Considering the objective and instructions of the given assignments, here are the practical tasks and Analysis.

**Assignment:**

## Task 1:

*Task 1 > grade 4: Explore how many tourist attractions are in 5, 10, 15, 20 minutes walking distance around your Salzburg address. Please provide a map of the result and provide a detailed analysis (statistics) of your results.*

### Objective

The goal is to identify and analyze the number of tourist attractions within 5-, 10-, 15-, and 20-minutes walking distance from a specified address in Salzburg using ArcGIS Online. The task involves generating a travel access map and providing a detailed statistical analysis of the results.

### Practical

I looked up "generate travel access" after adding a drawing of my home address. I chose the "sketch" input option, set the travel mode to "walking time," set the cutoffs to 5, 10, 15, and 20, set the overlap policy to "split," typed in the output name, and clicked "run."

### Map Results

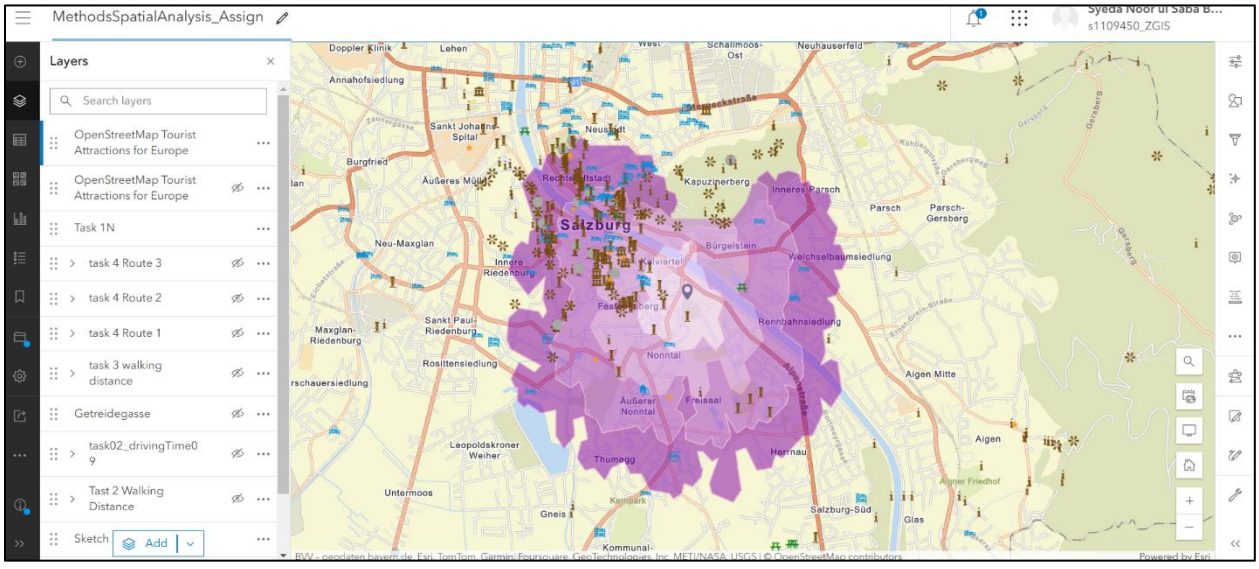


*Figure 1. Resulting Map (Walking Distance)*

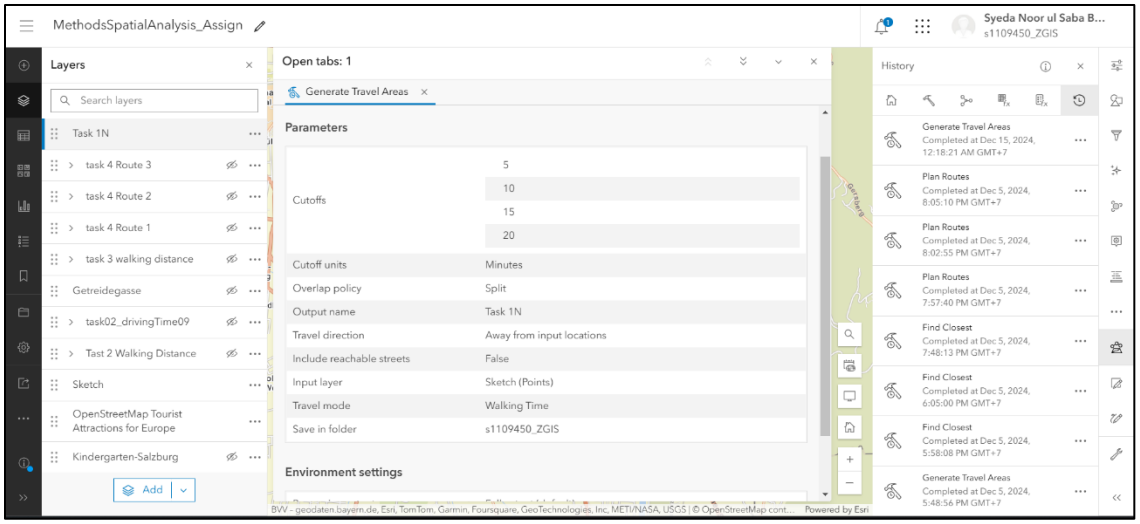


*Figure 2. Tourist Attractions Walking Distance Parameters*

**Evaluation and Analysis of the Results**

The resulting map shows the generated walking distance areas around my address in Salzburg, highlighting 5, 10, 15, and 20-minute walking zones.

**Walking Zones:**

The map displays four concentric polygons in different shades of purple, representing walking distances of 5, 10, 15, and 20 minutes.

**Tourist Attractions:**

Symbols of tourist attractions (e.g., museums, landmarks) are visible within the walking zones. Most of the attractions appear to be clustered within 10–20 minute walking zones.

## Task 2:

*Task 2 > grade 3: What are the 5 closest museums concerning Driving and Walking around your home in Salzburg (Hint: for museums, filter the attribute "tourism" of the OSM Tourist Attractions for Europe layer) Please provide a map and a comparison of the results concerning walking and driving.*

**Practical:**

To get the five closest museums, I applied two conditions to the OSM layer: City is Salzburg and Tourism is Museum. I selected "Sketch" as the input layer and "OSM" as the near layer using the Find Closest Tool in the Analysis Tools. I set the maximum number of closest places to five and chose Walking Time as the measurement method for the analysis. By changing the measurement type to Driving Time, an identical procedure was carried out for driving.

