AI ASSIGNMENT 1
Date of Submission : 19/09/2023

Total Marks : 25 Marks
Theory section : 10 Marks
Computational section : 15 marks

Instructions:

1. Assignments are to be attempted individually.
2. Submit a .pdf for theory question and .py file for programming question.
3. Submit the assignment in a zip folder with name AI1_Rollnumber
4. **Programming Language :** Python
5. **Extension and Penalty clause:** Even a 1 minute late submission on google classroom will be considered as late. Please turn-in your submissions atleast 5 minutes before the deadline.

Theory

1. Logic (5 marks): The universe either will simply exist as it is or end in a heat death. If there was no big bang then the universe simply existed. If and only if the universe is expanding then there was a big bang. If the universe is expanding and accelerated then it will end in a heat death.
   (a) Write the sentences using logical connectives.(1)
   (b) Write the contra-positive of the sentence using logical connectives. (1)
   (c) What can be inferred and not inferred from the statement. (1)
   (d) Draw the And-OR graph (2)
2. Semantic Network (5 marks) : Construct a Semantic network based on the relation between three people and yourself.(2) Include the information of their :
   (a) Location (1)
   (b) Gender (1)

   Explain inheritance and multiple inheritance using examples from your Network. (2)
3. (*Extra credit*: 3 marks) Show that the proof by resolution approach for propositional logic is sound and complete.

Computational

1. Travel Advisory System (15 marks):

   (a) Create a Travel advisory system in Python for travellers. It needs to suggest to a person the locations(places) they can visit based on their preferences.

   (b) Advisory system here refers to a system that will take some inputs from the user and ask them questions related to their travel to narrow down choices and then suggest a destination according to their preferences. Write clauses and show explicit knowledge representation and reasoning.

   (c) You are free to make your own rules and facts. Create your own knowledge base, for example, you can consider the weather, activities of that location, places to visit nearby, connectivity, etc.

   (d) You are free to add any number of parameters.

   (e) Use Python features such as Lists, Input/ Output, Recursion, Backtracking, etc.

   (f) Should work for different inputs. Should not be hard-coded for one user.

   (g) Make your own advisory system. Make it as good as you can, but the advice should be useful and practical.

   (h) Users must be able to add new destinations, rate them on a scale of 10, and provide feedback. They must also be able to check the already existing feedback.

   (i) You are free to make the program as interesting and complex as you want.

   (j) Marks distribution:

   - Working program (demo) (3 marks).
   - Knowledge Base (2 marks)
   - Three main functions: `recommend_destination()`, `add_new_destination()`, `add_feedback()` (6 marks)
   - The complexity of the program (2 mark).
   - The kind of result generated (2 mark).
   - `Example for Demo`
     Program: Enter the preferred weather condition for the place.
     User: Cold
     Program: Enter Budget
     User: 30000
     Program: Would you like to check feedback for a particular place ?
     User: No
     Program: The Recommended places are: Manali, Dehradun.
     Program: Would you like to add new destinations?
     User: Yes
     Prompt: Delhi Rating 8
     Program: Would you like to give feedback on the place ?
     User: No
     Ends..