

| Assignment 4.1: Switch Case | |
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| Switch Case | |
| Course Code: CPE007 | Program: Computer Engineering |
| Course Title: Programming Logic and Design | Date Performed: 11/09/2025 |
| Section: CPE11S1 | Date Submitted: 11/09/2025 |
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| Output | |
| 1. Using switch statement Write a C++ program to input marks of five subjects Physics, Biology and Math. Calculate percentage and grade according to following: | |
| Percentage >= 90% : Grade A Percentage >= 80% : Grade B Percentage >= 70% : Grade C Percentage >= 60% : Grade D Percentage >= 40% : Grade E Percentage < 40% : Grade F | |
| <i>The output should be similar to the one below:</i> | |
| Physics : 80 Biology : 80 Math : 80 | |
| <i>Average is : _____</i> | |
| <i>Grade Level: _____</i> | |
| CODE: | |
| <pre>#include <iostream> int main () { float physicsMark; float bioMark; float mathMark; float markTotal; float percentage; char grade; std::cout<<"Enter Mark For Physics: "; std::cin>>physicsMark; std::cout<<"Enter Mark For Biology: "; std::cin>>bioMark; std::cout<<"Enter Mark For Math: "; std::cin>>mathMark; markTotal = physicsMark + bioMark + mathMark; percentage = (markTotal/300.00) * 100.00;</pre> | |

```
switch (static_cast<int>(percentage)/10){
    case 10:
    case 9:
        grade = 'A';
        break;
    case 8:
        grade = 'B';
        break;
    case 7:
        grade = 'C';
        break;
    case 6:
        grade = 'D';
        break;
    case 5:
    case 4:
        grade = 'E';
        break;
    default:
        grade = 'F';
        break;
}

std::cout << "\n";
std::cout << "Physics Mark: " << static_cast<int>(physicsMark)<< std::endl;
std::cout << "Biology Mark: " << static_cast<int>(bioMark)<< std::endl;
std::cout << "Math Mark: " << static_cast<int>(mathMark)<< std::endl;
std::cout << " _____ " << std::endl;

std::cout << "Average is "<< percentage << "%" << std::endl;
std::cout << "Grade Level: " << grade << std::endl;

return 0;
}
```

RESULTS: GRADE A

The screenshot shows a dual-pane interface of a C++ development environment. On the left, the code editor displays `Untitled1.cpp` with the following content:

```
1 //include <iostream>
2
3 int main () {
4     float physicsMark;
5     float biologyMark;
6     float mathMark;
7     float marksTotal;
8     float percentage;
9     char grade;
10
11     std::cout << "Enter Mark For Physics: ";
12     std::cin >> physicsMark;
13
14     std::cout << "Enter Mark For Biology: ";
15     std::cin >> biologyMark;
16
17     std::cout << "Enter Mark For Math: ";
18     std::cin >> mathMark;
19
20     marksTotal = physicsMark + biologyMark + mathMark;
21     percentage = (marksTotal/300.00) * 100.00;
22
23     switch ((marksTotal/percentage)/10){
24         case 10:
25             grade = 'A';
26         case 9:
27             grade = 'B';
28         case 8:
29             grade = 'C';
30         case 7:
31             grade = 'D';
32         case 6:
33             grade = 'E';
34         default:
35             grade = 'F';
36     }
37
38     std::cout << "\n";
39     std::cout << "Physics Mark: " << static_cast<int>(physicsMark)<< std::endl;
40     std::cout << "Biology Mark: " << static_cast<int>(biologyMark)<< std::endl;
41     std::cout << "Math Mark: " << static_cast<int>(mathMark)<< std::endl;
42
43     std::cout << "Average is " << percentage << "%<< std::endl;
44     std::cout << "Grade Level: " << grade << std::endl;
45
46     return 0;
47 }
48
49
50
51
52
53
54
55
56
57
58
59
```

On the right, the terminal window shows the execution of the program with inputs 100, 99, and 98, resulting in an average of 99% and a grade level of A.

