CSCI 1300 CS1: Starting Computing

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Recitation 4 - week of September 13th, 2021

# Conditionals

Last week in lecture we learned about using conditional statements: if, if-else, nested if-else statements, and the switch statement. This week in lecture we’re continuing to explore statements that control the flow of your program.

# Exercises

1. Spot the errors. Work through these exercises interactively via CodeRunner.
2. #include iostream

using namespace std;

int main()

{   
 int x = 0, y;

if (x > 0)

{

y = 1;

}

else

{

y = -1;

}

cout << y << endl;

return 0;

}

1. #include <iostream>

using namespace std;

int main()

{

int x = 0;

int y = 0;

if (x = 1)

{

y++;

}

cout << y << endl;

return 0;

}

1. #include <iostream>

#include <cmath>

using namespace std;

int main()

{

int x = 0;

int y = 0;

if (1 + x > pow(x, sqrt(4))

{

y = x + y;

}

cout << y << endl;

return 0;

}

#include <iostream>

#include <cmath>

using namespace std;

int main()

{

int x = 0;

int y = 0;

if (x > pow(y, sqrt(4))) {

y = x + y;

}

else (x <= pow(y, sqrt(4))) {

y = x - y;

}

else {

y = 0;

}

cout << y << endl;

return 0;

}

1. **Music companion app**

An exercise app will play different music depending on how fast you are running. The program will ask first how fast you’re running to determine what kind of music to play:

* If you’re running 7 miles per hour or faster, the app will play hip-hop music.
* If you’re not running 7 miles per hour or faster, but you are running 5 miles per hour or faster, the app will play pop music.
* If you’re running slower than 5 miles per hour, the app will play smooth jazz.

Example output (**bold** is user input)

|  |
| --- |
| How fast are you running (in mph):  **6**  Enjoy some pop music! |

**2a.** Write an algorithm in pseudocode for the program above.

|  |
| --- |
|  |

**2b.** Let’s draw a flowchart of the solution

|  |
| --- |
| **Flowchart:** |

**2c.** Imagine how a sample run of your program would look like. Think about at least two examples

|  |
| --- |
| **Sample Run 1:** |

|  |
| --- |
| **Sample Run 2:** |

|  |
| --- |
| **Sample Run 3:** |

**2d.** Identify the values that you must test for. We call these values “**boundary conditions**”.

|  |
| --- |
| **Answer:** |

**2e.** Implement your solution in C++ using VS Code. Revise your solution, save, compile and run it again. Are you getting the expected result and output? Keep revising until you do. Make you sure you test for the values used in your sample runs, and for the boundary conditions.

1. Menu example: Using **switch** case to handle user choice.

You are trying to implement an interactive menu-driven program to control a data science application. The menu has 4 options:

1. Load Data
2. Run Data
3. Save Data
4. Print Data

The user is asked to enter their menu option. Based on their choice, the program will display the chosen menu item.

Example output (**bold** is user input)

|  |
| --- |
| The options are:   1. Load Data 2. Run Data 3. Save Data 4. Print Data   Please choose one option  **1**  Loading Data ... |

**3a.** Write an algorithm in pseudocode for the program above.

|  |
| --- |
| **Pseudocode:** |

**3b.** Let’s draw a flowchart of the solution

|  |
| --- |
| **Flowchart:** |

**3c.** Imagine how a sample run of your program would look like. Think about at least 2 examples

|  |
| --- |
| **Sample Run 1:** |

|  |
| --- |
| **Sample Run 2:** |

|  |
| --- |
| **Sample Run 3:** |

**3d.** Implement your solution in C++ using VS Code. Revise your solution, save, compile and run it again. Are you getting the expected result and output? Keep revising until you do.