CS115 Week 12
Do-While, For Loops, Nested Loops

Do Statement
- Is a looping control structure in which the loop condition is tested after executing the body of the loop

```
DoStatement
dostatement
while(Condition);
```

Loop body can be a single statement or a block

Do vs. While
- POSTTEST loop (exit-condition)
- The loop condition is tested after executing the loop body
- Loop body is always executed at least once

- PRETEST loop (entry-condition)
- The loop condition is tested before executing the loop body
- Loop body may not be executed at all

“for” statement - Designed for Count-Controlled Loops

SYNTAX
```
for(initialization; test expression; update)
{
0 or more statements to repeat
}
```

A Count-Controlled For Loop
```
// Calculating compound interest

double amount;
double principal = 1000.0;
double rate = 0.07;
System.out.println("Year Amount");
for(int year = 1; year <= 10; year++)
{
    amount = principal * Math.pow(1.0 + rate, year);
    System.out.println(year + " 	" + amount);
}
```

Nested loops
- Some problems require iteration structures to be nested
- Examples:
  - Process data in rows and columns of a table, outer loop is for one row at a time, inner loop is for each column in the current row
  - Outer loop is to allow the user to “play again” or “re-enter data”, inner loop is to do some iterative processing for each outer
Pattern of a nested loop
initialize outer loop
while ( outer loop condition )
{
   . . .
   initialize inner loop
   while ( inner loop condition )
   {
      inner loop processing and update
   }
   . . .
}