**A. High level requirements** for the web-based project management application:

* Allows you to track multiple Projects which may or may not depend on each other.
* Each Project has multiple tasks which may be started in parallel when they have the same sequence number or sequentially with lower sequence numbers starting first.
* Each Task may be assigned to multiple projects and may or may not depend on other Tasks.
* Each Task may be owned or assigned to a single contact or a group of contacts or to no one.
* A contact is simple an e-mail address. A contact may own or be assigned to multiple tasks or projects.
* Each Task has associated Resources which are UPLOADED documents like PDF files, WORD/EXCEL DOCUMENTS or simply URLS like WEB PAGES or VIDEO / PODCAST LINKS.
* Project Owners can view pre-defined or canned reports or receive them via their contact email address at scheduled intervals. They may also send some of the reports as emails to contacts who own or are assigned to tasks.

**B. Technical requirements** for the web-based project management application:

* Projects:

1. Add, Edit, Delete or Update the Project Details including; Name, Description, Planned Start date, Planned End date, Actual Start date, Actual End date, Project Owner, Project Type (with a list of project types) and Status (active, inactive, etc.), Project Dependency (other projects that this project depends on) and Status (Active, Inactive, Completed, etc.), Project Dependency Type

* Tasks

1. Add, Edit, Delete or Update the Task Details including; Subject, Description, Start date, Due date, Status (Not Started, Completed, IN Progress, Waiting on Someone), Priority (Yes/No), Reminder Date, Task Owner (a contact, group of contacts or no one), Category (with a list of categories), Completed (Yes/No), Recurrence (Daily, Weekly, Monthly, Yearly and on What Day), Follow Up (Today, Tomorrow, This Week, Next Week, No Date, Custom), Assigned To (a contact, group of contacts or no one), Task Dependencies (related tasks), Task Dependency Type (each task dependency has a task dependency type), Task Type (Follow up E-mail, Follow up Phone Call, Appointment, or any custom task type), Planned start date, Actual end date, Planned end date, Actual end date, Planned duration, Actual duration, Duration Units (Minutes, Hours, Days), Sequence (decides which task comes before the other)

* Contact

1. Add, Edit, Delete or Update the Contact Details including; First Name, Last Name, Middle Initial, Email Address, Phone Numbers (each phone number has one phone number type like Mobile, Home, Work, Office or any custom Phone Type), City, StateOrPrince, Country

* Resources

1. Add, Edit, Delete or Update the Resources Details including; Resource Name, Resource Description, Resource Type (PDF, WORD, EXCEL, IMAGE, URL/LINK) or anything that can be either Uploaded or Linked to

* Alerts

1. Add, Edit, Delete or Update Daily, Weekly, Monthly Custom Alerts to Project Owners and/or Assigned To Contacts on: Resource Over allocation (resource booked for more than 8 hours on a day or 40 hours per week), Past Due Tasks, Past Due Projects

* Reports

1. Basic Task List Report grouped by Project including: Task Subject and Task Due Date.
2. Detailed Task List Report grouped by Project including: Task Subject, Task Due Date, Status, %Complete, Categories.
3. Active Task List Report for active or uncompleted tasks grouped by Project including: Task Subject, Task Due Date, Status, %Complete, Categories.
4. Next Seven Days Task List Report for tasks due in the next seven days grouped by Project including: Task Subject, Task Due Date, Status, %Complete, Categories.
5. Overdue Task List Report for overdue Tasks grouped by Project including: Task Subject, Task Due Date, Status, %Complete, Categories.
6. Active Task List By Category Report for all Active Tasks grouped by Category and Project including: Task Subject, Task Due Date, Status, %Complete, Categories.
7. Active Task List By Assigned To Report for all Active Tasks grouped by Assigned To and Project including: Task Subject, Assigned To, Task Due Date, Status.
8. Active Task List By Task Owner Report for all Active Tasks grouped by Task Owner and Project including: Task Subject, Assigned To, Task Due Date, Status.
9. Task List By Completed Task Report for all Completed Tasks grouped by Project including: Subject, Due Date, Date Completed and Categories
10. Active Project Timeline Report for all Projects grouped by Month and Status including: Project Name

**C. Assignment**  
Design a completely Normalized Relational Database Management System that meets both the high-level and technical requirements of the web-based project management system.

1. **Normalize** your RELATIONAL DATABASE DESIGN to the THIRD NORMAL FORM.
2. **Define all the tables** you need to implement this relationship correctly during the physical database design
3. **Define all the Primary Keys and Foreign Keys** you need to implement all the relationships in your design correctly
4. **Define all the field or column sizes** and field or column types in your relational database design
5. Discuss how much of the **requirements of the system were met or not met by your design**