python

Design of Scrabble in Python
University of Southern California Young Researchers Program
Jose Lopez and Sourya Dey

What is Scrabble?

- Scrabble is a classic family board game
- Use tiles from a bag to create words
- It is used to expand one's vocabulary

What is Python?

- Python is one of the most popular programming languages today
- Python provides the programmer (coder) with many assets to make sure their code is what they want it to be.
- Easy to learn, somewhat hard to use (that's if you know how to use it)

The Big Picture

- Can programming be the future to classic games?
- Deep Blue, a chess program, beat the best human chess player.
- Artificial Intelligence is on the rise. Can this be The Matrix?

Gameplay

```
    0   1   2   3   4   5   6   7   8   9  10  11  12  13  14
0  | % |   |   | ~ |   |   |   | % |   |   |   | ~ |   |   | % |
1  |   | * |   |   |   | # |   |   |   | # |   |   |   | * |   |
2  |   |   | * |   |   |   | ~ |   | ~ |   |   |   | * |   |   |
3  | ~ |   |   | * |   |   |   | ~ |   |   |   | * |   |   | ~ |
4  |   |   |   |   | * |   |   |   |   |   | * |   |   |   |   |
5  |   | # |   |   |   | # |   |   |   | # |   |   |   | # |   |
6  |   |   | ~ |   |   |   | ~ |   | ~ |   |   |   | ~ |   |   |
7  | % |   |   | ~ |   |   |   | * |   |   |   | ~ |   |   | % |
8  |   |   | ~ |   |   |   | ~ |   | ~ |   |   |   | ~ |   |   |
9  |   | # |   |   |   | # |   |   |   | # |   |   |   | # |   |
10 |   |   |   |   | * |   |   |   |   |   | * |   |   |   |   |
11 | ~ |   |   | * |   |   |   | ~ |   |   |   | * |   |   | ~ |
12 |   |   | * |   |   |   | ~ |   | ~ |   |   |   | * |   |   |
13 |   | * |   |   |   | # |   |   |   | # |   |   |   | * |   |
14 | % |   |   | ~ |   |   |   | % |   |   |   | ~ |   |   | % |
```

```
Player 1 it is your turn
This is what your rack looks like now:
{'E': 1, 'L': 1, 'O': 1, 'N': 1, 'R': 2, 'W': 1}

Input letter here. If there's nothing to play,
type Done. Enter anything within '': 'N'
Put in row number here: 7
Put in column number here: 9

Input letter here. If there's nothing to play,
type Done. Enter anything within '': 'DONE'
Turn is over
You got 18 points
Your total score is 18
```

Errors!!! 😫

```
Turn is over
Invalid word..you don't know English?

Input letter here. If there's nothing to play,
type Done. Enter anything within '':'Z'
Stop being a cheater
Try again
Input letter here. If there's nothing to play,
type Done. Enter anything within '':'X'
Skip turn

Put in row number here: 15
Try again. Range is between 0-14
```

Interpretations

My mentor and I worked on this project for a long time and tried to make it the best. I came in to YRP knowing nothing about Python itself. To learn about Python, I actually had to code and test it out. I struggled in some parts, but excelled in others. Python was fun to use and I see why it's the most popular language among programmers.

Maybe in the near future there could be a better and improved version of this (Pythonian Scrabble v.2). The game itself is fun to play. You can try it out for yourself.

Conclusions

I really, really enjoyed YRP. From creating a digital board game, to learning about college in our Wednesday meetings. Don't forget the field trips. The field trips were beyond what I expected.

I want to thank USC for giving me this opportunity. Now I know what I need to do to get to college and as a bonus, I got a taste of college itself. I also want to thank my parents for their constant support and my teacher, Ms. Merkow, who recommended me to the program. Truly, a great experience.

```
    0   1   2   3   4   5   6   7   8   9  10  11  12  13  14
0  | % |   |   | ~ |   |   |   | % |   |   |   | ~ |   |   | % |
1  |   | * |   |   |   | # |   |   |   | # |   | D |   | * |   |
2  |   |   | * |   |   |   | ~ |   | ~ |   |   | I | * |   |   |
3  | ~ |   |   | * |   |   |   | ~ |   |   |   | E |   |   | ~ |
4  |   |   |   |   | * |   |   |   | B | I | T | E |   |   |   |
5  |   | # |   |   |   | # |   |   |   | A |   |   |   | # |   |
6  |   |   | ~ |   |   |   | ~ |   | ~ | R |   |   | ~ |   |   |
7  | % |   |   | ~ |   |   |   | O | W | N | E | R | S |   | % |
8  |   |   | ~ |   |   |   | ~ |   | H |   |   |   | P |   |   |
9  |   | # | D |   |   | G | A | M | E | S |   |   | A | # |   |
10 |   | A |   | * | O |   |   |   | N | O | W |   | T |   |   |
11 | ~ |   | T | * |   | U |   | ~ |   | N | O | * |   |   | ~ |
12 |   |   | E | X | I | T | ~ |   | ~ |   | N |   | * |   |   |
13 |   | * |   |   |   | # |   |   |   | # |   |   |   | * |   |
14 | % |   |   | ~ |   |   |   | % |   |   |   | ~ |   |   | % |
```