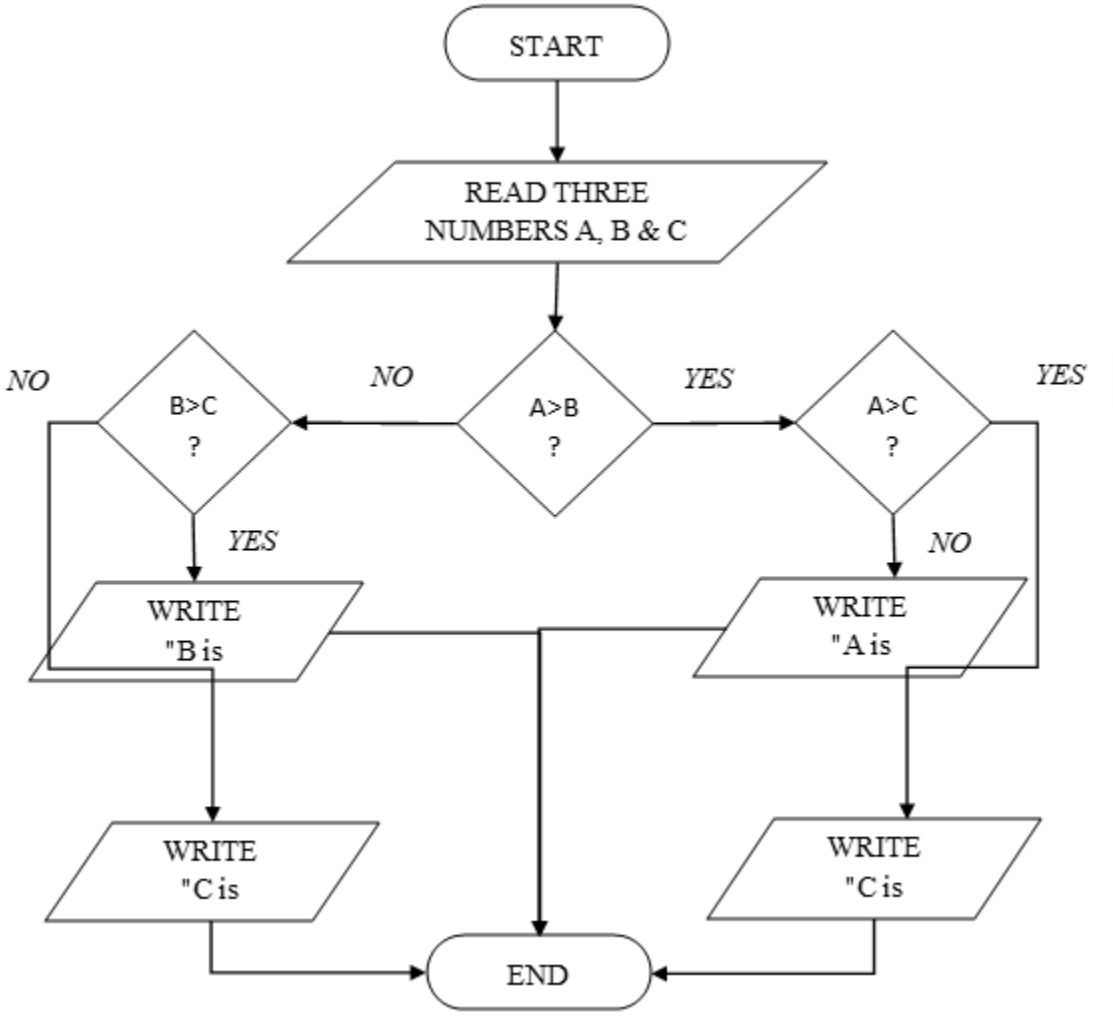
Introduction:

Getting more involved in C programming, you will find out that you have to deal with problems that require extensive logical reasoning and decision making. For this, at times you need to apply conditional logic within an already applied if/else structure.

