SENG 211 - Analysis Activities: From Use Cases to Objects
Assignment III

Duration: 48 Hours

Objective:

To understand and apply the process of transitioning from use cases to objects in system analysis, leveraging principles of object-oriented design. This assignment will guide students through identifying key objects, establishing their relationships, and representing them in a structured format.

Instructions:

1. Read the provided case study carefully.
2. Follow the steps outlined in the assignment to create a comprehensive analysis.
3. Use proper UML diagrams wherever applicable.
4. Submit your assignment as a PDF document.

Case Studies you choose one

1. **Agriculture Management System**
   Sector: Agriculture
   A smart farming platform that helps farmers manage crops, track soil conditions, and monitor irrigation systems. The system uses IoT devices to collect data about temperature, humidity, and soil pH levels. Farmers can analyze trends, schedule irrigation, and receive alerts about potential crop diseases. Administrators can oversee the network of devices and update software for better data accuracy.
2. **Customizable Online Learning Platform**
   Sector: Education
   A platform designed for schools and universities to create personalized learning experiences for students. Teachers can design courses, track student progress, and upload interactive content. Students can participate in virtual classrooms, complete assignments, and communicate with peers. Administrators manage user accounts, course libraries, and platform performance.
3. **Wildlife Conservation Tracking System**
   Sector: Environmental Conservation
   A system developed for monitoring and protecting endangered wildlife species. The platform allows conservationists to track animal movements using GPS collars and analyze migration patterns. It also collects data on poaching incidents and generates alerts for high-risk areas. Researchers can study data trends, while administrators manage access permissions and reporting tools.

4. **Digital Art Marketplace**
   Sector: Creative Industries
   An online platform for digital artists to sell their work as non-fungible tokens (NFTs). The system facilitates the listing of artwork, secure transactions, and royalty payments for resales. Artists can track sales and earnings, buyers can showcase their collections, and administrators manage platform policies and dispute resolutions.
5. **Disaster Relief Coordination System**
   Sector: Emergency Management
   A system for coordinating resources and efforts during natural disasters such as floods or earthquakes. Relief organizations can manage supply inventories, assign volunteers, and map affected areas using geospatial data. Victims can request aid, and administrators oversee resource distribution and generate post-disaster reports.
6. **Rare Disease Diagnosis Support Syste**
   Sector: Health
   A healthcare system designed to assist doctors in diagnosing rare diseases. The system collects patient symptoms and medical history, cross-references them with a database of rare diseases, and suggests possible diagnoses. Doctors can add notes, request additional tests, and refine the diagnosis. Administrators manage the disease database, update diagnostic algorithms, and generate performance reports for system improvements.

Tasks:

Part 1: Use Case Identification (20 Marks)

1. Identify and list the primary use cases for the rare disease diagnosis support system.
2. Describe each use case briefly (actors involved, main goal, and summary of interactions).

Part 2: Use Case Diagrams (15 Marks)

Draw a use case diagram representing the identified use cases and their relationships with actors.

Part 3: Identify Objects (20 Marks)

1. Based on the use cases, identify the key objects in the system.
2. For each object, list its responsibilities and collaborators (e.g., patient, doctor, administrator, etc.).

Part 4: Class Diagram (25 Marks)

1. Create a class diagram illustrating the objects and their relationships.
2. Include attributes and methods for each class.

Part 5: Sequence Diagram (20 Marks)

1. Choose one critical use case (e.g., suggesting a diagnosis).
2. Draw a sequence diagram showing the interaction between objects to achieve the use case.

Submission Requirements:

1. Submit a single PDF document containing all the required diagrams and explanations.
2. Ensure diagrams are neat and legible. Use tools like Lucidchart, StarUML, or draw\.io for creating UML diagrams.
3. Provide clear explanations for each part, wherever required.

Evaluation Criteria:

1. Clarity and Completeness : Are the diagrams and descriptions clear and complete?
2. Accuracy : Are the use cases, objects, and relationships accurately identified and represented?
3. Presentation: Is the assignment well-organized and neatly presented?
4. Creativity : Have you shown original thinking in designing and structuring the system?

Good Luck…