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MODULE : CMPG 313

Theory Assignment

Question 1

Campus Navigation Search Problem

Problem: For new student to find the quickest path from the main entrance to various departments on campus.

Formulation

- **States:** Locations on campus it can be main entrance, departments, intersections and landmarks
- **Initial State:** The new student will begins his navigation from main entrance
- **Actions:** Moving from one location to an adjacent connected location
- **Transition Model:** Moving from current location to next connected location
- **Goal Test:** Current location is the target department
- **Path Cost:** Time taken to traverse between locations ,this can be the distance used by a student

Question 2

Event Planning Search Problem

Problem Schedule campus events in a semester without conflicts.

Formulation

- **States:** Partial or complete assignment of events to timeslots/venues
- **Initial State:** Empty schedule with all events unscheduled

- **Actions:** Assigning an event to an available timeslot/venue
- **Transition Model:** Adding an event assignment to the current schedule
- **Goal Test:** All events are scheduled with no resource conflicts,venue, time, participant overlap
- **Path Cost:** Number of constraint violations to be minimized to zero

Question 3

Library Book Retrieval Search Problem Formulation

Problem: Find and retrieve a set of books from different library sections.

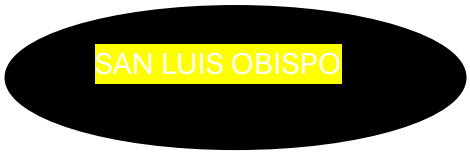
Formulation

- **States:** Current location in library and set of books collected so far
- **Initial State:** Library entrance with no books collected
- **Actions:** Moving between sections or picking up a book
- **Transition Model:** Moving changes location; picking up adds book to collection
- **Goal Test:** All target books are collected
- **Path Cost:** Total distance traveled or time taken to collect all books

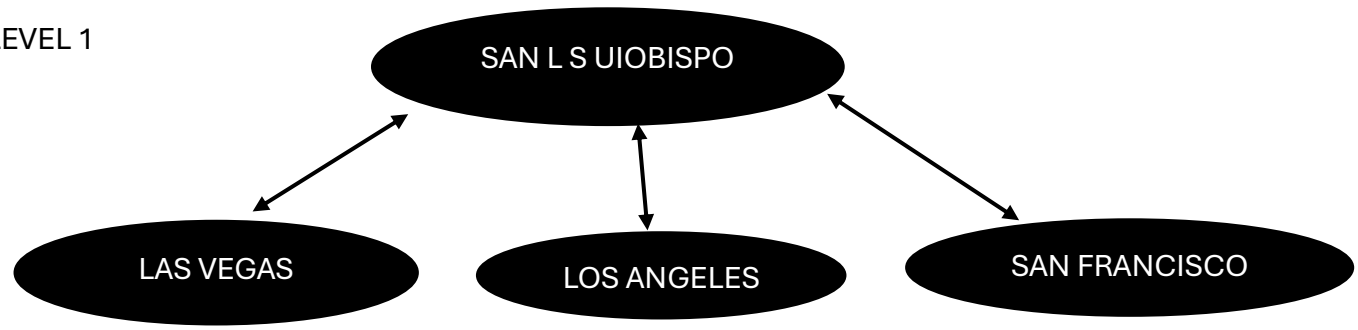
Question 4 (Solving Problems by Searching)

BFS SEARCH(IN ALPHABITICAL ORDER)

LEVEL 0



LEVEL 1



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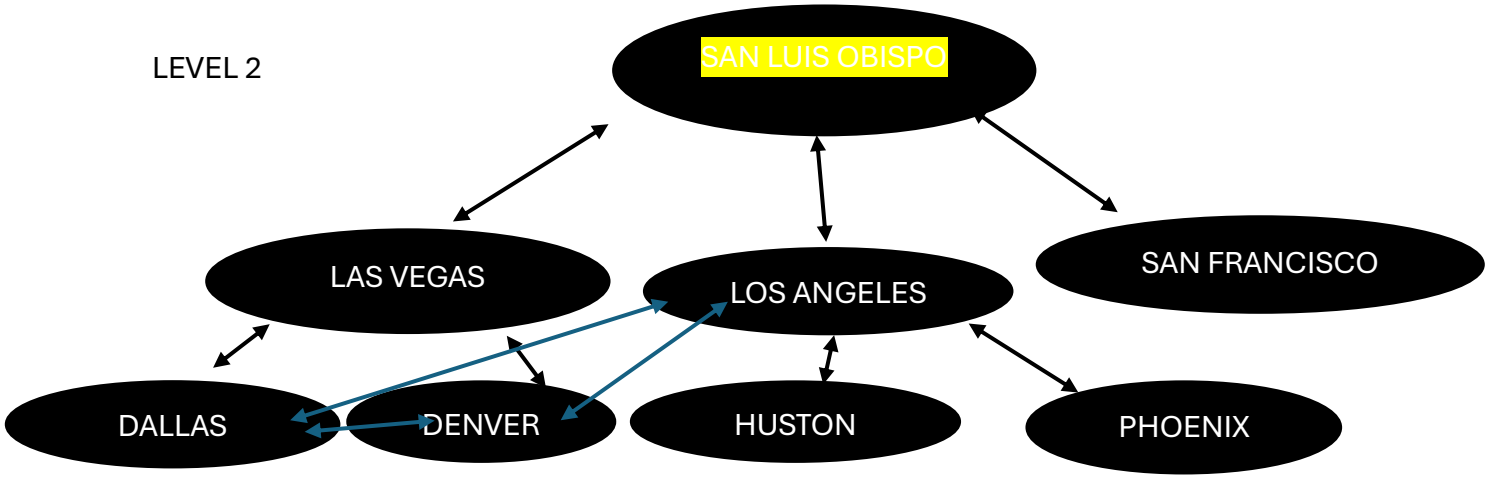