# Map Results

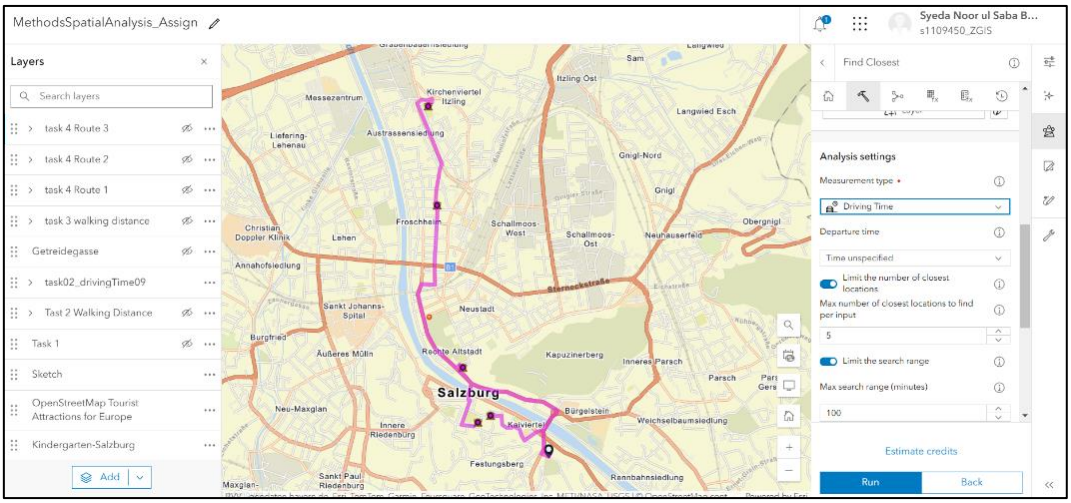


*Figure 3. Driving time*

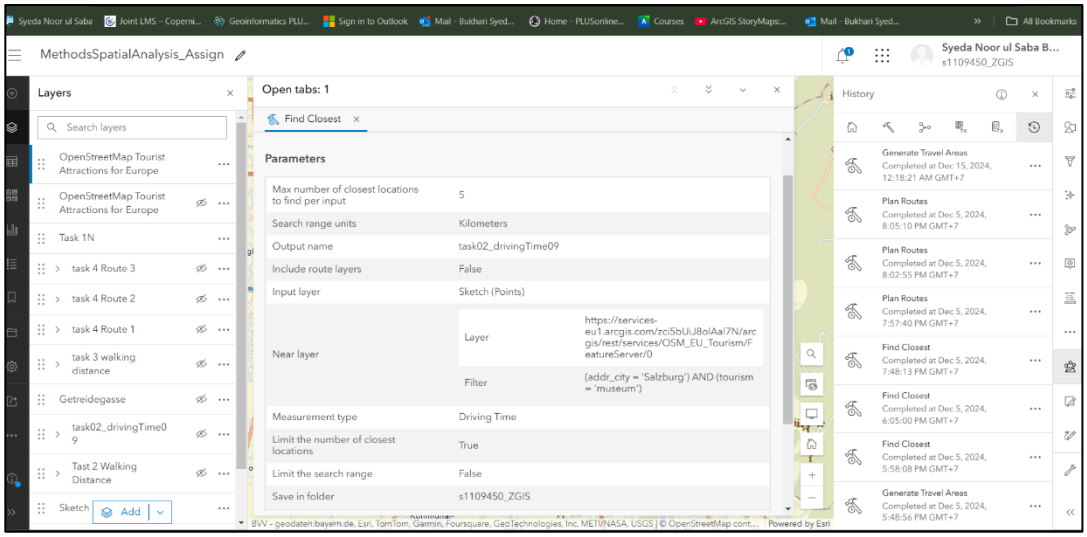


*Figure 4. Driving Time Parameters*

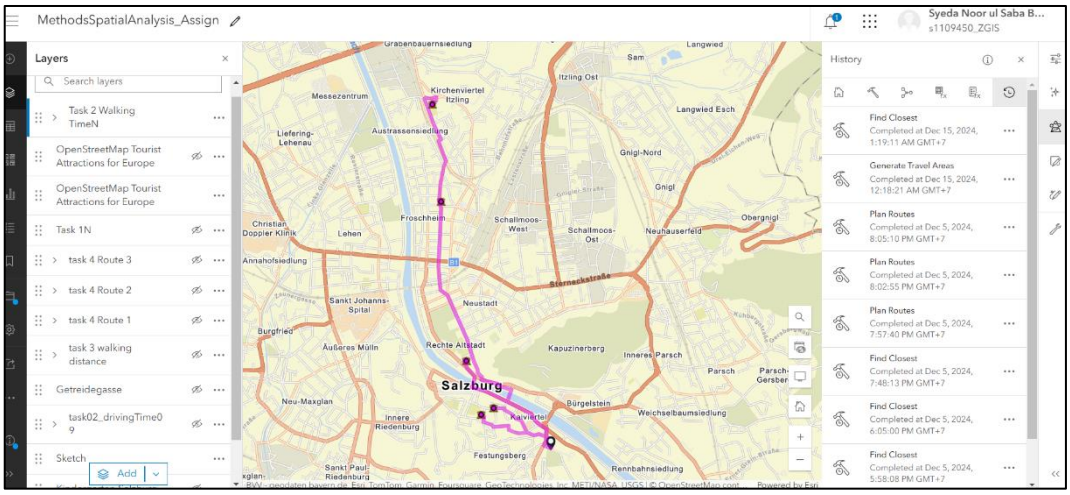


*Figure 5. Walking Time*

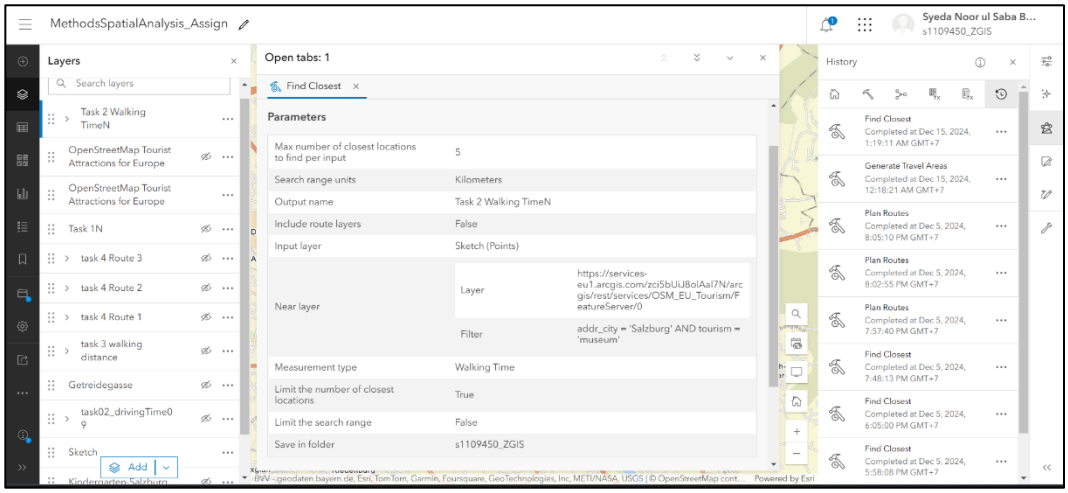


*Figure 6. Walking Time Parameters*

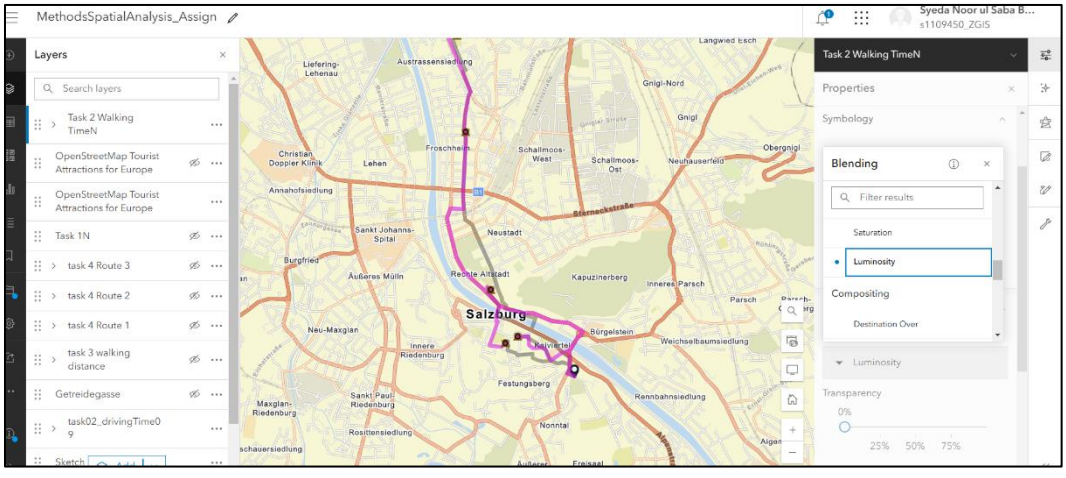


*Figure 7. Walking and Driving Time*

## Evaluation and Analysis of the Results

As it can be seen walking routes prioritize pedestrian paths, shortcuts, and trails. The paths are more direct to the closest museums, which might be due to narrow streets unavailable to vehicles.

## Task 3:

*Task 3 > grade 2: Find the closest 20 hotels (walking distance) around Getreidegasse. Please create a new Sketch that represents Getreidegasse, and use network analysis to find the closest hotels. Hint: for hotels, filter the attribute "tourism" of the OSM Tourist Attractions for Europe layer. Please provide a map and an analysis of the results (avg. distances).*

## Practical:

For task 3 first I sketched a point named Getreidegasse and used network analysis to find the closest hotels. Then by using an "open street map of tourist attractions for Europe" I filtered "Add city is Salzburg" and "Tourism is Hotel". In the analysis tool, in Find Closest, I input the layer "Getreidegasse" and the Near layer is set to "Open street map tourist attraction for Europe ", "Measurement type is "Walking distance" and a Maximum number of closest locations are set to 20 and the then finally entered the output name and click Run.

