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Batch A
Experiment 6: Work Breakdown Structure

Theory

What is a Work Breakdown Structure?

A work breakdown structure (WBS) is a visual, hierarchical and deliverableoriented deconstruction of a project. It is a helpful diagram for project managers because it allows them to break down their project scope and visualize all the tasks required to complete their projects.

All the steps of project work are outlined in the work breakdown structure chart, which makes it an essential project planning tool. The final project deliverable, as well as the tasks and work packages associated with it rest on top of the WBS diagram, and the WBS levels below subdivide the project scope to indicate the tasks, deliverables and work packages that are needed to complete the project from start to finish.

• Purpose of Data Flow Diagram

Project managers make use of project management software to lay out and execute a work breakdown structure. When used in combination with a Gantt chart that incorporates WBS levels and task hierarchies, project management software can be especially effective for planning, scheduling and executing projects.

Making a WBS is the first step in developing a project schedule. It defines all the work that needs to be completed (and in what order) to achieve the project goals and objectives. By visualizing your project in this manner, you can understand your project scope, and allocate resources for all your project tasks.

A well-constructed work breakdown structure helps with important project management process groups and knowledge areas such as:

- Project Planning, Project Scheduling and Project Budgeting

- Risk Management, Resource Management, Task Management and Team Management

In addition, a WBS helps avoid common project management issues such as missed deadlines, scope creep and cost overrun, among others.

- **Types of WBS**

1. Work Breakdown Structure List: Also known as an outline view, this is a list of work packages, tasks and deliverables. It's probably the simplest method to make a WBS, which is sometimes all you need.
2. Work Breakdown Structure Tree Diagram: The most commonly seen version, the tree structure depiction of a WBS is an organizational chart that has all the same WBS elements of the list (phases, deliverables, tasks and work packages) but represents the workflow or progress as defined by a diagrammatic representation.
3. Work Breakdown Structure Gantt Chart: A Gantt chart is both a spreadsheet and a timeline. The Gantt chart is a WBS that can do more than a static task list or tree diagram. With a dynamic Gantt chart, you can link dependencies, set milestones, even set a baseline. This is the most common version in project management software.

- **Steps to make WBS**

1. Define the Project Scope, Goals and Objectives: Your project goals and objectives set the rules for defining your project scope. Your project scope, team members, goals and objectives should be documented on your project charter.

2. Identify Project Phases & Control Accounts: The next level down is the project phases: break the larger project scope statement into a series of phases that will take it from conception to completion. You can also create control accounts, which are task categories for different work areas you want to keep track of.

3. List Your Project Deliverables: What are your project deliverables? List them all and note the work needed for those project deliverables to be deemed successfully delivered (sub-deliverables, work packages, resources, participants, etc.)

4. Set WBS Levels: The WBS levels are what make a work breakdown structure a "hierarchical deconstruction of your project scope", as defined by the project management institute in its project management body of knowledge book (PMBOK). You'll need to start at the final project deliverable and think about all the deliverables and work packages needed to get there from the start.

5. Create Work Packages: Take your deliverables from above and break them down into every single task and subtask that is necessary to deliver them. Group those into work packages.

