We Got Scrabble

New Mexico
Supercomputing Challenge
Final Report
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Executive Summary
And
Statement of Problem

The project that our group is working on is a study on the game of scrabble. This will hopefully give us the ultimate scrabble score. The reason that this is important is because it can change the game of scrabble for everyone. It will set a goal that any one could try to get to. Also, we will be able to see how the computer manipulates data. At first, we will use the computer to randomly generate letters, find the best possible word, and then find the best possible place for the word on a 6 by 6-sized tile board. Once we figure out a way to get the best score on the small board we will see if the program will work on the actual sized board. The program we will use will have a huge number of loops and arrays, due to the complexity and many variations within our project.

We are trying to find the highest possible score for the game of scrabble, and beat the current record high score of 805!

Description of Methods

The way we are going to find the ultimate score on scrabble with a series of loops. We are currently refining the programming for the loops. The loops and the computer will have to come up with a combination of letters, and decide if the combination of letters is a word. If it is a word then we will have another set of loops to decide where to put the word on the board. After it finds the best spot on the board for the word the computer will come up with a score the computer saves the word and continues looping the letters. The loops are going to work kind of like an odometer. The first loop is going to be like the tenth mile spot. It will have to cycle through all the letters before the next

letter on loop 2 can come up, then loop 2 will have to cycle through all the letters before the next letter on loop three can come up, and so on and so forth. When the loops are coming up with a word it has to check for a few things, first of which is if the combination of letters is a word, then it checks if any of the tiles have been used before, like if tile 3 comes up two times it moves on to the next loop. If the combination of letters is a word and it has no repeated tiles, the computer places the word on the board, calculates a score then saves the word. After the looping is done the computer selects the highest scoring word and places it on the board. When the computer is placing the word The computer has to place the word either horizontally or vertically and it has to connect to another letter, it also has to check if the word we place on the board makes any other words which will add on to the score. The language we are using currently is FORTRAN, but we might switch to visual basic. We don't have a full code right now but we are working on it. The next page shows a basic layout of the programming:

P1=? P2=? P3=? P4=? P5=? P6=? P7=?

```
For lp1 = T1 to T100   p1 = lp1
Check word
Check tile
Place word
Score
Save
        For lp2 = T1 to T100    p2 =lp2
                Check word
                Check tile
                Place word
                Save
              For lp3 = T1 to T100    p3 =lp3
                  Check word
                  Check tile
                  Place word
                  Score
                  Save
                      For lp4 = T1 to T100    p4 =lp4
                            Check word
                            Check tile
                            Place word
                            Score
                            Save
                               For lp5 = T1 to T100    p5 = lp5
                                          Check word
                                          Check tile
                                          Place word
                                          Save
                                     For lp6 = T1 to T100   p6 = lp6
                                       Check word
                                       Check tile
                                       Place word
                                       Score
                                       Save
                                             For lp7 = T1 to T100   p7 = lp7
                                                   Check word
                                                   Check tile
                                                   Place word
                                                  Score
                                                   Save

                                             next lp7
                                     next lp6
                               next lp5
                          next lp4
                    next lp3
        next lp2
Next lp1
```

Conclusions

We have learned the fundamentals of computer programming and the steps involved in solving a problem. We found that our particular problem required an incredible amount of computer decision making and the use of numerous loops.

We are still in the process of making our program play games in order to come up with the highest possible score. We think that the use of a “supercomputer” will speed things up immensely!

Acknowledgement

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