This will be illustrated with the help of the following tasks, developing the logic of which will help you understand the phenomenon.

Task 1: Write a C Program to find the biggest of three numbers.

Flowchart:



PROGRAM:-

By entering number 1 = 8,

Number 2 = 5,

Number 3 = 3.

```c
#include<stdio.h>
int main()
{
    int numA;
    int numB;
    int numC;
    printf("Enter three numbers: ");
    scanf("%d %d %d", &numA, &numB, &numC);

    if (numA > numB){
        if (numA > numC)
        printf("%d is the largest number.",numA);
        else
        printf("%d is the largest number.",numC);

    }
    else {
        if (numB > numC)
        printf("%d is the largest number.",numB);
        else
        printf("%d is the largest number.",numC);

    }
    return 0;
}
```

```
Please Enter three different values
8
5
3

8 is Greater than both 5 and 3
--------------------------------
Process exited after 15.87 seconds with return value 0
Press any key to continue . . .
```

By entering number 1 = 20,

Number 2 = 30,

Number 3 = 90.

```c
#include<stdio.h>
int main()
{
    int numA;
    int numB;
    int numC;
    printf("Enter three numbers: ");
    scanf("%d %d %d", &numA, &numB, &numC);

    if (numA > numB){
        if (numA > numC)
        printf("%d is the largest number.",numA);
        else
        printf("%d is the largest number.",numC);

    }
    else {
        if (numB > numC)
        printf("%d is the largest number.",numB);
        else
        printf("%d is the largest number.",numC);

    }
    return 0;
}
```

```
Please Enter three different values
20
30
90

90 is Greater than both 20 and 30
--------------------------------
Process exited after 14.13 seconds with return value 0
Press any key to continue . . .
```

By entering all same numbers,

```c
#include<stdio.h>
int main()
{
    int numA;
    int numB;
    int numC;
    printf("Enter three numbers: ");
    scanf("%d %d %d", &numA, &numB, &numC);

    if (numA > numB){
        if (numA > numC)
        printf("%d is the largest number.",numA);
        else
        printf("%d is the largest number.",numC);

    }
    else {
        if (numB > numC)
        printf("%d is the largest number.",numB);
        else
        printf("%d is the largest number.",numC);

    }
    return 0;
}
```

```
Please Enter three different values
55
55
55

All the three values are equal
--------------------------------
Process exited after 8.281 seconds with return value 0
Press any key to continue . . .
```

Compiler | Resources | Compile Log | Debug | Find Results | Close

ON ANOTHER METHOD:-

```c
#include<stdio.h>
int main()
{
    int a, b, c;
    printf("Please Enter three different values\n");
    scanf("%d %d %d", &a, &b, &c);

    if(a>b && a>c)
    {
        printf("\n%d is Greater than both %d and %d", a, b, c);
    }
    else if(b>a && b>c)
    {
        printf("\n%d is Greater than %d and %d",b, a, c);
    }
    else if(c>a && c>b)
    {
        printf("\n%d is Greater than both %d and %d", c, a, b);
    }
    else
    {
        printf("\nAll the three values are equal");

    }
}
```

```
Please Enter three different values
6
5
9

9 is Greater than both 6 and 5
--------------------------------
Process exited after 11.09 seconds with return value 0
Press any key to continue . . .
```