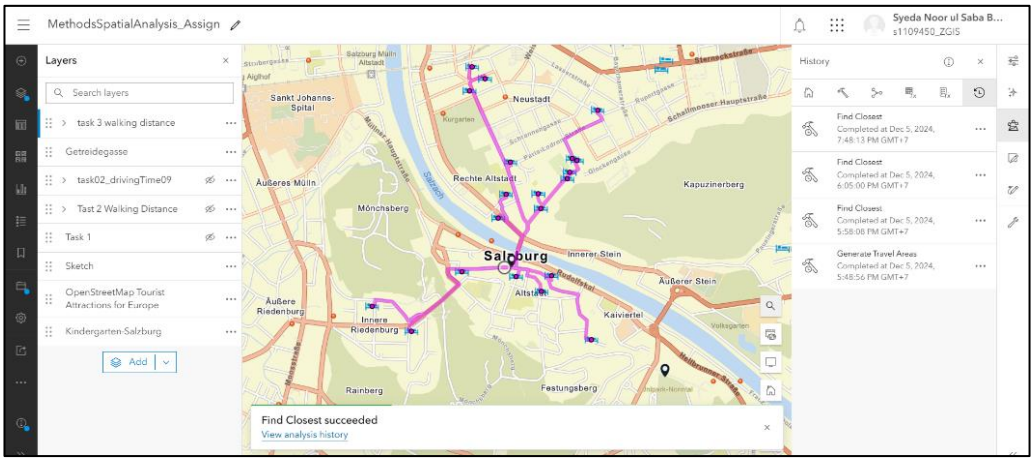


*Figure 8. Getreidegasse Closest Hotels*

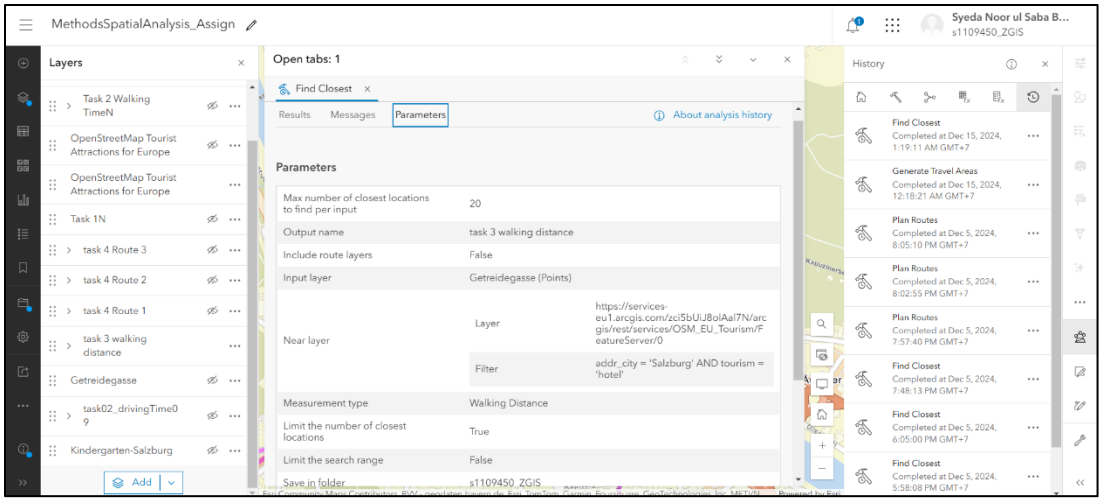


*Figure 9. Task 3 Parameters*

## Results Discussion

In this challenge, network analysis is used to link Getreidegasse to all 20 of the nearby hotels. Getreidegasse is depicted in the sketch as being in the heart of Salzburg. To identify the 20 hotels that are nearest to one another and can be reached on foot, the network analysis begins here. Most of the hotels are located in and around Salzburg's downtown, especially close to popular tourist destinations like Altstadt and Neustadt. The majority of the hotels are situated in a somewhat small area, as seen by the paths that connect them radiating outward from Getreidegasse. The well-organized and straightforward pathways to the nearest hotels are indicative of Salzburg's effective pedestrian system.

The paths seem brief, indicating that many hotels are easily accessible from Getreidegasse by walk starts from 5-15 minutes.

## Task 4:

*Task 4 > grade 1: Find museums that are in 10 minutes of walking distance around Kindergarten locations in Salzburg. Please select one Kindergarten of your choice and calculate the routes that connect all the selected museums. Calculate the routes with 1, 2, and 3 vehicles respectively, with no further capacity or time constraints. Please provide a map for your results and explain the results accordingly.*

## Practical: Task Overview:

- The task involves identifying museums within a 10-minute walking distance of a chosen Kindergarten in Salzburg.
- Three route calculation scenarios are required: 1, 2, and 3 vehicles with no further capacity or time constraints.

## Practical:

To address the task, the Kindergarten layer was filtered to concentrate on “BAKIP Übungskindergarten,” guaranteeing the analysis centered on the designated location. The OSM layer was subsequently filtered using the criteria City is Salzburg and tourism is Museum to focus on museums located in Salzburg. Employing the "Plan Routes" tool, the kindergarten was designated as the initial location, while the museums acted as stopping points for route creation and checked the “Return Point”. The “travel setting” was set to "Driving Time" and a maximum number of vehicles 1,2,3 respectively.

## Map Results

### Route 1

Route 1 results in one continuous route that connects all locations. It begins and ends at BAKIP Übungskindergarten, connecting all the stops straightforwardly and efficiently. The stops are close to each other in central Salzburg, so the travel time and distance are kept short. This route is designed for one vehicle, making it perfect for tasks with only a few nearby stops. It’s a simple and direct route without unnecessary detours. However, if there were more stops or a larger area to cover, adding more vehicles might make things quicker and easier. Comparing this route with options for 2 or 3 vehicles could help find the best solution.

