THINGS TO KNOW:

1. **Lab report must contain following sections: (order must be maintained)**
   a) **Title /Question**
   b) **Theory: The brief overview of the concept /techniques/syntax/technology used in the program**
   c) **Code: The complete code**
   d) **Output: Screenshot of the output**
2. **Output screen should be captured (use snipping tool), printed and attached in the report. Other contents can be handwritten or printed.**
3. **Every source code must include the printing statements to print following information after your main output:**

   Lab No.:

   Name:

   Roll No./Section :

4. **Contents should be written/printed on single side of A4 sized paper.**
5. **The works must be submitted within specified deadline.**
6. **Cover page and index page should be attached in the report appropriately.**

Index Page Format (can be printed)

List of Lab Works

Lab No.	Title /Question	Submission Date	Signature	Remarks
1(a)	This is sample	2079/11/12		
1(b)	This is also sample	2078/11/12		

Recommendation for self – study (required for doing Lab works in AI)

Students are recommended to study all the topics and concepts given in syllabus. They are **highly recommended to learn following concepts, language features and technologies:**

- Setting environments for coding in **Python** (install **Anaconda Navigator** or other alternatives)
- Basic language features of Python including ***conditional statements, loops, function, recursion, string, list, dictionary, tuple, set, class, object, constructor***, etc.)
- Idea to handle ***data structures like stack, queue, priority queue, etc. in Python***.
- Idea to generate random numbers
- Basics of **numpy** library for working with arrays, basics of **pandas** library for working with data frame and csv files.
- Basic idea about **NLTK** library in Python.
- Setting environments for coding in **Prolog (**install **GNU Prolog** or other alternatives and text editors like **NotePad++, Sublime Text**, etc.)
- Basic Idea About Prolog Language (What/ When/ Who/ Why)
- Ideas about ***Atoms, Variables, Facts, Rules and recursion in Prolog***

Lab works (AI / BSc.CSIT 4th Semester)

1. Program to simulate Simple Reflex Agent for detecting source of water leakage in a house. (Recommended language: Python or C)

   Note: Consider the followings while writing the code

   - *We need to write code for an agent to detect water leakage in a house*
   - *The necessary input will be provided by corresponding sensors but for our convenience we will take such values from user through console.*
   - *The rules to be considered are listed below:*
     - *If hall is wet and kitchen is dry then there is leak in bathroom*
     - *If hall is wet and bathroom is dry then there is problem in kitchen*
     - *If window is closed or it is not raining then it is confirmed that water is not from outside.*
     - *If no water from outside and problem is in kitchen then leak is in kitchen.*
2. WAP to implement BFS for a graph. (Recommended Language : Python)
   (Note: The graph should be drawn in lab report)
3. WAP to implement Uniform-cost search. (Recommended Language : Python)
   (Note: The graph should be drawn in lab report)
4. WAP to implement DFS for a graph (Recommended Language: Python).
   (Note: The graph should be drawn in lab report)
5. WAP to implement Depth limited search for a graph (Recommended Language: Python).
   (Note: The graph should be drawn in lab report)
6. WAP to implement greedy best first search. (Recommended Language : Python)
   (Note: Necessary information should be included in report.)
7. WAP to implement A* search. (Recommended Language : Python)
   (Note: Necessary information should be included in report.))
8. WAP to implement Hill Climbing (Steepest Ascent) Search. (Recommended Language : Python)
   (Note: Necessary information should be included in report.)

9. WAP to solve any one Cryptarithmetic Problem (like TWO +TWO = FOUR or SEND +MORE = MONEY). (Recommended Language : Python)