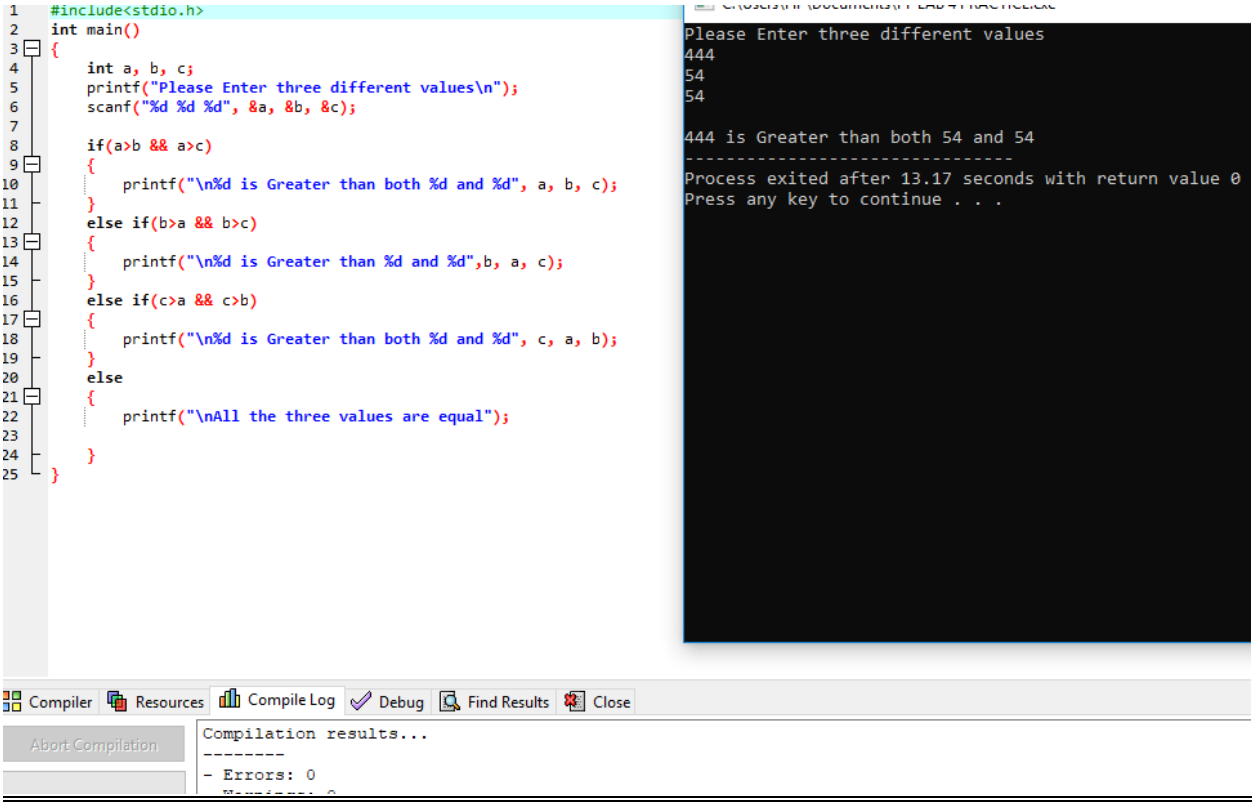
Compiler | Resources | Compile Log | Debug | Find Results | Close

Abort Compilation | Compilation results...

```c
#include<stdio.h>
int main()
{
    int a, b, c;
    printf("Please Enter three different values\n");
    scanf("%d %d %d", &a, &b, &c);

    if(a>b && a>c)
    {
        printf("\n%d is Greater than both %d and %d", a, b, c);
    }
    else if(b>a && b>c)
    {
        printf("\n%d is Greater than %d and %d",b, a, c);
    }
    else if(c>a && c>b)
    {
        printf("\n%d is Greater than both %d and %d", c, a, b);
    }
    else
    {
        printf("\nAll the three values are equal");

    }
}
```

```
Please Enter three different values
55
55
55

All the three values are equal
--------------------------------
Process exited after 8.143 seconds with return value 0
Press any key to continue . . .
```

