**General Guidelines**

1. **Week 6 will be a revision lab** covering all topics from **Week 1 to Week 5**.
2. **Pseudocode Requirement:**
   * Before coming to the lab, students must write the pseudocodes for the experiments listed below.
   * These pseudocodes will serve as a guide for implementation during the lab.
3. **No Internet Access:**
   * Ensure all required materials and references are prepared beforehand, as internet access will not be available in the lab.
4. **Weekly Assignments:**
   * Every week, the lab questions will be shared in advance.
   * Students must **write the pseudocode before coming to the lab** and **implement the code during the lab**.

**Experiments (Pseudocode to be Prepared Beforehand)**

1. **Implement the CartPole & Mountain Car Environment for a Certain Number of Steps**
   * Initialize the environment
   * Run for a predefined number of steps
   * Apply random actions or predefined policies
   * Record the results

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1. **Implement the CartPole & Mountain Car Environment for a Certain Number of Episodes**
   * Initialize the environment
   * Loop through a set number of episodes
   * Reset environment at the start of each episode
   * Apply random actions or predefined policies
   * Store performance metrics

A screenshot of a computer program

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1. **Breadth-First Search (BFS)**
   * Initialize queue with the start node
   * Explore neighbors level by level
   * Keep track of visited nodes to avoid redundancy
   * Stop when the goal is found

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1. **Depth-First Search (DFS)**
   * Initialize stack with the start node
   * Explore as deep as possible before backtracking
   * Keep track of visited nodes
   * Stop when the goal is found

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1. **Theta Policy** (CartPole)
   * If the pole angle (θ) is **tilted left (θ < 0)**, push the cart left.
   * If the pole angle (θ) is **tilted right (θ > 0)**, push the cart right.

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1. **Omega Policy** (CartPole)
   * If the pole’s angular velocity (ω) is **moving away from vertical (ω < 0)**, push left.
   * If the pole’s angular velocity (ω) is **moving towards vertical (ω > 0)**, push right.

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1. **Simple Hill Climbing**
   * Start with a random solution
   * Evaluate its fitness
   * If a better neighboring solution exists, move to it
   * Repeat until no better neighbors are found

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1. **Stochastic Hill Climbing**
   * Start with a random solution
   * Select a random neighbor instead of the best one
   * Move to the neighbor if it improves the fitness
   * Repeat the process

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1. **Steepest Ascent Hill Climbing**
   * Start with a random solution
   * Evaluate all possible neighbors
   * Move to the best possible neighbor
   * Repeat until no better neighbors are found

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**Note:** Ensure you bring the pseudocode for all the above experiments before attending the lab. Implementation will be done in the lab session itself.