Penn State University
CMPSC 475

Spring 2022

7: Campus II

Due: Noon, March 1st

Description

In this assignment you will modify your Campus app from last week to include more functionality. This assignment will also require you to implement the required features with your own design. You will be adding support for displaying step by step walking directions, travel time, and the user's location.

As always, good code organization and robust code is expected.

Requirements

Your app should include the following additional behavior:

1. The user's location appears on the map. The user should be able to tap a button to center the map on their current location while viewing the map. This button is disabled once the map is centered on the user, but if the user pans the map the button will become enabled.
2. After the user selects/deselects buildings to be mapped, the region of the map automatically changes so that the region of the map contains all mapped buildings.
3. Provide the option to get directions from one location to another. This could be between two buildings, from user location to a building, or from a building to the user's current location. The selection process of the source and destination should be an intuitive UI that is simple for the user. The resulting map should adjust its region to include the source and destination at an appropriate zoom level. The map should show only two annotations: the source and destination of the route, using a flag for the annotations. If one of these is the user's current location, the annotation for that is just the one provided by default.
4. Provide two ways to view the step-by-step directions for the walking route. One way is to view all of the steps at once in a list. The second way shows one step at a time, overlaid on the map, with controls for the user to move forward or backward through the steps.
5. When the user requests directions, you should show the Estimated Time of Arrival (ETA) for a walking route. The time should be nicely formatted using a `DateComponentsFormatter`.

Hints

1. Be sure to add the appropriate entry to the Target's Info section for location services. Any error message you receive will tell you what is missing.
2. Requirement 1 is actually very easy. The `userTrackingMode` binding of `Map` changes to `.none` whenever the user pans the map.
3. The walking instructions and Estimated Time of Arrival are both contained in the `MKRoute` object. See the documentation for digging into the datatypes.
4. A small TabView would be a good design choice for the step-by-step display of directions.

Testing

1. Your project should build without errors or warnings.
2. Your project should have a clean and pleasant user interface. User interface elements should be arranged logically, be aligned nicely; fonts should be appropriately sized; colors should be chosen to enhance the app's appearance.

Troubleshooting

Make effective use of the debugger. Set breakpoints and examine values.

Submission

Your submission should be pushed on the master branch. Be sure to verify that your project builds and remove all cruft and compiler warnings.