Compiler | Resources | Compile Log | Debug | Find Results | Close

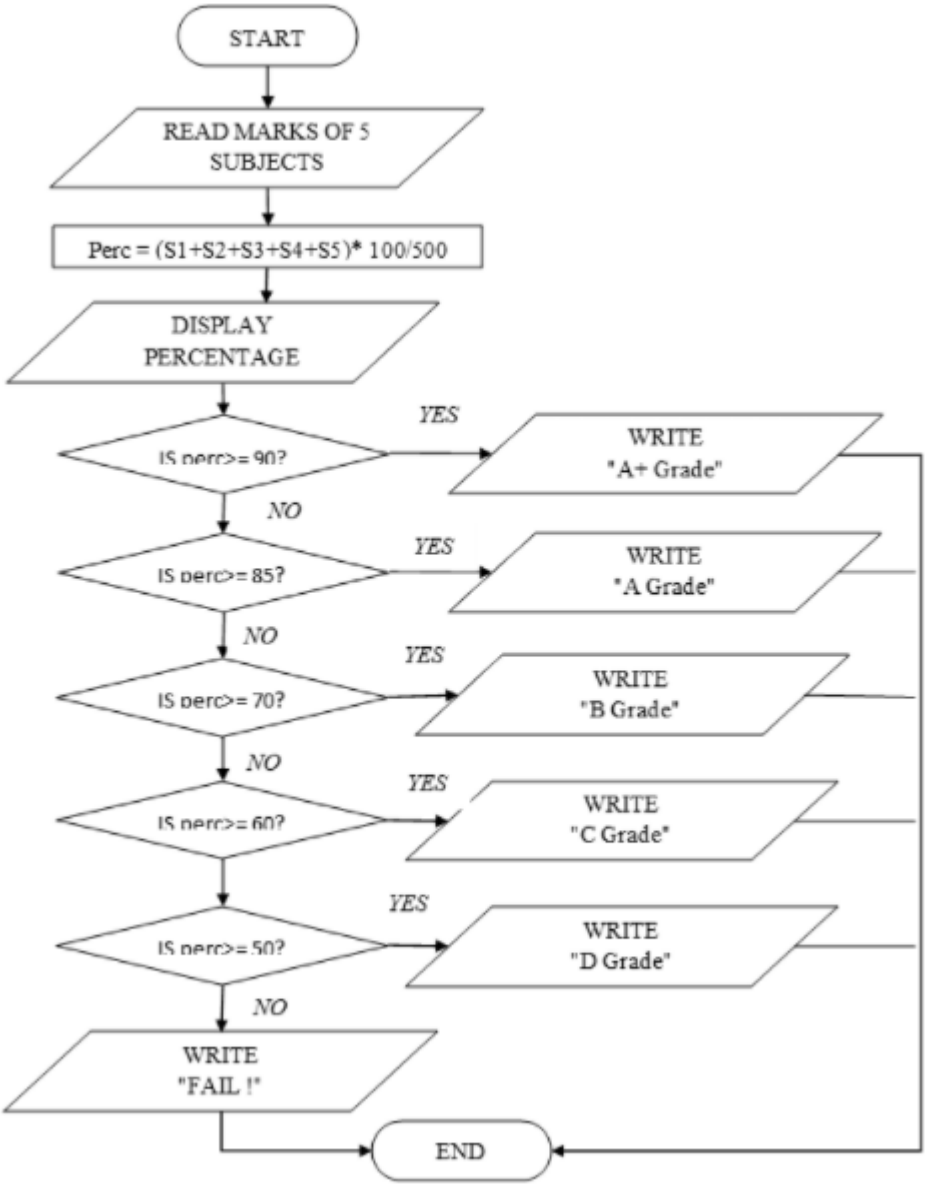


```c
#include<stdio.h>
int main()
{
    int a, b, c;
    printf("Please Enter three different values\n");
    scanf("%d %d %d", &a, &b, &c);

    if(a>b && a>c)
    {
        printf("\n%d is Greater than both %d and %d", a, b, c);
    }
    else if(b>a && b>c)
    {
        printf("\n%d is Greater than %d and %d",b, a, c);
    }
    else if(c>a && c>b)
    {
        printf("\n%d is Greater than both %d and %d", c, a, b);
    }
    else
    {
        printf("\nAll the three values are equal");

    }
}
```

```
Please Enter three different values
444
54
54

444 is Greater than both 54 and 54
--------------------------------
Process exited after 13.17 seconds with return value 0
Press any key to continue . . .
```


Task 2: Write a C program to find grade based on percentage of 5 subjects.