GRADE B

The screenshot shows a dual-pane interface of a C++ development environment. On the left, the code editor displays `Untitled1.cpp` with the following content:

```
1 //include <iostream>
2
3 int main () {
4     float physicsMark;
5     float biologyMark;
6     float mathMark;
7     float marksTotal;
8     float percentage;
9     char grade;
10
11     std::cout << "Enter Mark For Physics: ";
12     std::cin >> physicsMark;
13
14     std::cout << "Enter Mark For Biology: ";
15     std::cin >> biologyMark;
16
17     std::cout << "Enter Mark For Math: ";
18     std::cin >> mathMark;
19
20     marksTotal = physicsMark + biologyMark + mathMark;
21     percentage = (marksTotal/300.00) * 100.00;
22
23     switch (static_cast<int>(percentage)/10){
24         case 10:
25             grade = 'A';
26         case 9:
27             grade = 'B';
28         case 8:
29             grade = 'C';
30         case 7:
31             grade = 'D';
32         case 6:
33             grade = 'E';
34         default:
35             grade = 'F';
36     }
37
38     std::cout << "\n";
39     std::cout << "Physics Mark: " << static_cast<int>(physicsMark)<< std::endl;
40     std::cout << "Biology Mark: " << static_cast<int>(biologyMark)<< std::endl;
41     std::cout << "Math Mark: " << static_cast<int>(mathMark)<< std::endl;
42
43     std::cout << "Average is " << percentage << "%<< std::endl;
44     std::cout << "Grade Level: " << grade << std::endl;
45
46     return 0;
47 }
48
49
50
51
52
53
54
55
56
57
58
59
```

On the right, the terminal window shows the execution of the program with inputs 90, 89, and 88, resulting in an average of 89% and a grade level of B.

GRADE C

```
1 #include <iostream>
2
3 int main () {
4
5     float physMark;
6     float bioMark;
7     float mathMark;
8     float markTotal;
9     float percentage;
10    char grade;
11
12    std::cout<<"Enter Mark For Physics: ";
13    std::cin>>physMark;
14
15    std::cout<<"Enter Mark For Biology: ";
16    std::cin>>bioMark;
17
18    std::cout<<"Enter Mark For Math: ";
19    std::cin>>mathMark;
20
21    markTotal = physMark + bioMark + mathMark;
22    percentage = (markTotal/300.0) * 100.0;
23
24    switch (static_cast<int>(percentage)/10){
25        case 10:
26            grade = "A";
27        case 9:
28            grade = "B";
29        case 8:
30            grade = "C";
31        case 7:
32            grade = "D";
33        case 6:
34            grade = "E";
35        case 5:
36            grade = "F";
37        default:
38            grade = "F";
39    }
40
41    break;
42
43    default:
44        grade = "F";
45    }
46
47
48    std::cout << "\n";
49    std::cout << "Physics Mark: " << static_cast<int>(physMark)<< std::endl;
50    std::cout << "Biology Mark: " << static_cast<int>(bioMark)<< std::endl;
51    std::cout << "Math Mark: " << static_cast<int>(mathMark)<< std::endl;
52    std::cout << "Average is: " << percentage << std::endl;
53    std::cout << "Grade level: " << grade << std::endl;
54
55    return 0;
56
57
58 }
```

Physics Mark: 80
Biology Mark: 79
Math Mark: 78

Average is 79%
Grade Level: C

Process exited after 21.2 seconds with return value 0
Press any key to continue . . .

GRADE D

```
1 #include <iostream>
2
3 int main () {
4
5     float physMark;
6     float bioMark;
7     float mathMark;
8     float markTotal;
9     float percentage;
10    char grade;
11
12    std::cout<<"Enter Mark For Physics: ";
13    std::cin>>physMark;
14
15    std::cout<<"Enter Mark For Biology: ";
16    std::cin>>bioMark;
17
18    std::cout<<"Enter Mark For Math: ";
19    std::cin>>mathMark;
20
21    markTotal = physMark + bioMark + mathMark;
22    percentage = (markTotal/300.0) * 100.0;
23
24    switch (static_cast<int>(percentage)/10){
25        case 10:
26            grade = "A";
27        case 9:
28            grade = "B";
29        case 8:
30            grade = "C";
31        case 7:
32            grade = "D";
33        case 6:
34            grade = "E";
35        case 5:
36            grade = "F";
37        default:
38            grade = "F";
39    }
40
41    break;
42
43    default:
44        grade = "F";
45    }
46
47
48    std::cout << "\n";
49    std::cout << "Physics Mark: " << static_cast<int>(physMark)<< std::endl;
50    std::cout << "Biology Mark: " << static_cast<int>(bioMark)<< std::endl;
51    std::cout << "Math Mark: " << static_cast<int>(mathMark)<< std::endl;
52    std::cout << "Average is: " << percentage << std::endl;
53    std::cout << "Grade level: " << grade << std::endl;
54
55    return 0;
56
57
58 }
```

Physics Mark: 70
Biology Mark: 69
Math Mark: 68

Average is 69%
Grade Level: D

Process exited after 22.06 seconds with return value 0
Press any key to continue . . .

