UML diagrams are recognized as essential tools in software development during the design phase. They provide clear visualization of system design, improve design quality, enhance development efficiency, increase reusability, and improve traceability between development stages. Additionally, UML diagrams strengthen collaboration within teams. From design to implementation, testing, and maintenance, UML diagrams play a critical role throughout various development phases. They enable developers and their teams to proceed with clear direction and offer significant advantages in terms of maintenance and scalability.

In this recitation class, each team will create UML diagrams for their semester project. A minimum of two UML diagrams must be submitted. **Class and activity diagrams are mandatory.**

Although the project may not be complete at this point and the diagrams might need revisions before being included in the final report, this recitation serves as a starting point to begin working on the UML diagrams, which are a mandatory part of the final project report.

. **Step 0**  To understand the project in detail and decide which diagrams to create, discuss the key functions and structure related to the project and select the UML diagrams<https://www.smartdraw.com/uml-diagram/> most suitable for the project’s nature. In particular, detailed discussions are needed about which classes will be required during the project’s implementation. [40 min]

* + Class Diagram: Structure of the system and relationships between classes
  + Activity Diagram: Flow of processes or workflows
  + Sequence Diagram: Flow of messages in chronological order
  + Use Case Diagram: Interaction between the user and the system
  + Component Diagram: Relationships between modules and components
  + Deployment Diagram: Deployment and network structure
  + Etc.

. **Step 1** Design the Diagrams Based on the Core Features of the Project.

* + Identify the necessary elements:[30 min]
    - Class Diagram: Class names, attributes, methods, relationships (inheritance, dependency, etc.)
    - Activity Diagram: Start, activities, conditions, and end nodes
    - Use Case Diagram: Actors, use cases, relationships
    - Sequence Diagram: Messages and their sequence between objects
    - Etc.
  + Create and Revise the Diagrams: [30 min]
    - Use UML tools to draw the diagrams
    - Improve the diagrams through feedback from team members
  + Examples of Online UML Tools:
    - <https://app.smartdraw.com/index.aspx?startLocation=0&flags=128>
    - <https://app.diagrams.net/>
    - <https://moqups.com/uml-diagram-tool/>
    - <https://miro.com/diagramming/uml-diagram/>
    - <https://www.planttext.com/>

. **Step 2**  Explain the completed diagrams [30 min]

* + Teams that complete two or more diagrams explain them to the instructor.
  + Apply any revisions to the final report.

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**Submission Guidelines:**

* Submission Deadline: Within one week after the end of the recitation class
* Submission Requirements: A single Word (.docx) or HWP (.hwpx) file containing at least two completed diagrams
  + Diagrams for this recitation can be submitted either as those drawn using software tools or as copies (photos) of hand-drawn diagrams. However, diagrams included in the final report must be created using software tools.

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