Assignment # 1

Course: Artificial Intelligence

Instructor: RAFI ULLAH

Instruction:

1. Solve assignment in group of 2 or 3
2. Each member should participate in assignment tasks
3. Submit assignment before 12 PM Sunday 20-Oct-2019
4. Straight forward copy paste will lead to cancellation of all assignment – Negative Marking

You have to submit

1. All source codes file (Coding should be in Python Language), each line should be well commented, otherwise assignment will be rejected
2. You have to paste screen shots of executing program, and screen shots must contain some indication that you have executed on your system
3. 1 Page document showing the contribution of each member of your group
4. All stuff will be zipped and named **AI_assign_1_student1ID_student2ID_student3ID**
5. Email your assignment before deadline in softcopy on rafi@pafkiet.edu.pk

Question # 1: (AI Applications) (20 Marks)

Select one of the following topic, and then write following

A. ChatBOT development
B. Sound to Text conversion
C. Optical Character Recognition systems
D. Autonomous vehicles
E. Face Recognition Systems
F. Urdu to English conversions using machine learning
G. Stock Market Prediction
H. Recommendation systems

And do following activities

1. Download 5 recent research papers from **google.scholar**
2. Read Abstract of all papers, if papers are paid then download using **scihub.tv** site
3. Write in your words, the summary of all papers (should not be greater than 1 page)
4. Give at-least one point (innovation that can be suggested in given topic)
5. Write 10 applications where your selected topic can be used for efficiency

Question # 2: (Problem Solving) (20 Marks)

Think of any unique agent, (try for something new).

1. Write the problem definition (why you are developing this agent??)
2. Draw the structure of your agent
3. Write the Types of Tasks Environment where your agent will be deployed
4. Write PEAS Description of your agent

Question # 3: (Searching Techniques) (30 Marks)

1. Write problem formulation of following
    a. 8-Queens Problem
    b. Sliding Puzzle
    c. Path Finding Problem
    d. Parts Assembling Robots
2. Implements Successor Functions / Expand Functions for following
    a. Slide Puzzle (I will enter any random state, your code will return me all possible states)
    b. Tic-Tac-Toe (I will enter any random state and player name, and your code will return all possible states)
    c. Implement HIT and Trial algorithm Sliding puzzle.
3. Write Following Goal Tests logic (Implementation)
    a. Slide-Puzzle (I will enter any random state and your algorithm will return whether slide puzzle is solved or not?)
    b. Tic-Tac-Toe (I will enter random state and your algorithm will return whether X wins, O wins, Draw or cannot decide yet)
4. Consider following tree, 1 is initial state, 10 is goal state, Implement Depth First Search on following tree. Your program should return complete path from 1 to 10. Show the values of each data structure during program execution in following form. Note: Program (well commented and outputs (snapshots) must be send in this assignment)

Iteration #	Stack	Goal test	Expand