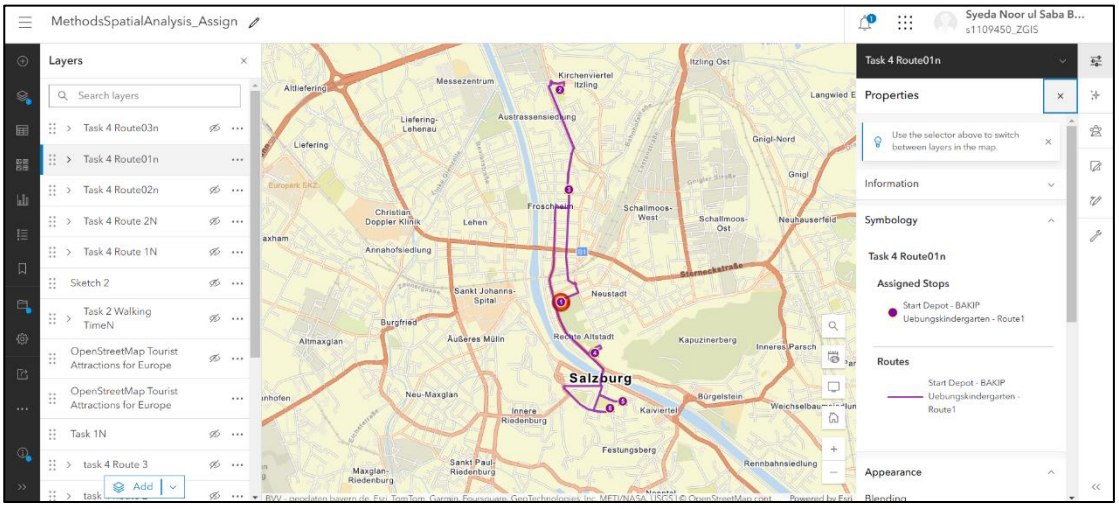


*Figure 10 Route 1*

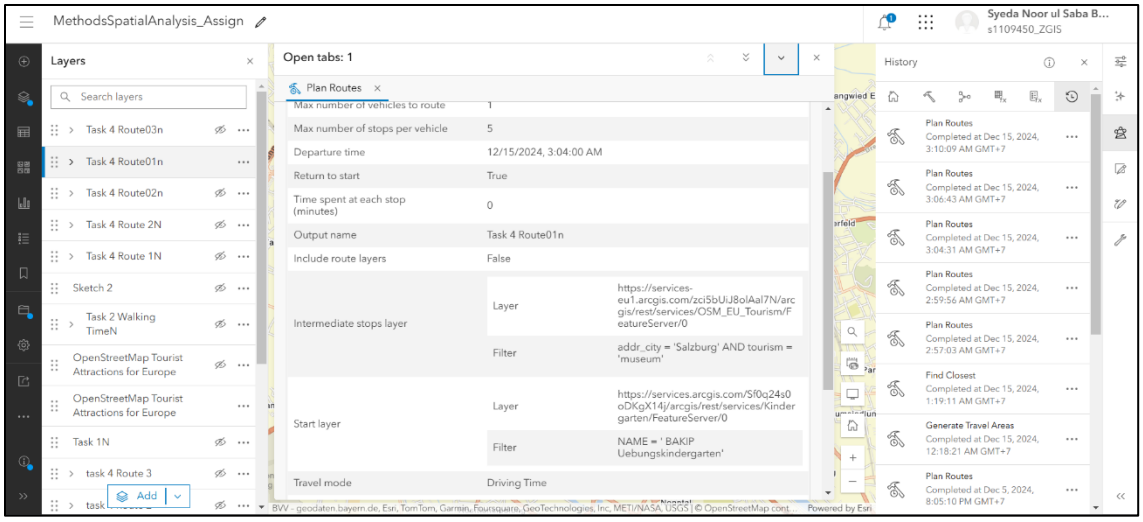


*Figure 11. Route 1 Parameters*

## Route 2

The stops are divided into two groups, with each vehicle assigned to one group. The route for each vehicle will be optimized for its assigned stops.

The stops are split between two routes (green and purple), each starting and ending at **BAKIP Übungskindergarten**. This division reduces the number of stops per route, making each route shorter and more efficient. The green route covers stop farther to the north, while the purple route focuses on the southern and central stops. Both routes appear to be optimized, with minimal overlap and efficient use of available paths.

## Efficiency:

Compared to Route 1 (a single vehicle handling all stops), this setup balances the workload between two vehicles. It reduces travel time for each vehicle while maintaining full coverage of all assigned stops.