Flowchart:



Program:-

When taking A+ Grade,

```c
#include<stdio.h>
int main()
{
   int english, chemistry, computers, physics, maths;
   float total, percentage;
    printf("please enter the five subjests marks : \n");
    scanf("%d%d%d%d%d", &english, &chemistry, &computers, &physics, &maths);
    total = english + chemistry + computers + physics + maths;
    percentage = (total / 500) *100;

    printf("Total marks = %.2f\n", total);
    printf("marks percentage = %.2f", percentage);

    if(percentage >= 90){
       printf("\n Grade A+");
    }
    else if(percentage >= 85){
       printf("\n Grade A");
    }
    else if(percentage >= 70){
       printf("\n Grade B");
    }
    else if(percentage >= 60){
       printf("\n Grade C");
    }
    else if(percentage >= 50){
       printf("\n Grade D");
    }
    else{
       printf("\n Fail");
    }
    return 0;
}
```

```
please enter the five subjests marks :
99
98
97
99
99
Total marks = 492.00
marks percentage = 98.40
 Grade A+
--------------------------------
Process exited after 17.98 seconds with return value 0
Press any key to continue . . .
```

Compiler | Resources | Compile Log | Debug | Find Results | Close

Abort Compilation

```
Compilation results...
--------
- Errors: 0
```

When taking A Grade,

```c
#include<stdio.h>
int main()
{
   int english, chemistry, computers, physics, maths;
   float total, percentage;
    printf("please enter the five subjests marks : \n");
    scanf("%d%d%d%d%d", &english, &chemistry, &computers, &physics, &maths);
    total = english + chemistry + computers + physics + maths;
    percentage = (total / 500) *100;

    printf("Total marks = %.2f\n", total);
    printf("marks percentage = %.2f", percentage);

    if(percentage >= 90){
       printf("\n Grade A+");
    }
    else if(percentage >= 85){
       printf("\n Grade A");
    }
    else if(percentage >= 70){
       printf("\n Grade B");
    }
    else if(percentage >= 60){
       printf("\n Grade C");
    }
    else if(percentage >= 50){
       printf("\n Grade D");
    }
    else{
       printf("\n Fail");
    }
    return 0;
}
```

```
please enter the five subjests marks :
95
87
87
87
80
Total marks = 436.00
marks percentage = 87.20
 Grade A
--------------------------------
Process exited after 15.58 seconds with return value 0
Press any key to continue . . .
```

Compiler | Resources | Compile Log | Debug | Find Results | Close

Abort Compilation

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
```

When taking B Grade:-

```c
#include<stdio.h>
int main()
{
    int english, chemistry, computers, physics, maths;
    float total, percentage;
     printf("please enter the five subjests marks : \n");
     scanf("%d%d%d%d%d", &english, &chemistry, &computers, &physics, &maths);
     total = english + chemistry + computers + physics + maths;
     percentage = (total / 500) *100;

     printf("Total marks = %.2f\n", total);
     printf("marks percentage = %.2f", percentage);

     if(percentage >= 90){
        printf("\n Grade A+");
     }
     else if(percentage >= 85){
        printf("\n Grade A");
     }
     else if(percentage >= 70){
        printf("\n Grade B");
     }
     else if(percentage >= 60){
        printf("\n Grade C");
     }
     else if(percentage >= 50){
        printf("\n Grade D");
     }
     else{
        printf("\n Fail");
     }
     return 0;
}
```

