Data Structures Lab Course (start of summer 2023)

Weekly report 4

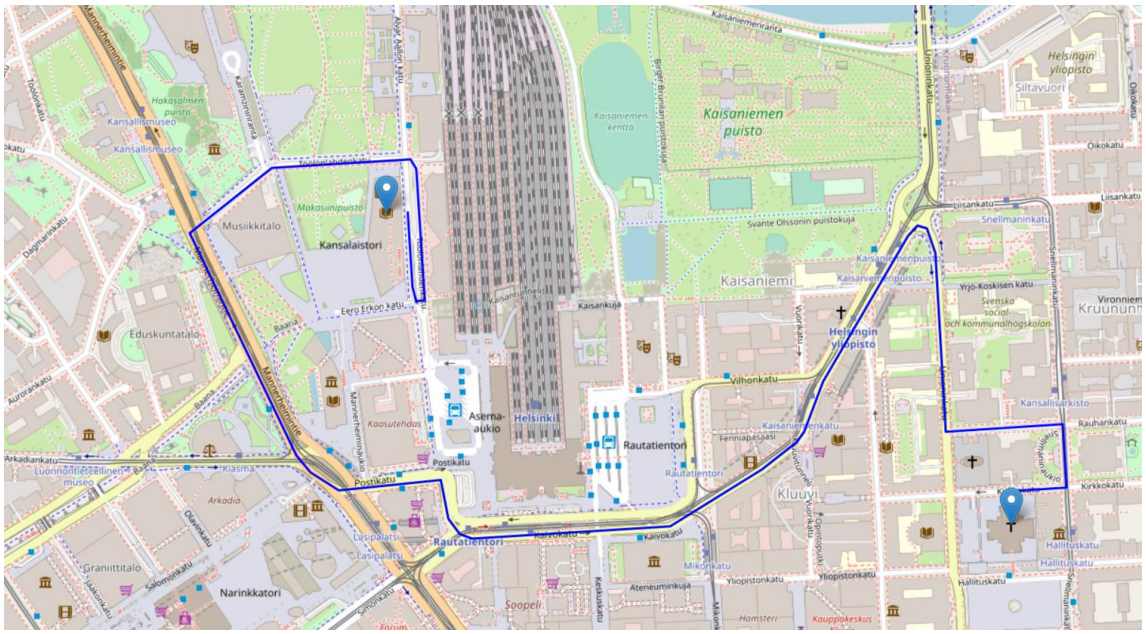
Learnings and tasks for week 4:

- Read-made NetworkX library was implemented and compared with previous codes.
- Path results visualization successful. The core functions were achieved.
- Started with the Implementation Document.
- Code quality monitoring continues.

The core functions of the program were completed and work well. Efforts were made to improve the functionality of path map and code clarity. Because there may be something wrong with the IDA* algorithm, so ready-made solutions were used to validate and test if the program frame and other functions can work well. The ready-made networkx.shortest_path function provided by the NetworkX library seems to a good solution, as it implements the Dijkstra's algorithm. It returns a list representing the shortest path between the start and end nodes.

GeoPy library were added to the codes. It can successfully display the path saved in the file of shortest_path.html. For example, below addresses can be used to test the functionality, it can display the shortest path found by the program.

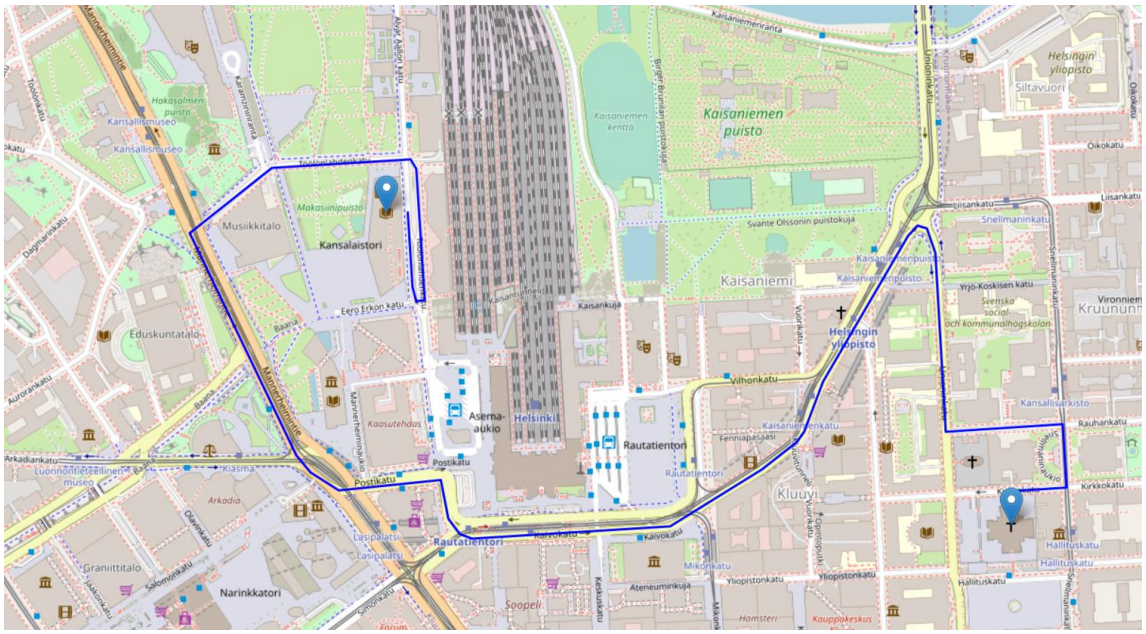
Start point: Töölönlahdenkatu 4, 00100 Helsinki
End point: Unioninkatu 29, 00170 Helsinki



However, it can not display the updated path's html file based on new addresses. For example, when enter below new addresses, web browser displays the same map and path which was based on previous addresses in Helsinki.

Start point: Oulu railway station: Rautatienkatu 11a, 90100 Oulu

End point: Oulun kauppahalli: Kauppatori, 90100 Oulu



In order to display the updated html file correctly, codes were modified to allow generate new html file to local folder for new address's submission, which is not an ideal solution if considering the huge memory demand for saving those html files. Thus, this current solution is not for a big amount of users. From another perspective, the advantage is service administrator is able to record and retrieve all the path finding records. As an alternative, in real life the service administrator can remove or delete those html files with a certain frequency if those are not needed for user management. Till now, path results visualization is successful.

User instructions first version was completed, will be pushed to GitHub. Next week, the focus will be correcting own implementations of IDA* algorithm, to ensure codes of IDA* algorithm implementation will work as well as current solution.

Working hours:

Date	Hour	Content
5.6.2023	3	Program main function works after adding Nominatim class, tested with built-in Dijkstra's algorithı
6.6.2023	2	The core operation of the program completed, able to display the found path, but not able to disp
8.6.2023	3,5	found a solution to display each new shortest_path html file
10.6.2023	4	improve codes, testing the overall function performance with few cases
11.6.2023	1,5	draft weekly report 4 & user instructions
Total	14	

Sources:

GeoPy library, geopy.geocoders & Nominatim: Python Geopy to find geocode of an Address - AskPython

Nominatim: https://nominatim.org/

Geopy: https://pypi.org/project/geopy/