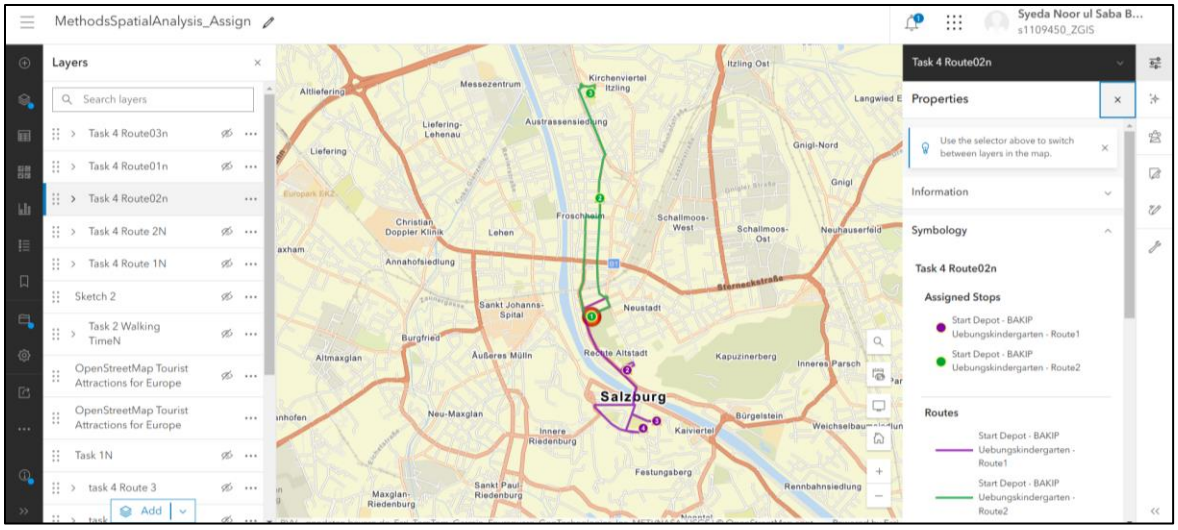


*Figure 12. Route 2*

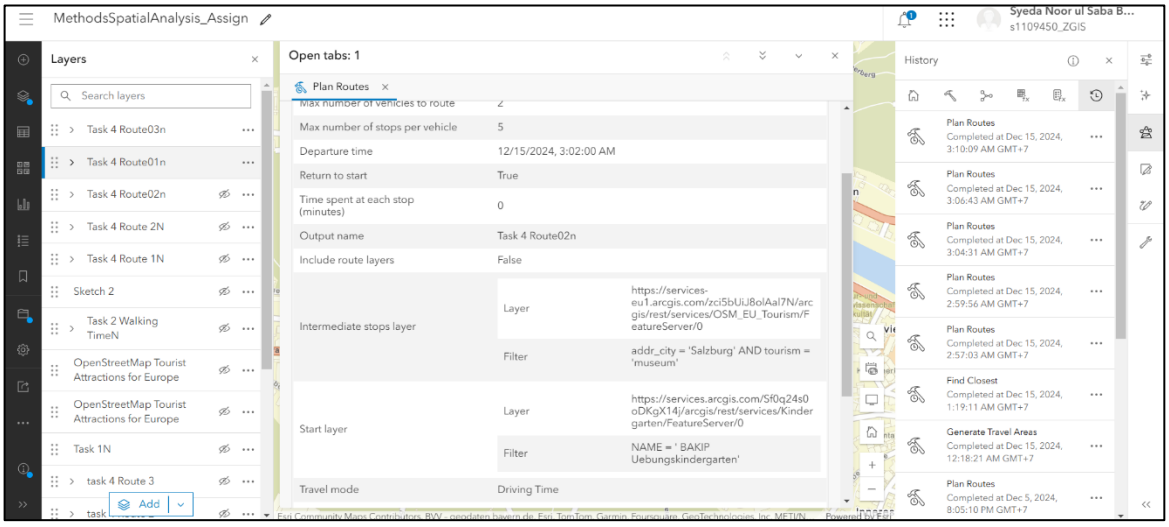


*Figure 13. Route 3 Parameters*

## Route 3

The map displays Route 3, where the stops would be divided among three cars, each with its different route originating and ending at the BAKIP Übungskindergarten. The colored stops-three different colors are used-are split among three routes. This brings up the point that by having the stops split into three routes, each car only has to make fewer total stops, which cuts the travel time for each particular route. The workload in this is evenly distributed as each vehicle has to stay within its area of concern for pickups. Each vehicle, because the stops are further split, covers a shorter distance than either Route 1 (one vehicle) or Route 2 (two vehicles). While the total length of travel might increase because three vehicles are used, the overall efficiency is greater because the individual routes are shorter. This minimizes the travel time for each vehicle to complete all routes in the fastest way possible.

