An Automated Holiday Planning System using PDDL

Team Members:

Suzad Mohammad - 170042024

Abdullah Al Jubair - 170042030

Zahin Raidah Maisha - 170042032

Project Overview

The aim of our project is to build an automated holiday tour planner. It is designed to plan personalized holidays where Includes several aspects of an entire tour package such as food cost, transport cost, route planning etc. Traveler start their tour from home, visits multiple location where each location consists of several places. Places can be marked as tourist spots. Designed in a way where one can travel to all those places with the minimum cost.

The plan is generated based on –

- The locations where need to be visited
- The starting location and ending location is set
- Multiple spots within a particular location and each spot need to be visited
- There is a rating order/ order of popular spots within a location
- The distance between the locations are given
- The food cost within each location is set
- The per kilometer moving cost is set
- Transport cost to roam within a location is set
- The total cost of the trip is minimized while visiting every location and spots within it

Predicated used

- (at ?transport - transport ?location - location):
  - Transport is in particular location

- (spot_visiting ?location - location ?spot_no - spot):
  - Spot visiting status within a certain location

- (rating_order ?spot1 ?spot2 - spot):
  - Rating/popularity order of the spots within a location

- (tour_ending_spot ?location - location):
  - Indicates whether a location is tour end position or not

- (moved)
  - Indicates whether already moved to a new location or not

- (food_cost_added)
  - Indicates whether food cost of a location added to total-cost or not

- (had_food)
  - Indicates whether enjoyed meal from a spot or not

- (enjoyed)
  - Indicates whether explored a spot or not.

Functions used

- (distance ?location1 ?location2 - location)
  Returns the distance between two locations

- (per_km_cost ?transport - transport)
  Returns per kilometer moving cost by the tour bus

- (total-cost)
  Returns the total cost of the entire trip. Initially total cost is set 0

- (transport-cost)
  Returns the transport cost to roam around spots within a location

- (food-cost)
  Returns food cost after entirely visiting a location

- (already_visited)
  Returns the number of already visited spots

Actions required

Move to a location:

Using this action we move from a location to another location along with calculating costs based on distance.

Here, total-cost = total-cost + (distance x per kilometer cost)

Enjoying location:

After moving to a location this action is used to roam all the spots within this location.

Having food:

After moving from a spot to another, tourists will taste the food of current spot using this action.

Add food cost:

After visiting all the spots within a location finally the total food cost is added with total cost.

Total-cost = total-cost + food-cost

Add transport cost:

Then add transport cost required to roam within location with total-cost.

Total-cost = total-cost + transport-cost

Get back home:

When the location is the end point of our trip, we will return to our initial position (home) using this action.

Future plan:

- We want to make every spot independent, so that we can provide more acute plan and distinguish costs and activities of every spot separately.
- Making the food cost of every spot mutually exclusive from one another which are more realistic than setting up a fixed food cost for every spot.
- To see the calculated cost value within the plan.
- Reducing the time and space complexity of this project.