GRADE E

```
1 #include <iostream>
2
3 int main () {
4
5     float physicsMark;
6     float bioMark;
7     float mathMark;
8     float markTotal;
9     float percentage;
10    char grade;
11
12    std::cout<<"Enter Mark For Physics: ";
13    std::cin>>physicsMark;
14
15    std::cout<<"Enter Mark For Biology: ";
16    std::cin>>bioMark;
17
18    std::cout<<"Enter Mark For Math: ";
19    std::cin>>mathMark;
20
21    markTotal = physicsMark + bioMark + mathMark;
22    percentage = (markTotal/300.0) * 100.0;
23
24    switch (static_cast<int>(percentage)/10){
25        case 10:
26            grade = "A";
27        break;
28        case 9:
29            grade = "B";
30        break;
31        case 8:
32            grade = "C";
33        break;
34        case 7:
35            grade = "D";
36        break;
37        case 6:
38            grade = "E";
39        break;
40        case 5:
41            grade = "F";
42        break;
43        default:
44            grade = "F";
45        break;
46    }
47
48    std::cout << "\n";
49    std::cout << "Physics Mark: " << static_cast<int>(physicsMark)<< std::endl;
50    std::cout << "Biology Mark: " << static_cast<int>(bioMark)<< std::endl;
51    std::cout << "Math Mark: " << static_cast<int>(mathMark)<< std::endl;
52    std::cout << "-----<< std::endl;
53
54    std::cout<< "Average is: "<< percentage << std::endl;
55    std::cout<< "Grade level: "<< grade << std::endl;
56
57    return 0;
58 }
```

Line: 59 Col: 1 Sel: 0 Lines: 59 Length: 1195 Insert Done parsing in 0.031 seconds

C:\Users\Red\OneDrive\Desktop\Ralph School\Logic Desgin\Switch Case Code\Untitled1.cpp - [Executing] - De... File Edit Search View Project Execute Tools AStyle Window Help

Project Classes Debug Untitled1.cpp

Enter Mark For Physics: 60
Enter Mark For Biology: 59
Enter Mark For Math: 58

Physics Mark: 60
Biology Mark: 59
Math Mark: 58

Average is 59%
Grade Level: E

Process exited after 32.35 seconds with return value 0
Press any key to continue . . .

GRADE F

```
1 #include <iostream>
2
3 int main () {
4
5     float physicsMark;
6     float bioMark;
7     float mathMark;
8     float markTotal;
9     float percentage;
10    char grade;
11
12    std::cout<<"Enter Mark For Physics: ";
13    std::cin>>physicsMark;
14
15    std::cout<<"Enter Mark For Biology: ";
16    std::cin>>bioMark;
17
18    std::cout<<"Enter Mark For Math: ";
19    std::cin>>mathMark;
20
21    markTotal = physicsMark + bioMark + mathMark;
22    percentage = (markTotal/300.0) * 100.0;
23
24    switch (static_cast<int>(percentage)/10){
25        case 10:
26            grade = "A";
27        break;
28        case 9:
29            grade = "B";
30        break;
31        case 8:
32            grade = "C";
33        break;
34        case 7:
35            grade = "D";
36        break;
37        case 6:
38            grade = "E";
39        break;
40        case 5:
41            grade = "F";
42        break;
43        default:
44            grade = "F";
45        break;
46    }
47
48    std::cout << "\n";
49    std::cout << "Physics Mark: " << static_cast<int>(physicsMark)<< std::endl;
50    std::cout << "Biology Mark: " << static_cast<int>(bioMark)<< std::endl;
51    std::cout << "Math Mark: " << static_cast<int>(mathMark)<< std::endl;
52    std::cout << "-----<< std::endl;
53
54    std::cout<< "Average is: "<< percentage << std::endl;
55    std::cout<< "Grade level: "<< grade << std::endl;
56
57    return 0;
58 }
```

Line: 59 Col: 1 Sel: 0 Lines: 59 Length: 1195 Insert Done parsing in 0.031 seconds

C:\Users\Red\OneDrive\Desktop\Ralph School\Logic Desgin\Switch Case Code\Untitled1.cpp - [Executing] - De... File Edit Search View Project Execute Tools AStyle Window Help

Project Classes Debug Untitled1.cpp

Enter Mark For Physics: 40
Enter Mark For Biology: 39
Enter Mark For Math: 38

Physics Mark: 40
Biology Mark: 39
Math Mark: 38

Average is 39%
Grade Level: F

Process exited after 22.06 seconds with return value 0
Press any key to continue . . .