```
please enter the five subjests marks :
80
83
86
80
79
Total marks = 408.00
marks percentage = 81.60
 Grade B
--------------------------------
Process exited after 66.56 seconds with return value 0
Press any key to continue . . .
```

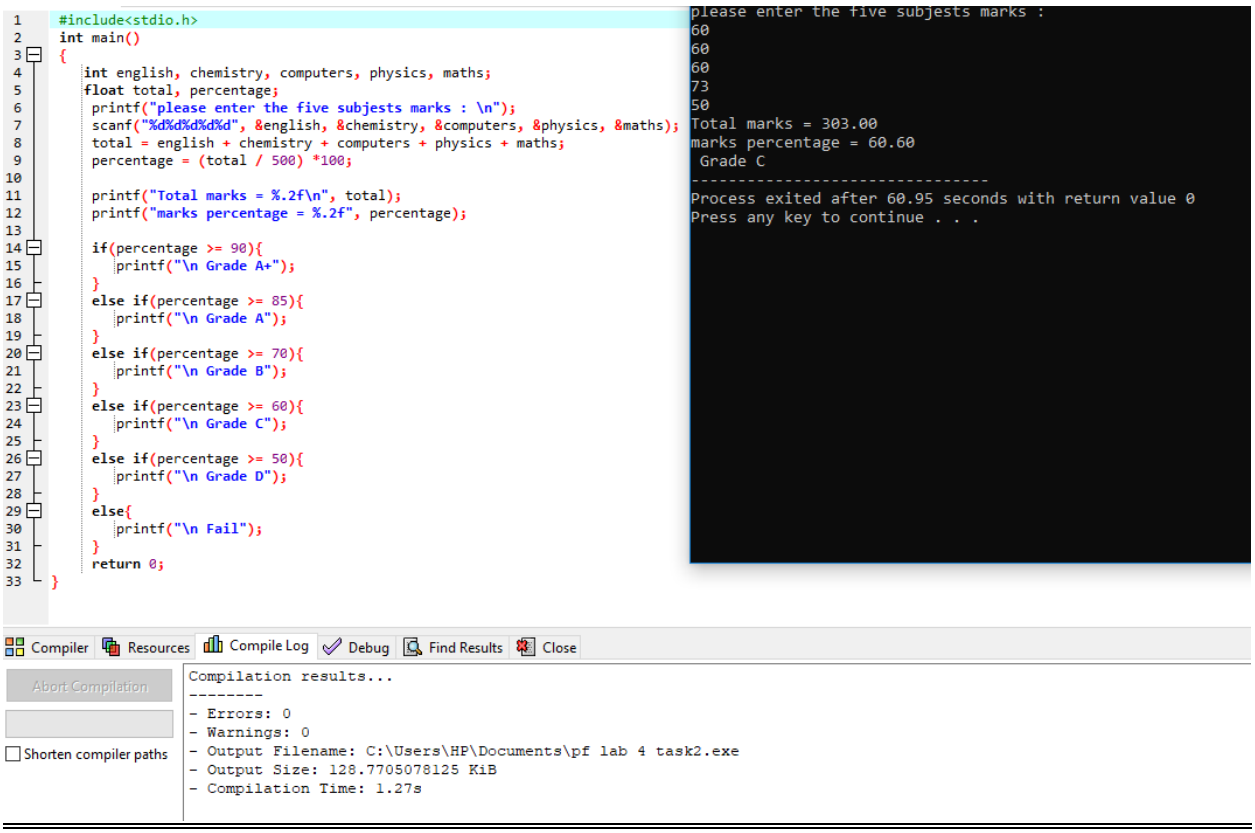
Compiler | Resources | Compile Log | Debug | Find Results | Close

Abort Compilation

Shorten compiler paths

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\HP\Documents\pf lab 4 task2.exe
- Output Size: 128.7705078125 KiB
- Compilation Time: 1.27s
```