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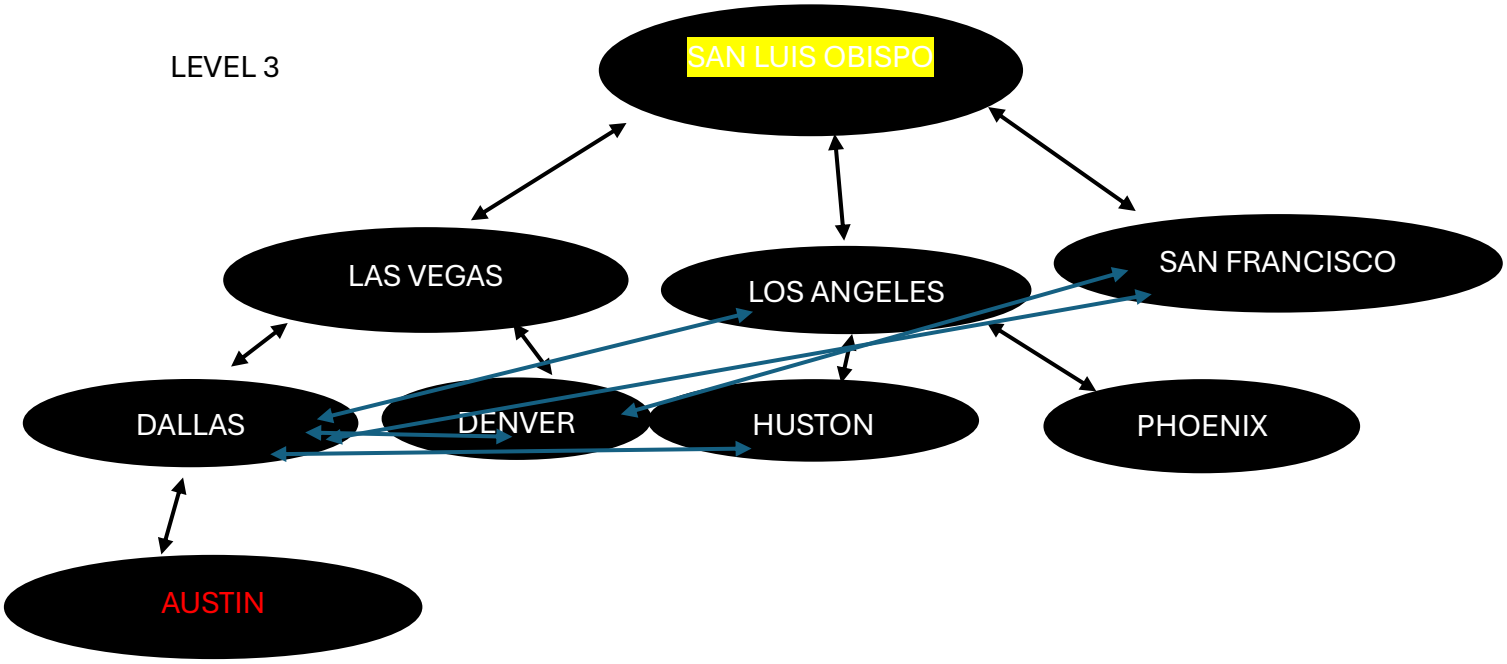
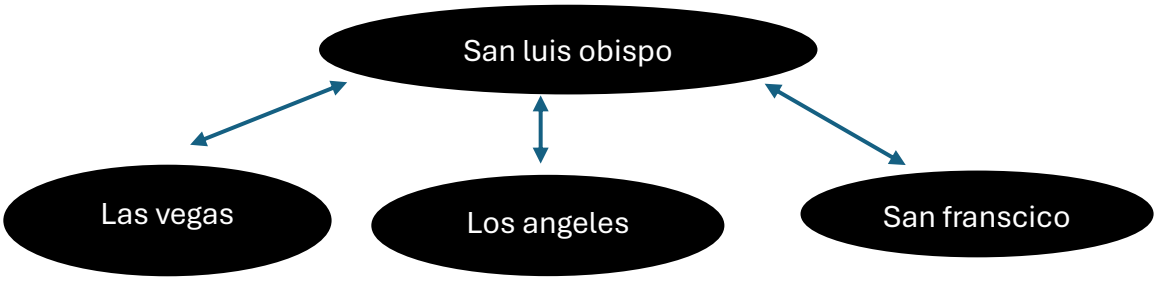


B ITERATIVE DFS(in alphabetical oders)

Level 0

Level 1



Level 2