The Outline for the Group Project
Phase II Deliverable

CMK todo (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 a **UML deployment diagram** to demonstrate 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 or more paragraphs. The allocation of the use cases to the nodes in the UML deployment diagrams will also be illustrated.

(3) **Detailed Design**: For each subsystem in the architecture perform a detailed design as follows.

To be completed by each team member individually

- **Interaction design – (UML Collaboration Diagrams):** Each use case is allocated to a subsystem in an architectural node and formalized in terms of one or more detailed Detailed SSD (DSSD). Using the DSSDs developed during the analysis phase, for each **complex operation,** develop a detailed **UML collaboration diagram** that realizes this operation in terms of collaboration among multiple objects. 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.
- **Design Class Diagram (DCD) -** Using the collaboration and DSSD diagrams develop 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 and discuss why it is used.
- **Class Design –** Choose 5 classes that have state-dependent behavior from the DCD, and for each object provide the following:
  - **Pre/Post conditions** for each **method** of the class as well as the **invariant** for the whole class. You need to use **UML OCL statements** to express these constraints.
  - **UML Statechart** that defines the states, events, guard conditions, and activities for the class. The events refer to methods. The guard conditions are the preconditions of methods. The activities are the procedural logic of respective methods (events) that trigger the transition.
  - **Procedural Behavioral Specification of Methods:** For each method of the class specify its control flow in terms of the UML activity diagram or pseudo code.

(4) **Design Quality** – **Evaluate the completeness, consistency, and quality of the detailed design model**. A minimum **two page** description of the completeness, consistency (e.g., transformational accuracy), and design quality (i.e., OO design metrics) of the model.