CS 111
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Decision making

Programs can making decision

Ex:
- Check whether username matches password
- Display AM or PM base on time
- If the age is 67 or above, the person can retire.

The program perform an action only to certain condition.
If Statement Logic Flow:

Start statement

Condition
(Test Expression)

True

Statement
(Body of if)

False

Rest statement
If Statement Model

if ( condition ){

    /* body of if
    statement do something here
    */

}

Ex: Print a message if the input is negative.
int age;
cout << "Please enter your age: ";
cin >> age;
if (age < 0)
{
    cout << "Hmm... Unlikely.\n";
}
cout << "Good bye!" << endl;
If Statement Logic Flow

```
if (age < 0)
{
    cout << "Hmm... Unlikely.\n";
}
```

```
age < 0

True

False

cout << "Hmm... Unlikely.\n";

(exit)
```
Comparison

<table>
<thead>
<tr>
<th>Comparing</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is X equal to Y?</td>
<td>==</td>
</tr>
<tr>
<td>Is X not equal to Y?</td>
<td>!=</td>
</tr>
<tr>
<td>Is X less than Y?</td>
<td>&lt;</td>
</tr>
<tr>
<td>Is X less than or equal to Y?</td>
<td>&lt;=</td>
</tr>
<tr>
<td>Is X greater than Y?</td>
<td>&gt;</td>
</tr>
<tr>
<td>Is X greater than or equal to Y?</td>
<td>&gt;=</td>
</tr>
</tbody>
</table>

Comparing two value of the same data type. Give either a true or false (boolean value)
If Statement Logic Flow

/* Print a message only if input is odd*/

(standard header, declare variable, print message, read in value)

(is number odd)

True

False

(print message)

(standard footer)
/* Print a message only if input is odd*/
#include <iostream>
using namespace std;
int main(){
    //declare variables
    int number;

    cout << "Please enter an odd number: ";
cin >> number;

    if (number % 2 == 1){
        cout << "Good Job.\n";
    }
    return 0;
}
If statement

- All statements inside block {} is called compound statement, and all is executed if the condition is true.

- If only one instruction inside block, {} can be omitted.

Ex:
if (number % 2 == 1)
{
    cout <<number << " is odd.\n";
}
Is same as:
if (number % 2 == 1)
    cout <<number << " is odd.\n";