Project 1

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Report

I created my program in C++. This program assumes that the three files provided are in the same directory as the source code. When the user executes the program, it asks the user to select one of the three prepared files, select a file of their own, or quit the program. When the user selects a valid file, it displays the current file contents and the current score. It then asks the user to select either the right or the left item. The AI then takes a turn and the score is updated and repeats till there are no more values left. The grand totals then are displayed at the end.

The program demonstrates a search algorithm that has an efficiency of $O(n^2)$. It utilizes a dynamic programing approach to offer an effective way to avoid recomputing each possible result. It follows the general algorithm of the below:

$$V_{i,j} = \max(\{C_i + \min(V_{i+1,j-1}, V_{i+2,j})\}, \{C_j + \min(V_{i,j-2}, V_{i+1,j-1})\})$$