Comsats University Islamabad Lahore Campus

Lab Mid Term Examination-Semester Fall 2024

Course Title:	Artificial Intelligence Lab				**Course Code**	CSC462	
Course Instructor	Mishal Muneer	**Program**		BS Computer Science			
Semester:		**Batch:**	Repeaters	**Section**		**Credit Hours:**	4(3,1)
Time Allowed:	1.5 Hours	**Maximum Marks**	20	**Date**		22/10/2024	
Student's Name:	[redacted]			**Reg-No**	[redacted]		

Important Instructions / Guidelines:

- **Answer all questions.**
- **Viva will be taken after exam in lab. Manage your time accordingly.**

Question No. 1 [CLO 6: Applying] [10 Marks]

You are a delivery planner for a company that needs to deliver packages to different cities in a region. The cities are connected by roads, and some routes may take longer than others. The delivery truck starts from a central hub city and must find a route to deliver a package to a specific destination city.

- Cities are represented as nodes in a graph, and roads between cities are edges.
- Some roads take longer to travel than others (weights are uniform for this case, and just node connections matter).
- Implement IDDFS to find the shortest route from the central hub city to the destination city.

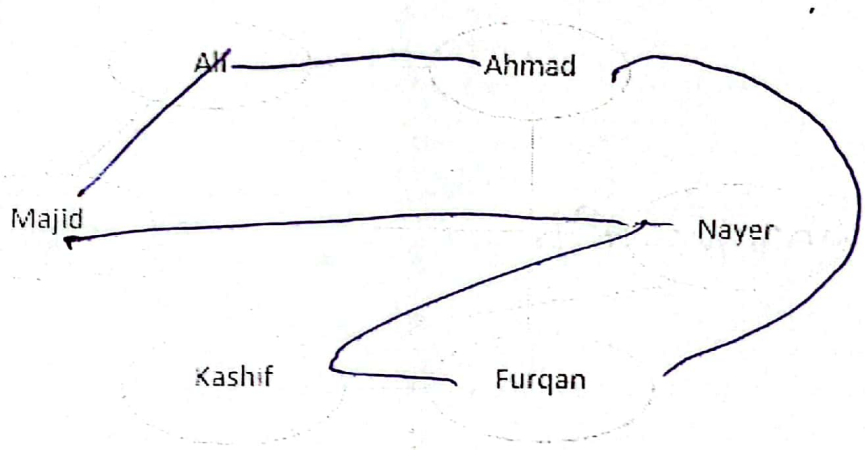
Graph Example:

- **Cities:** A, B, C, D, E
- **Roads:** A-B, A-C, B-D, C-D, D-E

Write a Python program using IDDFS to find the shortest delivery route from city A to city E. If no route exists, return that the destination is unreachable.

Question No. 2 [CLO 6: Applying] **[10 Marks]**

Design a friend suggestion system for a social media platform. Users on the platform are represented as nodes in a graph, and connections between them (friendships) are represented as edges. Given a starting user, your task is to suggest the shortest path (minimum number of hops) from this user to another specific user.



You must get input from user and use Breadth First Search to find the shortest path between the given user (start node) and the target user (goal node).