6. Choose Task Owners: With the tasks now laid out, assign them to your project team. Give each team member the work management tools, resources and authority they need to get the job done
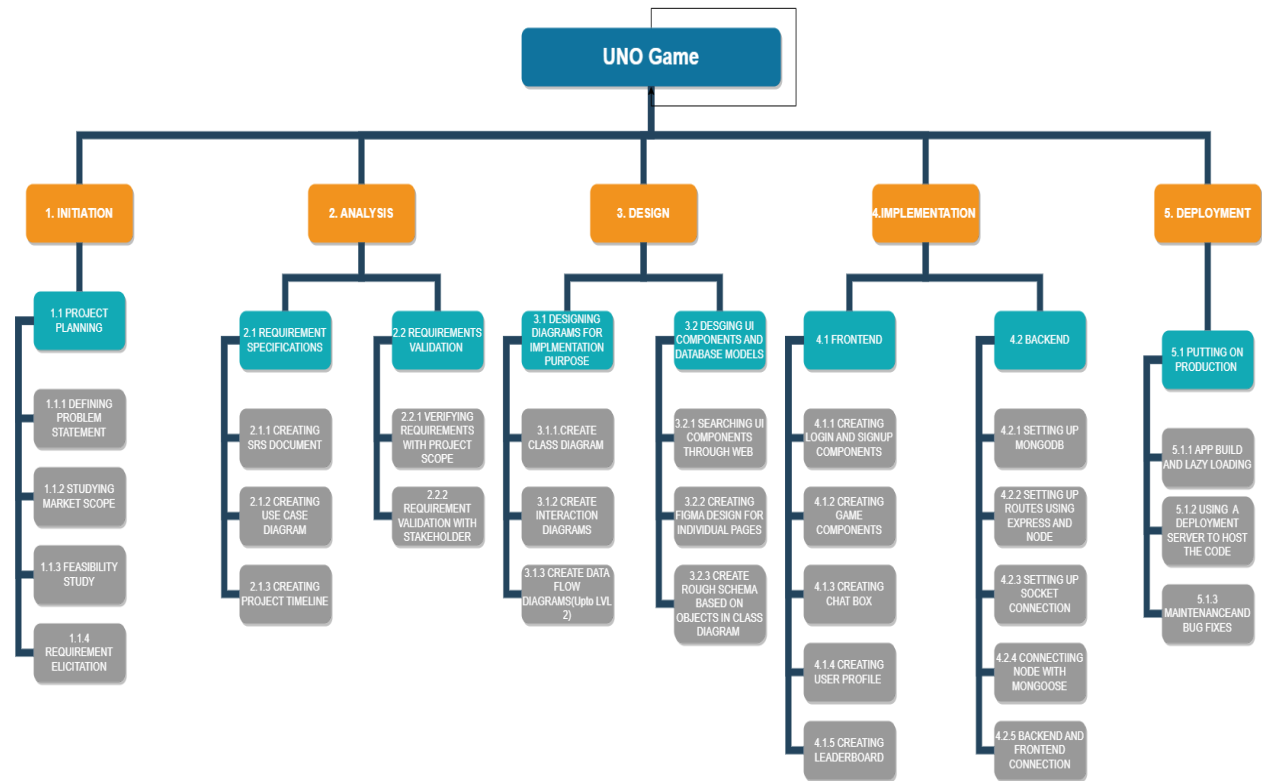
• **Tips for making WBS** As you're working on your WBS it is helpful to maintain some best practices. Here are some things to keep in mind.

1. **100% Rule:** This is the most important work management principle to construct a WBS. It consists in including 100% of the work defined by the project scope, which is divided into WBS levels that contain control accounts, project deliverables, work packages and tasks. This rule applies to all the levels of the WBS, so the sum of the work at a lower WBS level must equal the 100% of the work represented by the WBS level above without exception.

2. **Use Nouns**: WBS is about deliverables and the tasks that will lead to your final deliverable. Therefore, you're dealing more on the what than the how. Verbs are great for action, and should be used in your descriptions, but for clarity, stick to nouns for each of the steps in your WBS.

3. **Be Thorough**: For a WBS to do its job, there must be no holes. Everything is important if it's part of the course that leads to your final deliverable. To manage that schedule, you need a complete listing of every task, big and small, that takes you there.

4. **Keep Tasks Mutually Exclusive**: This simply means that there's no reason to break out individual tasks for work that is already part of another task. If the work is covered in a task because it goes together with that task, then you don't need to make it a separate task.

5. **Go Just Deep Enough**: You can get crazy with subtasks on your WBS.

The WBS has to be detailed, but not so deep that it becomes confusing. Ideally, think maybe three or five at most levels.