When taking C Grade,



```c
#include<stdio.h>
int main()
{
   int english, chemistry, computers, physics, maths;
   float total, percentage;
    printf("please enter the five subjests marks : \n");
    scanf("%d%d%d%d%d", &english, &chemistry, &computers, &physics, &maths);
    total = english + chemistry + computers + physics + maths;
    percentage = (total / 500) *100;

    printf("Total marks = %.2f\n", total);
    printf("marks percentage = %.2f", percentage);

    if(percentage >= 90){
       printf("\n Grade A+");
    }
    else if(percentage >= 85){
       printf("\n Grade A");
    }
    else if(percentage >= 70){
       printf("\n Grade B");
    }
    else if(percentage >= 60){
       printf("\n Grade C");
    }
    else if(percentage >= 50){
       printf("\n Grade D");
    }
    else{
       printf("\n Fail");
    }
    return 0;
}
```

```
please enter the five subjests marks :
60
60
60
73
50
Total marks = 303.00
marks percentage = 60.60
 Grade C
--------------------------------
Process exited after 60.95 seconds with return value 0
Press any key to continue . . .
```

Compiler | Resources | Compile Log | Debug | Find Results | Close

Abort Compilation

Shorten compiler paths

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\HP\Documents\pf lab 4 task2.exe
- Output Size: 128.7705078125 KiB
- Compilation Time: 1.27s
```

When taking D Grade,

```c
#include<stdio.h>
int main()
{
    int english, chemistry, computers, physics, maths;
    float total, percentage;
     printf("please enter the five subjests marks : \n");
     scanf("%d%d%d%d%d", &english, &chemistry, &computers, &physics, &maths);
     total = english + chemistry + computers + physics + maths;
     percentage = (total / 500) *100;

     printf("Total marks = %.2f\n", total);
     printf("marks percentage = %.2f", percentage);

     if(percentage >= 90){
        printf("\n Grade A+");
     }
     else if(percentage >= 85){
        printf("\n Grade A");
     }
     else if(percentage >= 70){
        printf("\n Grade B");
     }
     else if(percentage >= 60){
        printf("\n Grade C");
     }
     else if(percentage >= 50){
        printf("\n Grade D");
     }
     else{
        printf("\n Fail");
     }
     return 0;
}
```

```
please enter the five subjests marks :
52
55
58
52
53
Total marks = 270.00
marks percentage = 54.00
 Grade D
--------------------------------
Process exited after 72.13 seconds with return value 0
Press any key to continue . . .
```

Compiler | Resources | Compile Log | Debug | Find Results | Close

Abort Compilation

Shorten compiler paths

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\HP\Documents\pf lab 4 task2.exe
- Output Size: 128.7705078125 KiB
- Compilation Time: 1.27s
```

And last one when student fail:-

```c
#include<stdio.h>
int main()
{
   int english, chemistry, computers, physics, maths;
   float total, percentage;
    printf("please enter the five subjests marks : \n");
    scanf("%d%d%d%d%d", &english, &chemistry, &computers, &physics, &maths);
    total = english + chemistry + computers + physics + maths;
    percentage = (total / 500) *100;

    printf("Total marks = %.2f\n", total);
    printf("marks percentage = %.2f", percentage);

    if(percentage >= 90){
       printf("\n Grade A+");
    }
    else if(percentage >= 85){
       printf("\n Grade A");
    }
    else if(percentage >= 70){
       printf("\n Grade B");
    }
    else if(percentage >= 60){
       printf("\n Grade C");
    }
    else if(percentage >= 50){
       printf("\n Grade D");
    }
    else{
       printf("\n Fail");
    }
    return 0;
}
```

```
please enter the five subjests marks :
8
19
17
21
22
Total marks = 87.00
marks percentage = 17.40
 Fail
--------------------------------
Process exited after 30.54 seconds with return value 0
Press any key to continue . . .
```

Compiler | Resources | Compile Log | Debug | Find Results | Close

Abort Compilation

Shorten compiler paths

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\HP\Documents\pf lab 4 task2.exe
- Output Size: 128.7705078125 KiB
- Compilation Time: 1.27s
```