**Problematic situation:**

University comes from the Latin universitas which means "the set of all things" where engineers, economists, artists, doctors and among all existing disciplines share a place, unfortunately among this individuals there are disadvantages, and one of them is in mobility, but as in the university there is room for everyone, we decided to test how well our ICESI university is designed to accommodate this diverse community.

For this project we will model the floors of all the university buildings (and places of interest such as: cafeterias, libraries, coliseums, entrances, etc.) that can be accessible by ramps or elevators, to help people with difficulty in their mobility to know if there is a route from the place where they are to the desired location.

**Case studies:**

- Problem 1: What is the shortest path for people with disabilities from any of the university buildings and floors to the main entrance? *Minimum Weight Pathways (Dijkstra, Floyd-Warshall)*

- Problem 2: What is the set of landmarks that can be visited by a person with mobility impairment, ensuring that all locations can be accessed with the least number of ramps or elevators required? *Minimum Spanning Tree - MST (Prim, Kruskal).*

**The following spaces will be modeled:**

**Requirement Specification:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name or identifier** | **RF1. Minimum Pathways to any place.** | | |
| **Summary** | The system should make it possible to find the shortest path for people with disabilities from the main entrance to any of the university buildings and floors. | | |
| **Inputs** | **Input name** | **datatype** | **Selection or repetition condition** |
| areaSelected | Area |  |
| **General activities necessary to obtain the results** | 1. Find the area selected by the user in the graph. 2. Calculate the minimum path from the main entrance to the selected area. 3. Show the smallest route found. | | |
| **Result or post-condition** | The route for disabled persons from any area of the university to the main entrance is calculated as follows. | | |
| **Outputs** | **Output name** | **datatype** | **Selection or repetition condition** |
| minPath | String |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Name or identifier** | **RF2. Accessible Landmarks with Minimal Accessibility Infrastructure.** | | |
| **Summary** | The system should make it possible to find the set of landmarks that a person with mobility problems can visit, ensuring that he or she can access all locations with the fewest number of ramps or elevators required. | | |
| **Inputs** | **Input name** | **datatype** | **Selection or repetition condition** |
| areaSelected | Area |  |
| **General activities necessary to obtain the results** | 1. Find the area selected by the user in the graph. 2. Use Prim's or Kruskal's algorithm to find a minimum spanning tree (MST) in the graph, considering the edge weights as the minimum number of ramps or elevators required. 3. Show the set of locations in the MST that represents the accessible sites. | | |
| **Result or post-condition** | The set of landmarks that a person with mobility problems can visit, ensuring that he or she can access all places with the fewest number of ramps or elevators necessary is founded. | | |
| **Outputs** | **Output name** | **datatype** | **Selection or repetition condition** |
| path | String |  |