

CSCI 1370

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The point of these exercises is to allow you to evaluate whether you have learned the material from the past week, and to direct you in additional studying outside of class. These are exactly the types of questions that will show up on your final.

My advice is to figure it out on paper, using your book or other resources, and then verify your answer by running the code. If you really want to learn the material, try variations and make sure you understand why the behavior changes the way it does.

Exercise: conditional loops

1. How many times does the following loop execute? What is the value of the variable *i* after the loop is done?

```
int i = 1;
while( i < 10 )
{
    i = i + 2;
}
```

Answer: 5 times, with *i* being 1, 3, 5, 7 and 9. When *i* is 11, the condition fails and the loop terminates.

2. What is the output of the following C++ code?

```
int count = 1;
int y = 100;
while( count < 100 )
{
    y = y - 1;
    count++;
}
cout << "y = " << y << " and count = " << count << endl;
```

Answer: *y* = 1 and count = 100

3. Given a double variable *n*, write C++ statements to ask the user to enter a real number repeatedly until the user enters a number that is greater than *n*. Store the user number in a double variable *number*.

Answer: Here are a couple ways, there are others:

```
double number = -1;
while( number <= n )
{
```

```

    cout << "Please enter a number greater than " << n << ": ";
    cin >> number;
}

```

or:

```

double number = 0;
do
{
    cout << "Please enter a number greater than " << n << ": ";
    cin >> number;
} while( number <= n );

```

or:

```

double number = -1;
while( true )
{
    cout << "Please enter a number greater than " << n << ": ";
    cin >> number;

    if( number > n )
    {
        break;
    }
}

```

4. What is the output of the following nested loop?

```

int i, j, x = 8;
for( i = 3; i < x; i += 2 )
{
    for( j = i; j >= 2; j-- )
    {
        cout << "+";
    }
    cout << endl;
}

```

Answer:

```

++
++++
++++++

```

5. Given an integer variable *limit*, write C++ statements that use a for loop to add together all the odd numbers that are greater or equal to 7 and less than or equal to *limit*. Store that sum in an integer variable *sum*.

Answer:

```
int i, sum;
```

```
sum = 0;
```

```
for( i = 7; i <= limit; i = i + 2 )  
{  
    sum = sum + i;  
}
```