Work algorithm:

1)Loading the road network:

The ox.graph_from_bbox function loads the road network for the specified grid area using latitude and longitude coordinates.
network_type='drive' indicates that only the road network for car traffic is loaded.

2)Adding attributes to edges:

For each edge in the network, "type" and "length" attributes are added.
"type" is the road type obtained from the "highway" attribute in the OSM data.
"length" is the length of the road specified in the data.

3)Finding the shortest path:

The source and destination vertices are specified.
Using the nx.shortest_path function, the shortest path between these vertices is found based on the length of the edges.

4)Visualization of the network and shortest path:

Using ox.plot_graph the entire road network is visualized.
Using ox.plot_graph_route, the shortest path is visualized based on the path found.

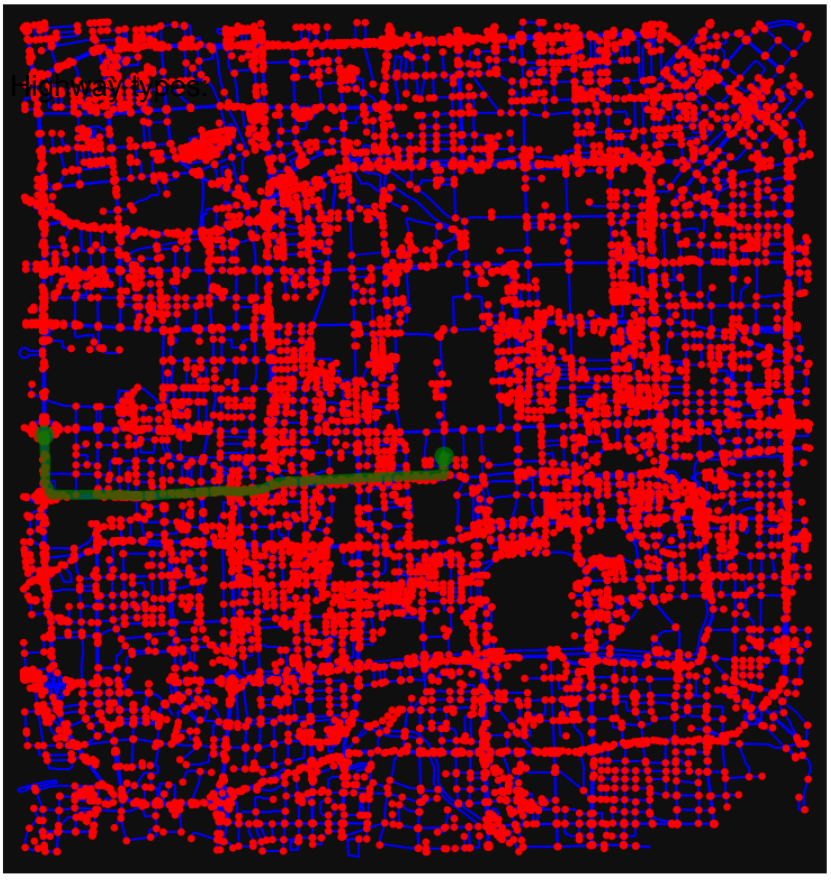
5)Analysis of the distribution of road types and road lengths:

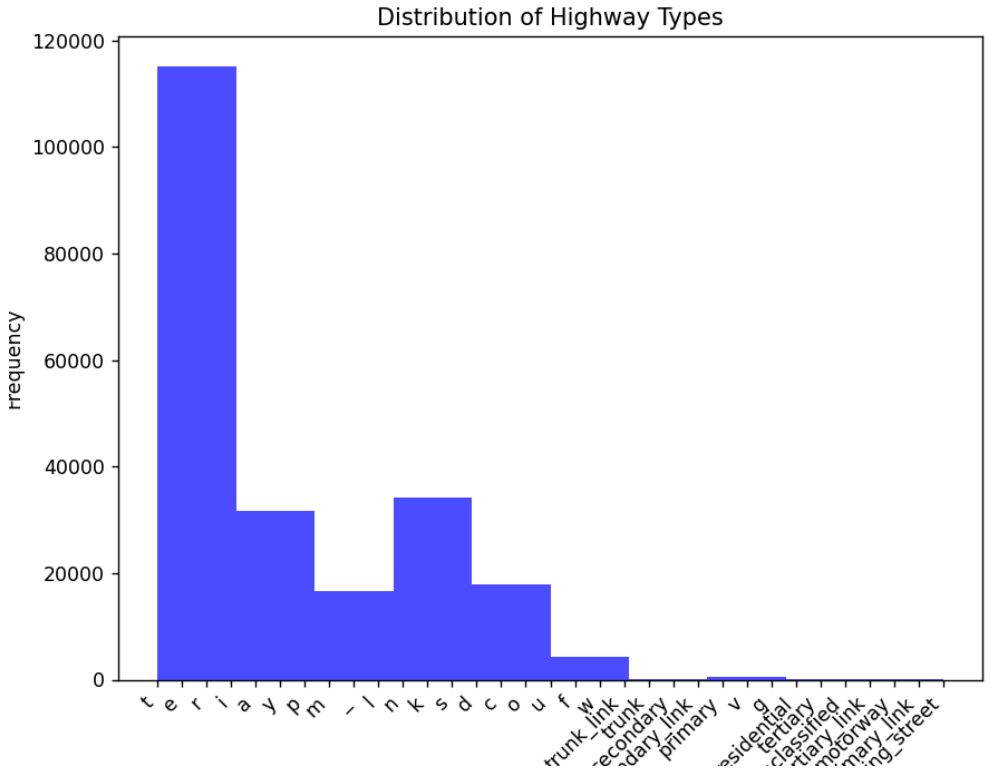
The types of roads for analysis are obtained and a histogram of their distribution is constructed.

The lengths of the roads are obtained and a histogram of their distribution is constructed.

Program output:

Shortest path and road network





Road lengths: