Project 7

You are given a summarized dataset about state demographics in the united states. This data file is a subset of a public available CSV file: https://corgis-edu.github.io/corgis/csv/state_demographics/.

Write a program to sort the states by percentage of population whose ages are equal or greater than 65 years old. Write the results in the output file.

The input file is a CSV file with the following fields for each state:

state (String), 2020 population (int), 2010 population (int), percentage of population whose ages are under 5 years old (double), percentage of population whose ages are under 18 years old (double), percentage of population whose ages are equal or greater than 65 years old (double),

with each state on a separate line:

Connecticut, 3605944, 3574097, 5.1, 20.4, 17.7

….

Example input/output:

```
Enter the file name: state_demographics.csv
Output file name:
sorted_state_demographics.csv
```

Technical requirement:

1. Name your program *`project7_demographics.c`*.

2. The output file should be the same name as the input file name with added prefix of `sorted_`. For example, if the original file name is `states.csv`, the output file name is then `sorted_states.csv`. The output file name should not be hard coded.

3. Assume that there are no more than 100 states in the file. Assume that each state is no more than 150 characters.

4. Do NOT hard code the number of states in your program. Your program needs to keep track of the number of states in the file as it reads from it.

5. Use fscanf and fprintf to read and write data. To read all fields of a car, use the following conversion specifier for fscanf:

```
"%[^,], %d, %d, %lf, %lf, %lf\n"
```

6. The program should be built around an array of `state` structures, with each `state` containing state name, 2020 population, 2010 population, percentage of population whose ages are under 5 years old, percentage of population whose ages are under 18 years old, percentage of population whose ages are equal or greater than 65 years old.

7. Your program should include a function that sorts the states by percentage of population whose ages are equal or greater than 65 years old. You can use any sorting algorithms such as selection sort and insertion sort. **Note that with different sorting algorithms, the result might differ when percentage of population whose ages are equal or greater than 65 years old are the same.**

```
void sort_states(struct state list[], int n);
```

8. Output file should be in similar format as the input file, with the members separated by comma and each state on a separate line, and 1 decimal digit for the doubles.

Maine,1362359,1328361,4.7,18.5, 21.2

…..

1. Compile with –Wall. Be sure it compiles with no errors and no warnings. *gcc –Wall project7_demographics.c*

2. Test your program with the script.

chmod +x try_project7_demographics

./try_project7_demographics