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**Basic Tasks**

1. **Autonomous Campus Security System Example**:
   * **Task Description**: You need to consider a scenario where a set of security robots work together to protect a campus. The task does not require specifying a location for the campus.
   * **Approach**: Describe how multiple robots communicate and coordinate to ensure campus security. For instance, these robots might patrol different areas, detect intruders, or monitor for emergencies. You could discuss how they share data among themselves and communicate any detected issues to a central server.
2. **Middleware Activities**:
   * **Task Description**: Discuss the role of middleware in the autonomous campus security system.
   * **Approach**: Middleware serves as an intermediary that facilitates communication and coordination between the robots and the central system. Middleware activities could include:
     + **Data Integration**: Collecting and consolidating data from different robots.
     + **Communication**: Relaying alerts or information between the robots and the main control center.
     + **Error Handling**: Identifying and managing robot malfunctions or communication breakdowns.
     + **Security**: Ensuring secure communication between the robots and the control center.

**Medium Tasks**

1. **Security/Emergency Scenarios**:
   * **Task Description**: Choose a few scenarios, and for each, identify the data to be stored or processed. Decide on the appropriate database type (Relational, Network, Hierarchical, Object-Oriented, NoSQL) based on the needs.
   * **Approach**:
     + **Scenario Examples**:
       1. **Intruder Alert**: Robots detect an unauthorized person on campus.
          - **Data to Store**: Video footage, robot navigation logs, intruder location details.
          - **Recommended Database**: NoSQL document-based database for storing large amounts of varied data like video and logs.
       2. **Fire Emergency**: Robots detect a fire in a building.
          - **Data to Store**: Sensor readings, video feeds, emergency routes.
          - **Recommended Database**: A combination of NoSQL and relational for real-time sensor data and structured response protocols.
   * **Consideration**: For each scenario, address factors like dataset types, scalability, consistency, performance, security, maintenance, and sustainability.
2. **Decision Tree Example**:
   * **Task Description**: Create a decision tree for the chosen scenarios.
   * **Approach**: You can create a diagram to show how different factors (like data type, security requirements, and scalability) affect the choice of database. For instance:
     + **Intruder Alert** → **High Volume of Video Data** → **NoSQL Document Database**.
     + **Fire Emergency** → **High Consistency Required** → **Relational Database**.

**Advanced Tasks**

1. **Telecommunication and AI/ML Application**:
   * **Task Description**: Research and explore the role of telecommunications and AI/ML in this scenario.
   * **Approach**: You can consider solutions like:
     + **Communications**: Starlink offers satellite-based communication to maintain reliable connections between the robots and the control center.
     + **AI/ML**: Microsoft Azure’s Machine Learning as a Service can be used for real-time analysis of video feeds and detection of anomalies like suspicious movements or fires.
2. **Presentation Slides**:
   * **Task Description**: Create 2-3 slides detailing your chosen solutions.
   * **Approach**:
     + **Slide 1**: Overview of the chosen scenarios (intruder alert, fire emergency) and the required data.
     + **Slide 2**: Suggested database solutions with justifications.
     + **Slide 3**: The role of telecommunications and AI/ML in improving security.
3. **Class Presentation**:
   * **Task Description**: Share and exchange ideas in class.
   * **Approach**: Highlight the key aspects of your solution and discuss the practical applications of these technologies in campus security.