ARTIFICIAL INTELLIGENCE
TOPICS for FINAL REVIEW (22CLC2 – 22CLC3)

1. UNINFORMED SEARCH and INFORMED SEARCH
    a. Tree-search algorithm vs. Graph-search algorithm
    b. Uninformed search: BFS, DFS, DLS, IDS, and UCS
    c. Informed search: Greedy Best First Search (GBFS) and A*
    d. Admissible heuristic & Consistent heuristic & Dominant heuristic
    e. Draw the search tree that shows reached states during the search.
2. LOCAL SEARCH
    a. Hill-Climbing (Steepest ascent hill-climbing, simulated annealing, local beam search)
    b. Genetic Algorithm
3. ADVERSARIAL SEARCH: $\alpha - \beta$ pruning.
4. CONSTRAINT SATISFACTION PROBLEMS
    a. Formulation: Variables, Domains, Constraints (Unary/Binary)
    b. Algorithms:
        i. Node consistency
        ii. Arc consistency (AC-3)
        iii. Backtracking with Forward Checking
        iv. Heuristics: DH, MRV, LCV
5. PROPOSITIONAL LOGIC
    a. Syntax, Semantic (Entailment)
    b. Algorithms:
        i. CNF conversion
        ii. Resolution (Contradiction) ← KB in CNF
        iii. Forward and Backward Chaining ← KB in Horn Clause
6. FIRST-ORDER LOGIC
    a. Syntax, Semantic: Predicate, Function, Term, Quantifiers (∀, ∃)
    b. Algorithms:
        i. Unification, CNF conversion
        ii. Resolution ← KB in CNF
        iii. Forward and Backward Chaining ← KB in Horn Clause
7. MACHINE LEARNING
    a. Learning Types: Supervised, Unsupervised, Reinforced Learning
    b. Algorithms:
        i. ID3: Algorithm, Metrics to evaluate attributes (Entropy, Average Entropy, and Information Gain)
        ii. Perceptron Learning Rule (both feedforward and weight update)
        iii. Multi-layer Neural Network (both feedforward and weight update)