Car Navi Simulator using C Language

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1 Codes

- map.dat has been used to indicate the locations.
- When compiled and executed, the terminal asks the user to select the searching method. The user will have the option to search a particular intersection using name, id or coordinates of the intersection.
- The path from initial position to final destination is calculated using Djikstra's Algorithm.
- OpenGL is used to display the map and the car movement from start to destination.

2 Additional Features

2.1 Additional Features on functions

- This Djikstra's Algorithym only calculates the shortest distance to the destination.
- Program shows error code and exits if the user puts wrong input.
- User can select the cruising speed depending on your mood.

2.2 Features added to OpenGL part

- The background color is set to gray, just like Google Maps.
- The color of the road and the selected path is white and blue respectively, just like Google Maps.
- Arrow has a circle surrounded, just like Google Maps.
- The marker used to denote the car is an arrow, like Google maps.
- Different colors are used to plot the map to enable the user to differentiate between the intersections and roads.

- Location name can be printed out in the map.
- The markers used for initial position and final destination has been distinguished from the other map points.
- Different line width has been used for drawing the car marker to make it visible. Also, the selected road is thicker than the other road, like GOogle Maps.
- The marker for the car does not get distorted due to zooming, panning, and rotating.
- The path followed by the car is highlighted using different color and line width, so you know where you are at.
- The section of the road the car is currently in, is highlighted in different color for better visibility.
- The immediate next intersection is highligted in different color for better understanding of car's current location.
- Turn indicator shows which direction the car should turn next.
- Estimated time of Arrival and Distance to turn is displayed.
- Map can be moved around using 'W','A','S','D' keys
- The map can be zoomed in and out using 'Z' and 'X' keys respectively.
- The map can be rotated using 'Q' and 'E' keys respectively.
- Map can be recenterd using 'R' key.
- 'T' key fixes the poles to one direction.
- Zooming in and out also changes the scales of the font for increasing visibility.
- The fonts rotate perfectly so that they can be read easily irrespective of map orientation.
- Arial font has been used so it is easy to read.

3 Conclusion

This class was very challenging, but I think I gained the basic idea of how programming works. Programming requires legion of organization and patience, and it was really difficult to make them run, but it felt good when the codes actually ran. Car navigation program was quite fun since I got to come up with my own ideas and share with others, too. People came up with many interesting features, and it is amazing how programs can actually make those features work! Thank you for the class!