



CS150 Intro to CS I

Fall 2012

Chapter 5

Loops & Files

- Reading: pp. 262-264 (Section 5.10)
- Good Problems to Work: p. 297 [18]

Nested Loops

- Quick Loop Review
- We have three types of loops:
 1. while
 2. for
 3. do-while
- What is each good for?

Nested Loops

- What is the output?

```
for (int i = 0; i < 3; i++)
{
    // how many times will this run?
    cout << i << ": ";

    for (int j = 0; j < 2; j++)
    {
        // how many times will this run?
        cout << "*";
    }
    cout << endl;
}
```

Practice

- What is the output?

```
for (int i = 1; i < 4; i++)
{
    cout << i << ": ";

    for (int j = 0; j < i; j++)
    {
        cout << "*";
    }
    cout << endl;
}
```

Practice

- Write C++ statements that will read in an integer from the user, n , and produce the following output:

1

22

333

4444

...

nnnnnnnnnn

Practice

- Consider the following program segment:

```
cout << setw(3) << "i" << setw(3) << "j" << endl;

for (int i = 0; i <= 3; i += 2)
{
    for (int j = i; j <= 3; j++)
    {
        cout << setw(3) << i << setw(3) << j << endl;
    }
}
```

1. What is the output?
2. Rewrite the above nested loop as a nested while loop.

Practice

- Write a complete C++ program that allows the user the ability to input a number of students in a class and the number of exam scores for each student.
 1. Output each student's average
 2. Output the student with the highest average and their average