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Reflection

In this lab, we were tasked with predicting how far a ski jumper would travel given the type of hill (normal vs. large) and the jumper’s speed, and then calculating their points based on how their distance compared to a par value. The goal was to apply decision-making using if statements and separate the logic for calculating the jumper's performance from the actual calculations. We were also expected to output appropriate messages depending on whether the jumper performed better or worse than par.

To tackle the problem, Cameron took the lead on developing the algorithm while I focused on writing the code. The algorithm calculated the time in the air based on the hill type and speed, and then determined the distance traveled by multiplying the speed by the time. From there, it computed points depending on whether the jumper’s distance was above, below, or equal to par. We used if statements to handle decision-making, ensuring the correct message was displayed based on their performance. In the coding process, I separated the decision logic from the calculations, which made it easier to debug and test.

The key concepts explored in this lab included using conditional statements for decision-making, separating logic and calculations for better code organization, and creating and testing various test cases to ensure the program handled all possible scenarios. We also practiced using external libraries (such as math) for calculations, which became essential for handling mathematical functions like square roots.

The results were mostly as expected, though we encountered a few bugs during the testing phase. We tested the code with a variety of inputs, including edge cases like extreme speeds, to ensure the program worked correctly in all situations. Our tests included checking if the jumper’s performance matched or exceeded par, as well as ensuring the correct messages were displayed for different points ranges. Testing a range of inputs helped us confirm that the program handled all cases as intended.

One challenge we encountered was with importing the math library correctly, which caused some initial confusion and bugs in our calculations. We also had to carefully debug the if statements, as some conditions were not met as expected. By reviewing our algorithm, we were able to resolve these issues. Following the first three rules of programming—understanding what the problem was, planning before coding, and testing as we went along—helped us manage these challenges. We made sure to plan the logic thoroughly before writing the code, and we tested each part individually, which allowed us to quickly identify and fix problems.

The key takeaway from this lab was the importance of separating decision-making logic from calculations, which made the debugging process more straightforward. I believe I learned the intended concepts, particularly regarding conditional statements and testing. Overall, working with Cameron was a great experience. Cameron’s attention to detail in the algorithm complemented my work in coding, and we collaborated effectively to overcome challenges like the math library import and bugs in the if conditions. We were able to support each other throughout the process, which led to a successful outcome for the lab.