

(5-1) Selection Structures III in C

H&K Chapter 4

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Advantages of `switch` Statements (1)

- One issue with nested `if` statements is *readability*
 - The deeper the nesting, the more difficult it can be to figure out what's happening
- Another issue is that the programmer could mistakenly "mis-nest" `if` statements, as in the previous example found in lecture set 4-3
- In cases in which the nesting is based on the value of a single variable, a `switch` statement may be a better alternative
- Offer the potential for faster execution through the program



Advantages of switch Statements (2)

- Easier to debug
- Understandability
- Maintainability



switch Statements Example (1)

- Let's revisit the following scenario:

A high school baseball team awards merit points to players based on their offensive performance *and* the class standing ('f' = freshman, 'o' = sophomore, 'j' = junior, and 's' = senior). In particular, freshmen and sophomores earn an extra point for home runs, whereas juniors and seniors do not earn any points for singles. Write a C if-statement that, given an at-bat character and a class standing character, properly awards points.



switch Statements Example (5)

- We can write this more clearly as a switch statement with embedded if statements :

```
...
switch (at bat) {
    case 's': /* single */
        if (class_standing == 'f') || (class_standing == 'o')
        {
            points = 1;
        }
        break;
    case 'd': /* double */
        points = 2;
        break;
    case 't': /* triple */
        points = 3;
        break;
    case 'h': /* home run */
        if ((class_standing == 'f') || (class_standing == 'o'))
        {points = 5;}
        else {points = 4;}
        break;
    case 'o':
        points = 0;
        break;
    default: /* Anything but 's','d','t','h' */
        printf("Unrecognized at-bat code.");
        break;
}
```



Next Time...

- Repetition in C
 - Executing statements while a condition is true
 - Can eliminate redundant sequential statements



References

- J.R. Hanly & E.B. Koffman, *Problem Solving and Program Design in C (8th Ed.)*, Addison-Wesley, 2016.
- P.J. Deitel & H.M. Deitel, *C How to Program (7th Ed.)*, Pearson Education , Inc., 2013.



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