The Outline for the Group Project Phase II Deliverable

(1) **Phase I documentation** – This part constitutes the analysis artifacts produced during the first phase of the project.
(2) **Architectural design:** This section will include the **UML deployment diagram** that demonstrates the subsystems and their interconnections. The style of the architecture, the rationale for its selection, and its pros/cons need to be explicitly discussed in one paragraph. The allocation of the use cases to the nodes in the UML deployment diagram will also be illustrated.
(3) For each subsystem in the architecture perform a detailed design as follows.

- **Interaction design – (UML Collaboration Diagrams):** Each use case allocated to a subsystem in an architectural node has one or more Detailed SSDs (DSSDs). Using the DSSDs of a use case, for each **complex operation** in the DSSD develop one or more collaboration diagrams that realize this operation. The top-level collaboration diagram for each operation may include messages that require their own collaboration diagram. Refine your collaboration diagram in a stepwise manner (choose one operation at a time from each diagram and refine it) so that a hierarchy of collaboration diagrams is obtained. Continue the refinement of a collaboration diagram until all operations are sufficiently primitive. For each collaboration diagram, state in one paragraph which **GRASP patterns are used** (make sure to give the reason) to assign responsibilities to objects in the collaboration diagram. Repeat this step for each use case.
- **Design Class Diagram -** Using the collaboration and DSSDs derive a comprehensive UML design class diagram (DCD). Make sure the classes, associations, attributes, navigability, and dependency information is captured in the DCD. **Use at least one design pattern** in your design class diagram.
- **Object Design –** Choose 5 classes that have state-dependent behavior from the DCD, and for each class provide the following:
    - **Interface Contract** that defines the invariant along with the pre and post-conditions of member functions (methods).
    - **UML Statechart** that defines the states, transitions, and guard conditions in terms of the method calls (events) and activities (e.g., changes in the member variables and possible calls (interactions) to other associated objects).
    - **Procedural Behavioral Specification of Methods:** Choose one method from the class and specify its control flow in terms of the UML activity diagram or pseudo code.

(4) **Evaluate the completeness, consistency, and quality of the detailed design model**. A two-page description of the completeness, consistency (e.g., transformational accuracy), and design quality criteria (i.e., OO design metrics) used to evaluate the detailed design model.