PSEUDO CODE:

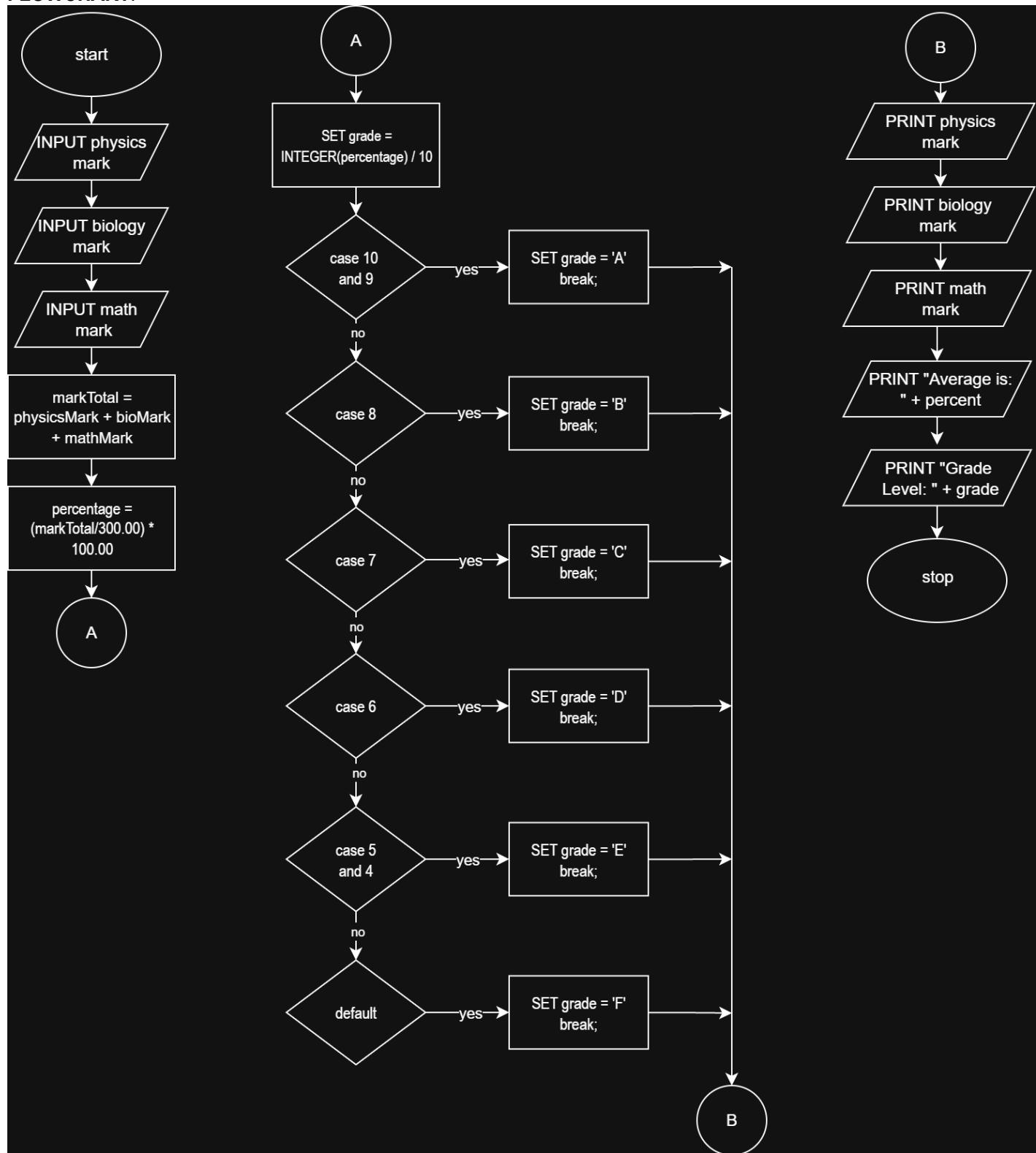
start

```
    INPUT physics mark
    INPUT biology mark
    INPUT math mark
    markTotal = physicsMark + bioMark + mathMark
    percentage = (markTotal/300.00) * 100.00
    SET grade = INTEGER(percentage) / 10
        CASE 10, 9:
            SET grade = 'A'
        CASE 8:
            SET grade = 'B'
        CASE 7:
            SET grade = 'C'
        CASE 6:
            SET grade = 'D'
        CASE 5, 4:
            SET grade = 'E'
        DEFAULT:
            SET grade = 'F'
```

```
PRINT physics
PRINT biology mark
PRINT math mark
PRINT "Average is" + percent
PRINT "Grade Level" + grade
```

stop

FLOWCHART:



Supplementary Activity

Conclusion

It took me a while to figure out how to implement the switch case so that it could choose either case 1, case 2, or everything else, but after a lot of trial and error, I managed to make it work at the end. I just had to think logically by

adding equations first so that it could pick a number for the cases. The flowchart was quite difficult for me because I was trying my best for it to make sense not just to me but to others as well.

This assignment was helpful; it made me realize that I could do more with switch cases than the simple examples I've seen online and in videos.