

UE22CS341A - Software Engineering
PROJECT PLAN DOCUMENT
SPORTS DATABASE

Team #: 13

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Life-cycle followed

Identify the lifecycle to be followed for the execution of your project and justify your choice of the model. Use a degree of certainty to justify your answer.

Life-cycle Model: Incremental Model

Degree of Certainty: The product certainty is high, as the core functionalities are well-defined, allowing us to build out essential features first and add more complex ones incrementally. The low process certainty makes the Incremental Model ideal because it provides flexibility to adjust and refine the development process after each phase. Given low resource certainty (with two team members and a limited semester timeline), this model ensures continuous progress, even if resources become constrained. Additionally, our focus on milestones and clear personal responsibilities aligns well with the Incremental Model, as it breaks the project into manageable chunks with well-defined goals for each phase. Overall, this model balances flexibility and progress, allowing us to deliver a functional system within the project constraints.

Tools Used for this Project

Identify the tools you want to use throughout the lifecycle, such as planning tools, design tools, version control, development tools, bug tracking, and testing tools.

Based on the lifecycle and nature of the project, the following tools can be used throughout:

- **Planning Tools:**
 - **Microsoft Project** for project management.

- **Design Tools:**
 - **Canva** or **Draw.io** for designing the ERD and system architecture.
 - **Canva** for any UI/UX design elements.
- **Version Control:**
 - **GitHub** for version control, ensuring collaborative development and easy rollbacks.
- **Development Tools:**
 - **MySQL** for database development.
 - **Visual Studio Code/IDE** for coding and database schema creation.
- **Bug Tracking:**
 - **Jira** or **Bugzilla** to track issues and defects during development and testing.
- **Testing Tools:**
 - **JUnit** or **PyTest** for unit testing.

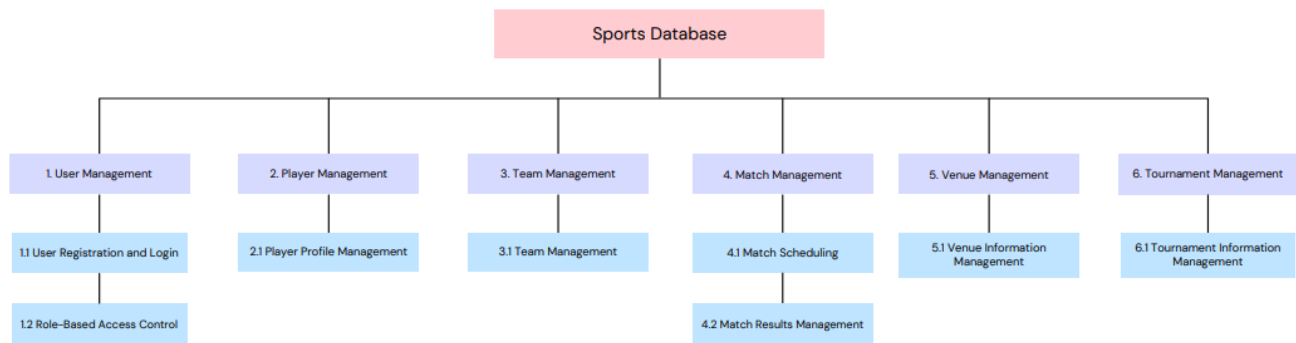
Deliverables classified as reuse/build components

Determine all the deliverables and categorize them as reusable/build components, and provide justification for each categorization

Deliverable	Category	Justification
Database Schema	Reusable Component	Can be adapted for similar sports management systems
ER Diagram	Reusable Component	Generalisable to other systems with similar structure
SQL Queries	Reusable Component	Can be used across other relational databases
Stored Procedures & Functions	Reusable Component	Applicable to future sports-related DBMS projects
Front-End UI	Build Component	Tailored to this specific system and user needs
API for Sports DBMS	Reusable Component	Adaptable for other systems with sports data
Documentation	Build Component	Specific to this project's context and functionality
Test Cases	Reusable Component	Test scenarios applicable to similar projects
Version Control Setup	Build Component	Unique to this project's history

Work Breakdown Structure

Create a Work Breakdown Structure (WBS) detailing all the functionalities. Identify the type of WBS and justify.



Effort Estimation (in person-months)

Provide a rough effort estimate for each task in person-months

You may use the assumption that 1 year = 260 working days, then 1 month = $260/12 = 21.66$ working days. So 7 full working days for one person would be $7/21.66 = 0.323$ person-months.

Use the COCOMO model to estimate the effort and time.

COCOMO Model for Organic Projects

$a=2.4$ $b=1.05$

Estimate Lines of Code (LOC): The Estimation KLOC (thousands of lines of code) to be 2.5 KLOC for the project.

Overall Effort Calculation Using the COCOMO formula:

$$\text{Effort (person-months)} = a \times (\text{KLOC})^b$$

Plugging in the values:

$$\text{Effort} = 2.4 \times (2.5)^{1.05}$$

Calculating:

$$(2.5)^{1.05} \approx 2.63$$

$$\text{Effort} = 2.4 \times 2.63 \approx 6.28 \text{ person-months}$$

Total Effort Calculation Total Effort = $0.5 + 1.0 + 1.5 + 1.0 + 1.0 + 0.5 + 0.5 = 6.0$ person-months

Comparison with COCOMO Estimate

COCOMO Estimate: 6.28 person-months

Task Breakdown Estimate: 6.0 person-months

Project Timeline

The project will be worked on by 2 people:

Total Effort for 2 members=6.28 person-months

To calculate how long this project will take with 2 people:

Time (months) = Total Effort / Number of People = $6.28/2 \approx 3.14$ month

Gantt Chart

Create a Gantt Chart for scheduling using any scheduling tool.

