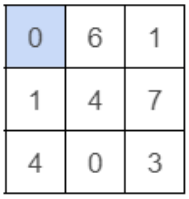
SimCity Land Value Calculator Version 2: Find neighbors

Let's find our neighbors! Neighbors are all the cells that are in the grid and are horizontally, vertically or diagonally adjacent.

Here is some visuals for *what* is a neighbor:

Position (0, 0) is highlighted in blue.

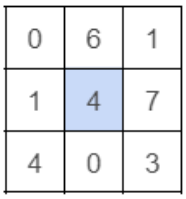


The neighbors are highlighted in red.

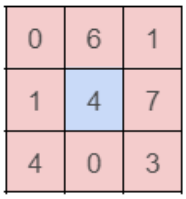
The function returns a list of the neighbors' values:

```
[6, 1, 4]
```

Position (1, 1) is highlighted in blue.



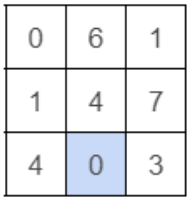
The neighbors are highlighted in red.



The function will return a list of the neighbors' prices:

```
[0, 6, 1, 1, 7, 4, 0, 3]
```

Position (2, 1) is highlighted in blue.



The neighbors are highlighted in red.

The function returns a list of the neighbors:

```
[1, 4, 7, 4, 3]
```

What to do

- Implement the `find_neighbor_values` function that finds and returns a list of all neighbors given the coordinate location (`row`, `col`).

- in this version you will not be calling the `find_neighbor_values` function in the main function. You will just test this function using the unit test functions that we have provided. See below for more details.
- You must use the given template means you should not change the names of the functions, its parameters or the object it returns.

You must use the following template:

```
def create_grid(filename: str) -> list[list[int]]:
    """
    Create a grid of land values from a file
    """
    # Implemented in Version 1

def display_grid(grid: list[list[int]]) -> None:
    """
    Display a grid of land values
    """
    # Implemented in Version 1

 def find_neighbor_values(grid: list[list[int]], row: int, col: int) -> list[int]:
    """
    Find the neighbors of a cell
    """
    # TODO: Implement this function
    pass

def main() -> None:
    """
    Main program.
    """
    grid = create_grid("data_0.txt")
    print("SimCity Land Values:")
    display_grid(grid)

if __name__ == "__main__":
    main()
```

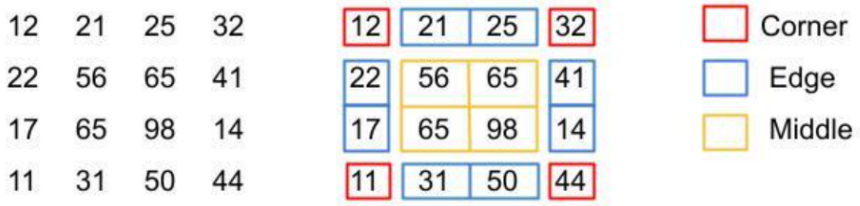
Hints

- For the `find_neighbor_values()` function, consider three cases:
    - The cell is at the edge of the grid.
    - The cell is in the middle of the grid.

- The cell is at the corner of the grid.

Example:

```
data = [[12,21,25,32], [22,56,65,41], [17,65,98,14], [11,31,50,44]]
```



Program name

Save your program as `simcity2.py`.

Demo

In this demo, `data_1.txt` is used.

https://asciinema.org/a/Q2LeLXvi5gRnQ6HqXd6IJYMN8

Testing

To make sure your program works correctly, you should test it.

Good news: we wrote the unit tests for you: test_simcity2.py

To test your `find_neighbor_values()` function, simply run the unit tests in your terminal:

```
$ python -m pytest test_simcity2.py
```

All tests should pass.

Submitting

Submit `simcity2.py` via eClass.

I. Akhmetov, J. Schaeffer, M. Morris and S. Ahmed, Department of Computing Science, Faculty of Science, University of Alberta (2022).