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# `switch` Selection Structure

## Section 4.15

# Switch Statements

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- Another form of selection statement
- Similar to if's
- Useful for lots of alternatives

# Example

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```
char choice;
cout << "Enter A, B, or C: ";
cin >> choice;
switch (choice)
{
    case 'A': cout << "You entered A" << endl;
              break;
    case 'B': cout << "You entered B" << endl;
              break;
    case 'C': cout << "You entered C" << endl;
              break;
    default:  cout << "You did not enter A, B, or C!" << endl;
}

```

# Form

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```
switch (selector)
{
    case label1:  statements1;
                  break;
    case label2:  statements2;
                  break;
    ...
    case labeln:  statementsn;
                  break;
    default:     statements;
}

```

# Important!

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- Selector must be a constant integral expression
- Each possible value is a separate case
- break stops statements for case, otherwise continue with statements for next case

# What happens if no break?

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```
int watts;
cout << "Enter the number of watts: ";
cin >> watts;

switch (watts)
{
    case 25: life = 2500;
            break;

    case 40:
    case 60: life = 1000;
            break;

    case 75:
    case 100: life = 750;
            break;

    default: life = 0;
}
cout << "The life of your light bulb is: " << life << endl;
```

# What is the Output?

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```
switch (color)
{
    case 'R' :
    case 'r' : cout << "red" << endl;
    case 'B' :
    case 'b' : cout << "blue" << endl;
    case 'Y' :
    case 'y' : cout << "yellow" << endl;
}
```

What happens when color is 'r'? 'B'? 'Y'? 'K'?

# Example

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```
int x, y;
cout << "Enter two numbers: ";
cin >> x >> y;
switch (x > y)
{
    case 1: cout << "x greater\n";
            break;
    case 0: cout << "y greater or equal\n";
            break;
}
```

Write this as an if statement.



# Questions

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- Can you write any switch statement as an if?  
Why or why not?
  
- Can you write any if statement as a switch?  
Why or why not?

# Examples

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- Write an if statement that prints out the level of schooling based on a grade level. If the input is 0, then output none. (1 through 6, elementary; 7 through 8, middle school; 9 through 12, high school; > 12, college)
  
- Write a switch statement to do the same