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This implementation adds the museum mechanism to the Micropolis game. The primary design plan to create a special building called museum with three special features:

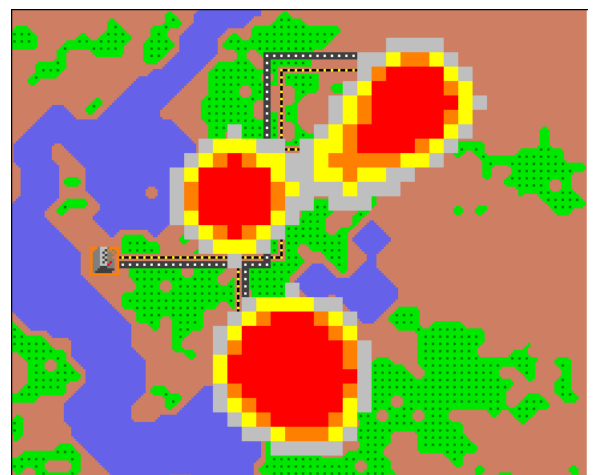
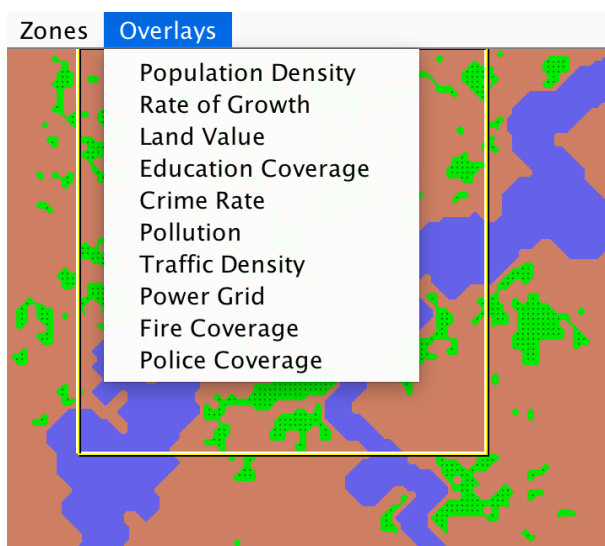
1. Nearby housing price will increase because of the educational benefits brought by the museum. In this particular feature, I planned to have the housing price of the houses within 5 tiles away from the museum go up by 20%, while price of houses within 6-10 tiles away from the museum go up by 10%.
2. Nearby crime rate will decrease, and there will be a yearly increment of the decline percent. The crime rate around the museum will decrease 2% more each year, with an ultimate decrease cap of 20%.
3. Overall migration will change with more people flowing into the city because of the attraction that the museum brings.

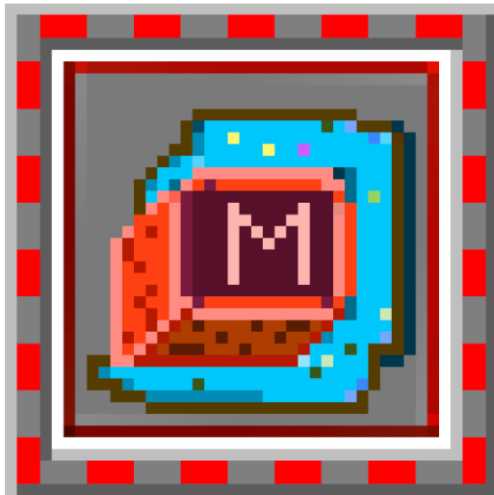
What went wrong:

1. The effect was thought to be too easy. Although the impact of the museum on each parameter (crime, housing price, migration) is reasonable, there is convoluted internal correlations between parameters. Influencing one parameter might directly or indirectly change another. Thus, if simply adding direct multipliers to each parameter intended, the aggregate effect might be too exaggerated. Honestly, it would not be reasonable for the program to change the three parameters mentioned above.
2. During the implementation, the yearly increment of crime mitigation percent is hard to produce. As the program scans all tiles every cycle, it is hard to keep a public global variable to keep track of the decrease percent throughout the years. This is to say, the delaying effect is within the time dimension. It gets especially hard when a town has more and more museums because the program has to memorize the crime rate growth for each museum.
3. Since this is a tile-based game, I used to plan out the radius based on euclidean distance — I thought the effect will be smoothed out geographically, sort of a Gaussian distribution. However, looking at the smoothMap function, I realized that I could only use Manhattan distance to spread out the effects.

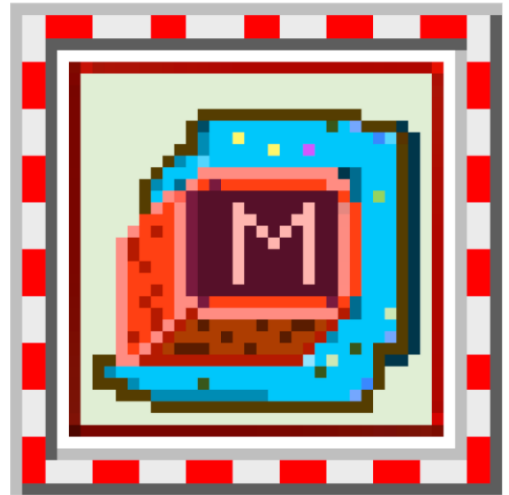
What went right:

1. I re-looked at the pre-built mechanism, figured out what parameters to be directly affected. It turned out to be land values and crime. With these two parameters changed, the migration will automatically change because of indirect impact. However, to create impact on land values and crime, a map-based bridge parameter should be made.
2. Thus, the second thing that went right is that I added an additional education coverage map that was not planned before. An education map was created.
3. I properly designed the iteration pattern for the museum map generation. I successfully inserted the museum map scanning into the pollution, land value, and terrain scanning process, which is a relatively efficient way for the implementation.
4. My pixel icon for museum is adorable!





Regular Museum



Museum Highlighted