Work Breakdown Structure

Work Breakdown Structure Tree Flowchart

UNO Game

1. INITIATION

- **1.1 PROJECT PLANNING**
  - 1.1.1 DEFINING PROBLEM STATEMENT
  - 1.1.2 STUDYING MARKET SCOPE
  - 1.1.3 FEASIBILITY STUDY
  - 1.1.4 REQUIREMENT ELICITATION

2. ANALYSIS

- **2.1 REQUIREMENT SPECIFICATIONS**
  - 2.1.1 CREATING SRS DOCUMENT
  - 2.1.2 CREATING USE CASE DIAGRAM
  - 2.1.3 CREATING PROJECT TIMELINE
- **2.2 REQUIREMENTS VALIDATION**
  - 2.2.1 VERIFYING REQUIREMENTS WITH PROJECT SCOPE
  - 2.2.2 REQUIREMENT VALIDATION WITH STAKEHOLDER

3. DESIGN

- **3.1 DESIGNING DIAGRAMS FOR IMPLMENTATION PURPOSE**
  - 3.1.1.CREATE CLASS DIAGRAM
  - 3.1.2 CREATE INTERACTION DIAGRAMS
  - 3.1.3 CREATE DATA FLOW DIAGRAMS(Upto LVL 2)
- **3.2 DESGING UI COMPONENTS AND DATABASE MODELS**
  - 3.2.1 SEARCHING UI COMPONENTS THROUGH WEB
  - 3.2.2 CREATING FIGMA DESIGN FOR INDIVIDUAL PAGES
  - 3.2.3 CREATE ROUGH SCHEMA BASED ON OBJECTS IN CLASS DIAGRAM

4.IMPLEMENTATION

- **4.1 FRONTEND**
  - 4.1.1 CREATING LOGIN AND SIGNUP COMPONENTS
  - 4.1.2 CREATING GAME COMPONENTS
  - 4.1.3 CREATING CHAT BOX
  - 4.1.4 CREATING USER PROFILE
  - 4.1.5 CREATING LEADERBOARD
- **4.2 BACKEND**
  - 4.2.1 SETTING UP MONGODB
  - 4.2.2 SETTING UP ROUTES USING EXPRESS AND NODE
  - 4.2.3 SETTING UP SOCKET CONNECTION
  - 4.2.4 CONNECTIING NODE WITH MONGOOSE
  - 4.2.5 BACKEND AND FRONTEND CONNECTION

5. DEPLOYMENT

- **5.1 PUTTING ON PRODUCTION**
  - 5.1.1 APP BUILD AND LAZY LOADING
  - 5.1.2 USING A DEPLOYMENT SERVER TO HOST THE CODE
  - 5.1.3 MAINTENANCEAND BUG FIXES

Work Breakdown Structure List

ID ↑	Name	Start Date	End Date	Duration	Progress %	Dependency
1	Gathering requirements and defining project s...	Aug 25, 2022	Aug 29, 2022	3 days	0	
2	Conducting feasibility study	Aug 30, 2022	Sep 02, 2022	4 days	0	1FS
3	Curating the SRS document	Sep 05, 2022	Sep 09, 2022	5 days	0	2FS,1FS
4	Make Use Case diagram	Sep 12, 2022	Sep 16, 2022	5 days	0	3FS
5	Finalizing Requirements according to project c...	Sep 19, 2022	Sep 22, 2022	4 days	0	4FS,3FS,2FS
6	Designing Class diagram	Sep 23, 2022	Sep 26, 2022	2 days	0	5FS
7	Designing Sequence and Collaboration diagrams	Sep 27, 2022	Sep 30, 2022	4 days	0	6FS
8	Defining database schema and designing data...	Oct 03, 2022	Oct 07, 2022	5 days	0	6FS+4 days,5FS...
9	Research on UI designs and design the fronte...	Oct 05, 2022	Oct 07, 2022	3 days	0	5FS+8 days
10	Creating frontend pages and basic UI compon...	Oct 10, 2022	Oct 19, 2022	8 days	0	9FS
11	Establish database connection	Oct 18, 2022	Oct 21, 2022	4 days	0	8FS+6 days
12	Establishing socket connection	Oct 18, 2022	Oct 21, 2022	4 days	0	10FS-2 days
13	Integrating the frontend with the backend	Oct 28, 2022	Nov 01, 2022	3 days	0	12FS+4 days,10F...
14	Setting up authentication module	Nov 02, 2022	Nov 04, 2022	3 days	0	13FS,12FS,11FS...
15	Testing and debugging	Nov 07, 2022	Nov 11, 2022	5 days	0	14FS,13FS,12FS...
16	Releasing production build and hosting on ser...	Nov 14, 2022	Nov 14, 2022	1 day	0	15FS

