For Loops

Section 5.6

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for loops (5.6)

- Just like a while loop, but more concise!

```
//  initialize    test        update
for (int count = 0; count < 5; count++)
  {
    cout << count << endl;
  }
```

For vs While

This for loop

```
for (int count = 1; count <= 9; count += 3)
{
  cout << count << endl;
}
```

is equivalent to what **while** loop?

Example

- Write a **for** loop that outputs odd integers less than 10 and greater than 0

Problem

- Write code that will print the sum of the odd integers between 1 and 50 inclusive.

- Do this with a for loop

- Do this with a while loop

Practice

- Write a program that computes the factorial of a number. The factorial of a number is given by the formula below. The user will input a value for N.
- **N! = N * (N-1) * (N-2) * … * 2 * 1**
  - Where 0! = 1, 1! = 1 , 2! = 2, 3! = 6, …

Localized Declarations

```
for (int i = 0; i < 10; i++)
{
  cout << i << endl;
}
cout << i << endl; // This will cause an error
```

• `i` is declared ONLY in the loop

Potential Pitfalls

• What is the output of the following loop

```
int count;
for (count = 0; count < 5; count++)
{
   cout << count << endl;
   count++;
}
```

Problem

• Write a program that allows the user to enter 20 integers, you should then print out the following:
  o The sum of all integers inputted
  o The average of all integers inputted
  o The largest integer of all integers inputted