

# COMSATS University Islamabad ABBOTTABAD CAMPUS Lab Assignment#1 FALL 2025

Class:	BSC-6C, BSC-9B, BSE-6C	Due Date:	1 3 / 1 0 / 2025
Subject:	Artificial Intelligence	Instructor:	Zeenat Zulfiqar
CLO:	CLO 6	Max Marks:	15
Student Name:		Roll	
		Number:	

#### **Attention:**

- Individual Lab Assignment
- You must record a video while working.
- Your work should be in video, if you submit the code and your activity is not in video then marks will be zero. Because we must check so many things, how you are searching on the internet, how you install a new library, how you learn and follow a new library.
- After completing all tasks while recording video, then upload them to YouTube channel and upload your code on GitHub.
- You must submit a YouTube link, GitHub link and convert your ipynb file to PDF.

### CLO-6

#### TASK#1

Apply BFS and DFS on trees and graphs. You can use simple examples for your practice. For graph editor you can use this: <a href="https://csacademy.com/app/graph\_editor/">https://csacademy.com/app/graph\_editor/</a>

## TASK#2

- Create a dictionary to store **student information** with the following keys: name, age, roll\_number, and grade.
- Perform the following operations:
  - 1. Print all keys and values.
  - 2. Update the grade of the student.
  - 3. Add a new key email with a value.
  - 4. Delete the roll number key.

#### TASK#3

- 1. Import the **Matplotlib** library.
- 2. Create a **simple line plot** for the following data:
- X = [1, 2, 3, 4, 5]

- Y = [2, 4, 6, 8, 10]
- 3. Add:
- 1. Title: "Simple Line Plot"
- 2. Labels for the X-axis and Y-axis.
- 3. Grid lines.

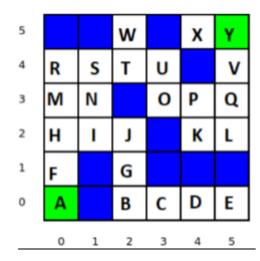
# TASK#5

For Water Jug problem

- Implement both BFS and DFS.
- Compare their performance in terms of:
  - o Number of steps taken.
  - o Time taken to find the solution.
  - o Memory usage.

# TASK#6

Consider a maze as shown below. Each empty tile represents a separate node in the graph, while the walls are represented by blue tiles. Your starting node is A, and the goal is to reach Y. Implement an A\* search to find the resulting path.



The End