PSEUDOCODE CSCE 2110 SIM CITY

- Daniel Jordan
- Justin McKeever

FOR MAIN():

- Read configuration file
- Read initial region layout
- Initialize simulation layout using an Array
    - Locate residential, industrial, and commercial zones and assign location on grid
    - Set populations to zero
    - Set pollution to zero
    - Set available goods to zero
    - Set workers to zero

// Note we may have to use additional arrays or potentially nested arrays if these different variables become location dependent, though this could have consequences on the runtime complexity of the program. We could also just use codes in order to specify data within a cell of an array IE: Rp4, could be used to signify that a cell is zoned residential with a current population of 4, this would add complexity in our logic.

- Timestep=0
- While time step < time limit, timestep +1
- Count industrial workers
    - Count industrial workers after timestep
    - Check assigned workers and unassigned workers
    - Check pollution counter
    - Check population counter
    - Check goods counter
- Count commercial workers
    - Count commercial workers after timestep
    - Check assigned workers and unassigned workers
    - Check population counter
    - Check goods counter
- Count available goods
    - Count available and sold goods
- Update population

    - Update population growth
    - Update available workers
    - Update assigned workers
- Output region stats
    - Output the population stats and pollution stats
- End while
- Output final region
    - Output final region layout
- Output populations
    - Output final population counters
- Output pollution
    - Output final pollution counters

FOR SUBREGION ANALYSIS:

- Prompt user for coordinates
- If valid output analysis
- Else ask again
- End if

END MAIN()

FOR RESIDENTIAL:

- Check neighboring cells
- Check populations
- If meets growth criteria then update growth
- Update population counters
- End

FOR INDUSTRIAL:

- Check neighboring cells
- Check populations
- Check available workers
- Check assigned workers
- If meets growth criteria then update growth
- Update population counters
- Update pollution counters

- End

FOR COMMERCIAL:

- Check neighboring cells
- Check populations
- Check available workers
- Check assigned workers
- Check available goods
- If meets growth criteria then update growth
- Update population counters
- Update pollution counters
- Update goods counters
- Update assigned workers
- Update available workers
- End

FOR POLLUTION:

- Check for industrial cells
- Increase pollution for industrial cells
- Check for population in adjacent cells
- Add pollution to populated adjacent cells
- End

FOR ANALYSIS:

- Output initial region
- Output timestep
- Output available workers
- Output available goods
- Output final region
- Output populations
- Output pollution levels for cells
- Output total pollution levels
- Create and save coordinate data for more precise analysis
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// Note - the overall storage space for any saved data should be tiny, Ideally no bigger than 50Mb, this size expectation may change but I feel that this is more than enough space

- At end of simulation print population totals and total pollution levels
- End