Supplemental Instruction Handout

Below is a series of questions regarding functions in c++. Each question is worth so many points as detailed in the brackets to the left of the question.

Build A Thing

NOTE: To indent, use "CTRL" + "]". If one question is confusing, it is better to quickly move on due to time. I purposefully implemented TOO many questions so that you can move around.

[1 small block] What do you press to use auto-fill in visual studio?

Tab (once box is presented)

[1 small block] Do all if statements require a trailing else statement?

Nope!

[3 small blocks] Do the expressions in a switch statement have to be a specific value? If so, what value do they have to be?

Yes. They have to be integer values. They can be an int or a char.

[1 large block] Correct the following if statement.

```
if (numNeighbors >= 3 || numNeighbors = 4)
{
   ++numNeighbors;
   cout << "You are dead!" << endl;
}
else
   --numNeighbors;
```

[1 large block] Predict what this poorly indented programming segment will output.

```
int number = 4;
double alpha = -1.0;
if (number > 0)
      if (alpha > 0)
            cout << "Here I am!" << endl;
else
      cout << "No, I'm here!" << endl;
cout << "No, actually, I'm here!" << endl;
```

```
No, I'm here!
No, actually, I'm here!
```

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[2 large blocks] Write a statement that executes the following logic: if the variable sales is greater than 50,000, then assign 0.25 to the commissionRate variable, and assign 250 to the bonus variable.

```
if (sales > 50000)
{
   commissionRate = 0.25;
   bonus = 250;
}
```

[2 large blocks] Write an if/else statement that assigns 0.10 to commissionRate unless sales is greater than or equal to 50000.00, in which case it assigns 0.20 to commissionRate .

```
if (sales >= 50000.00)
   commissionRate = 0.20;
else
   commissionRate = 0.10;
```

[2 large blocks] Using a variable sales and a global constant QUOTA_AMOUNT, write an if statement that signals a flag if a sales quota is met. Make sure to allow for the possibility of the quota not being met.

```
if (sales >= QUOTA_AMOUNT)
   salesQuotaMet = true;
else
   salesQuotaMet = false;
```

[2 large blocks] Write an if statement that prints the message “The number is valid” if the variable speed is within the range 0 through 200.

```
if (speed >= 0 && speed <= 200)
   cout << "The number is valid.";
```

[2 large blocks] Write an if statement that prints the message “The number is not valid” if the variable speed is outside the range 0 through 200.

```
if (speed < 0 || speed > 200)
   cout << "The number is not valid.";
```

[4 large blocks] Rewrite the following program. Use a switch statement instead of the if/else if statement.

```
#include <iostream>
using namespace std;
int main()
```

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```
{
      int selection;
      cout << "Which formula do you want to see?\n\n";
      cout << "1. Area of a circle\n";
      cout << "2. Area of a rectangle\n";
      cout << "3. Area of a cylinder\n"
      cout << "4. None of them!\n";
      cin >> selection;

      if (selection == 1)
            cout << "Pi times radius squared\n";
      else if (selection == 2)
            cout << "Length times width\n";
      else if (selection == 3)
            cout << "Pi times radius squared times height\n";
      else if (selection == 4)
            cout << "Well okay then, good bye!\n";
      else
            cout << "Not good with numbers, eh?\n";
      return 0;
}
```

```
#include <iostream>
using namespace std;
int main()
{
      int selection;
      cout << "Which formula do you want to see?\n\n";
      cout << "1. Area of a circle\n";
      cout << "2. Area of a rectangle\n";
      cout << "3. Area of a cylinder\n"
      cout << "4. None of them!\n";
      cin >> selection;

      switch (selection)
      {
            case 1 : cout << "Pi times radius squared\n";
                     break;
            case 2 : cout << "Length times width\n";
                     break;
            case 3 : cout << "Pi times radius squared times height\n";
```

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```
                    break;
            case 4 : cout << "Well okay then, good bye!\n";
                    break;
            default : cout << "Not good with numbers, eh?\n";
      }

      return 0;
}
```

[5 large blocks] Write a function named highestNum that takes in two integers and returns the highest integer. Make sure to account for if the numbers are equal.

```
int highestNum(int num1, int num2)
{
      if (num1 > num2)
            return num1;
      else if (num2 > num1)
            return num2;
      else //num1 & num2 are equal
            return num1;
}
```

[5 large blocks] Write a prototype for the previous function.

```
int highestNum(int num1, int num2);
```