Gantt Chart
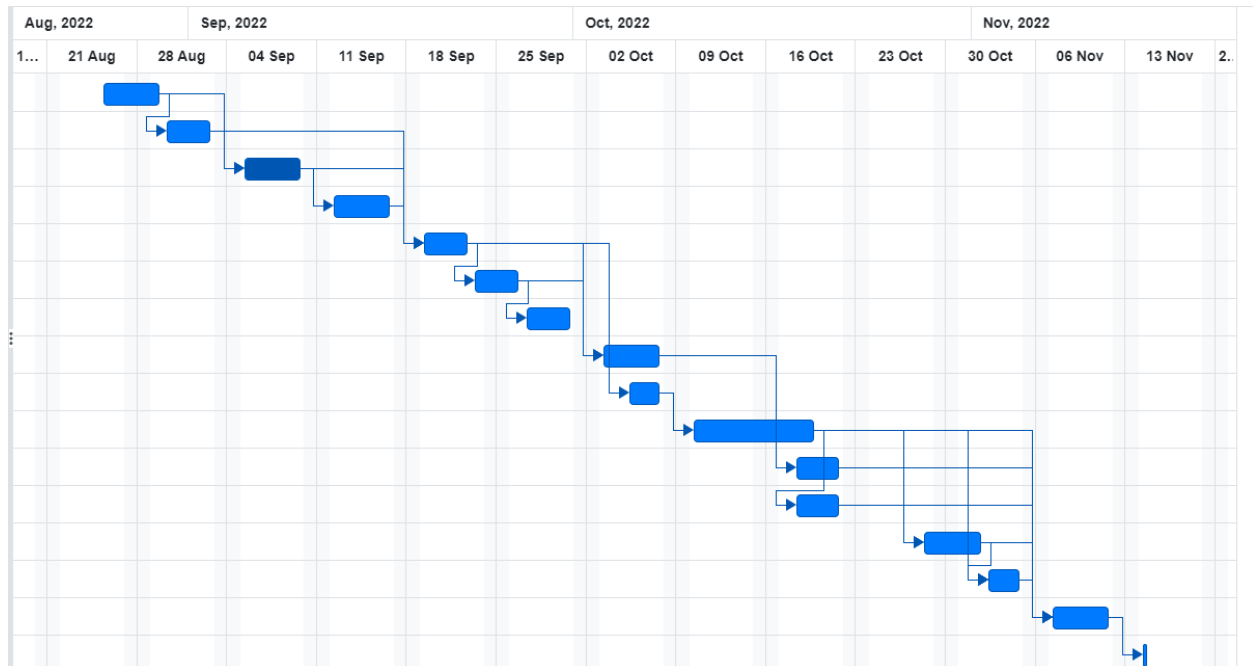
Conclusion

1.   A good WBS is simply one that makes the project more manageable.
2.   A Gantt chart is a visualization that helps in scheduling, managing, and monitoring specific tasks and resources in a project.
3.   In this experiment, we explored the concepts of Work Breakdown Structure & Schedule.
4.   Studied our project domain to construct the charts & diagrams for the project.
5.   Successfully completed all mentioned objectives.

References

1.   https://www.projectmanager.com/guides/work-breakdown-structure
2.   https://www.investopedia.com/terms/g/gantt-chart.asp
3.   https://www.workbreakdownstructure.com/
4.   https://www.teamgantt.com/what-is-a-gantt-chart