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Programming Foundations I

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**Problem Statement:**

This program was designed to calculate certain statistics of football players based on user input and then to determine who had the most turnovers, highest yards per attempt, and most touchdowns. User input was in the form of mainly strings and integers. The program output the various statistics calculated as well as the winner in each of the three categories listed above. If-statements were used to make sure that certain statistics didn’t end up being negative or above 2.375.

**Design:**

First, the variables were declared and initialized in order to make testing easier. Then the program called for user input and echoed it out to make sure that the input was read correctly. After user input was collected, the statistics were calculated. The error handling was completed, and then the final quarterback rating was recalculated, since it used some of the other statistics in its calculation. The statistics were output to the command prompt. In order to find the person with the maximum number of turnovers, yards, and touchdowns, two if-statements were used for each. The program assumed the quarterback had the maximum of each, and the if-statements checked whether the wide receiver or running back were higher than the max, respectively. If a person did overcome the quarterback, then the max was reassigned to that person. No data structures or algorithms were needed in this program.

**Implementation:**

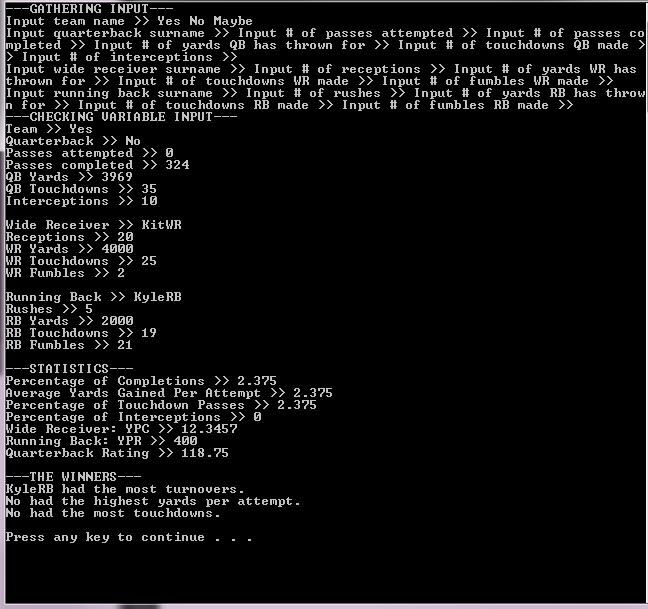
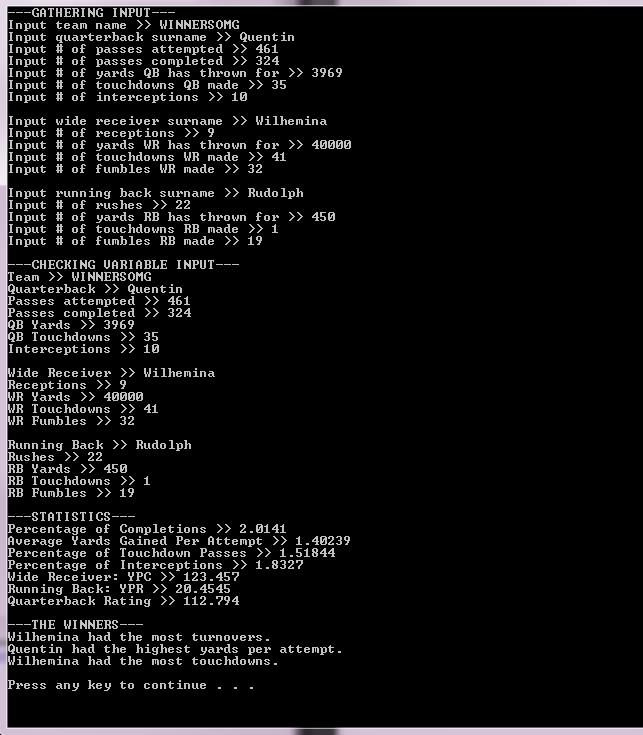
The implementation process was as follows: comments were added outlining the structure of the program, then from top to bottom everything was fleshed out. The base skeleton for this program was the homework 1 assignment. Extra user input was added as well as error handling for out-of-bounds statistics. The people with the most turnovers, yards, and touchdowns were calculated at the end. The program itself took about half an hour to complete, with half of that time being dedicated to finding an efficient way to calculate the person with the maximum of each of the three categories.

**Testing:**

The program was tested after adding the extra user input, after adding the error handling, and after finding the people with the most touchdowns, turnovers, etc.. Normal inputs included nonnegative integers and one-word names for the players and the team. After everything seemed to work fine with those test cases, test input consisted of negative numbers, decimals, and multiple zeros. Everything worked as expected.

**Conclusions:**

The program performed exactly as it was supposed to. The assignment took about half an hour to complete, excluding the report. In the future, I would like to keep fleshing out my programs with comments first, as that provided a very helpful outline when I was actually writing my program.

**Typescript:**