## Comparison with Routes 1 and 2

- Route 3 significantly reduces the travel time for each vehicle compared to Route 1 (single vehicle) or Route 2 (two vehicles)
- It ensures balanced distribution and efficient coverage.

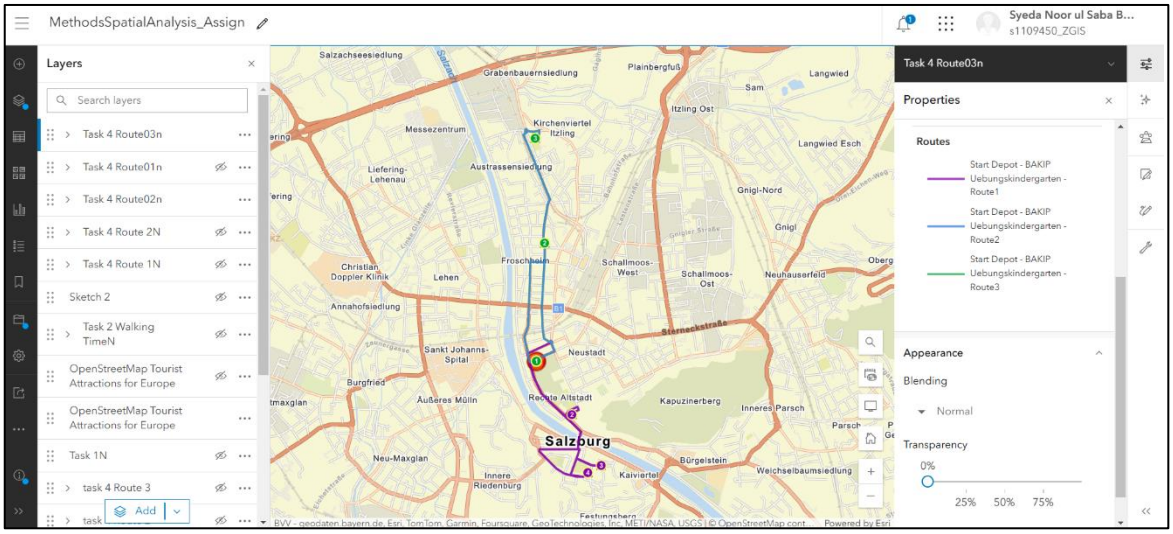


*Figure 14. Route 3*

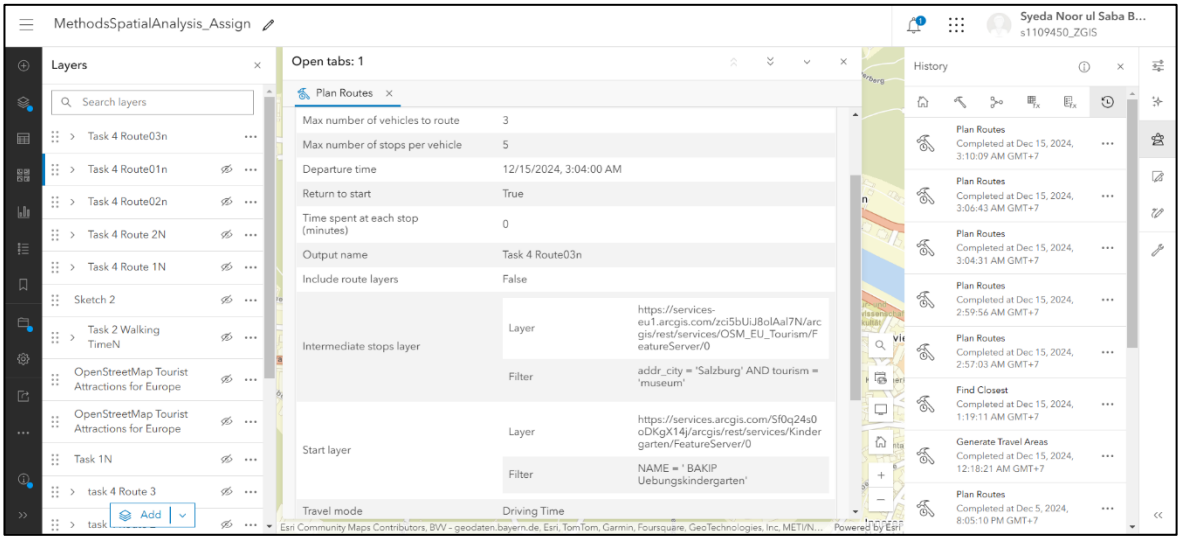


*Figure 15. Parameters*