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Experiment No.	6
Topic	Work Breakdown Structure
Subject:	Software Engineering

- **What is a Work Breakdown Structure?**

A work breakdown structure (WBS) is a visual, hierarchical and deliverable-oriented 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

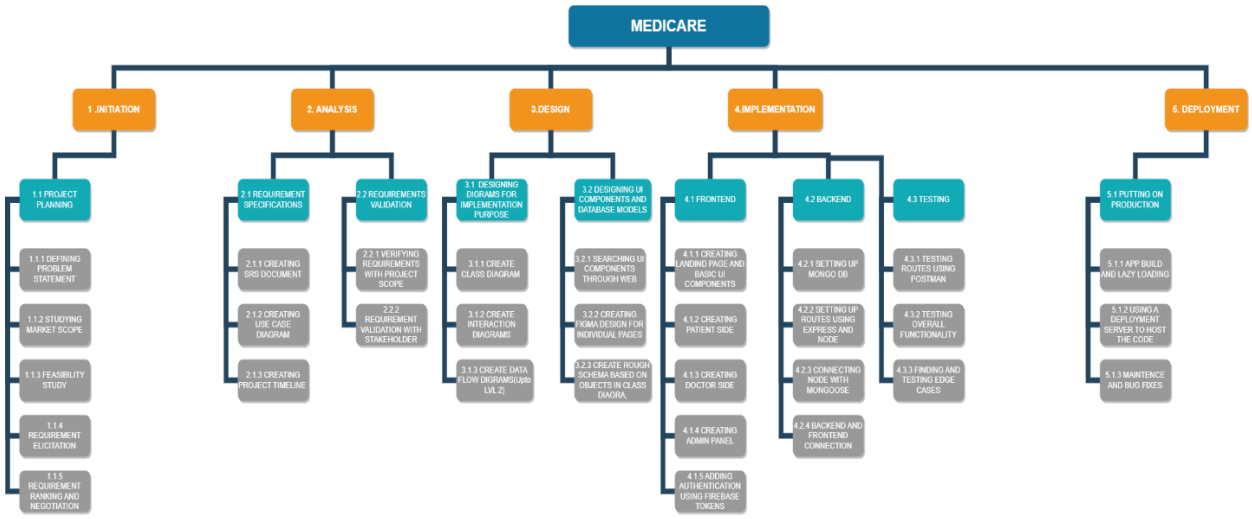
- **Tips for making WBS**

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

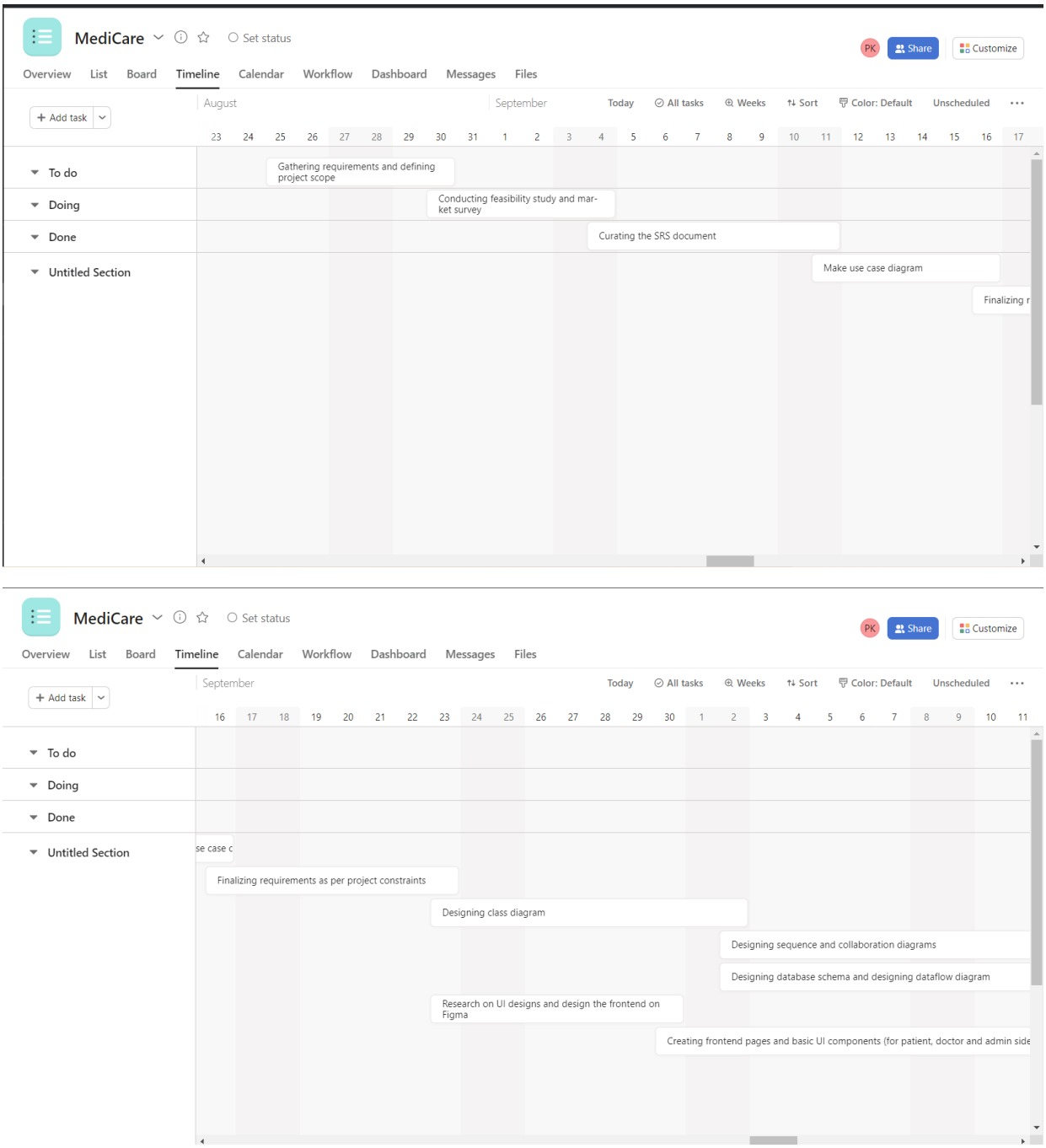
Work Breakdown Structure Tree Flowchart



Work Breakdown Structure List

Sr. No.	Activity	Predecessors	Start (exclusive)	End (inclusive)	Duration
1	Gathering requirements and defining project scope	-	25/08/2022	30/08/2022	5 days
2	Conducting feasibility study and market survey of the available projects in hospital management domain	1	30/09/2022	04/09/2022	5 days
3	Curating the SRS document	1, 2	04/09/2022	11/09/2022	1 week
4	Make Use Case diagram	3	11/09/2022	16/09/2022	5 days
5	Finalizing Requirements according to project constraints	2, 3, 4	16/09/2022	23/09/2022	1 week
6	Designing Class diagram	5	23/09/2022	02/10/2022	9 days
7	Designing Sequence and Collaboration diagrams	6	02/10/2022	12/10/2022	10 days
8	Defining database schema and designing data flow diagram	5, 6	02/10/2022	16/10/2022	2 weeks
9	Research on UI designs and design the frontend on Figma	5	23/09/2022	30/09/2022	1 week
10	Creating frontend pages and basic UI components (for patient, doctor and admin sides)	9	30/09/2022	21/10/2022	3 weeks
11	Establish database connection	8	16/10/2022	21/10/2022	5 days
12	Creating routes for patients and doctors	6, 7, 8	16/10/2022	25/10/2022	9 days
13	Integrating the frontend with the backend	10, 12	25/10/2022	31/11/2022	6 days
14	Integrating third party APIs and authentication module	10, 11, 12, 13	31/11/2022	05/11/2022	5 days
15	Testing and debugging	10, 11, 12, 13, 14	05/11/2022	12/11/2022	1 week
16	Releasing production build and hosting on servers	15	12/11/2022	14/11/2022	2 days
17	Maintaining software	16	14/11/2022	-	-

Gantt chart: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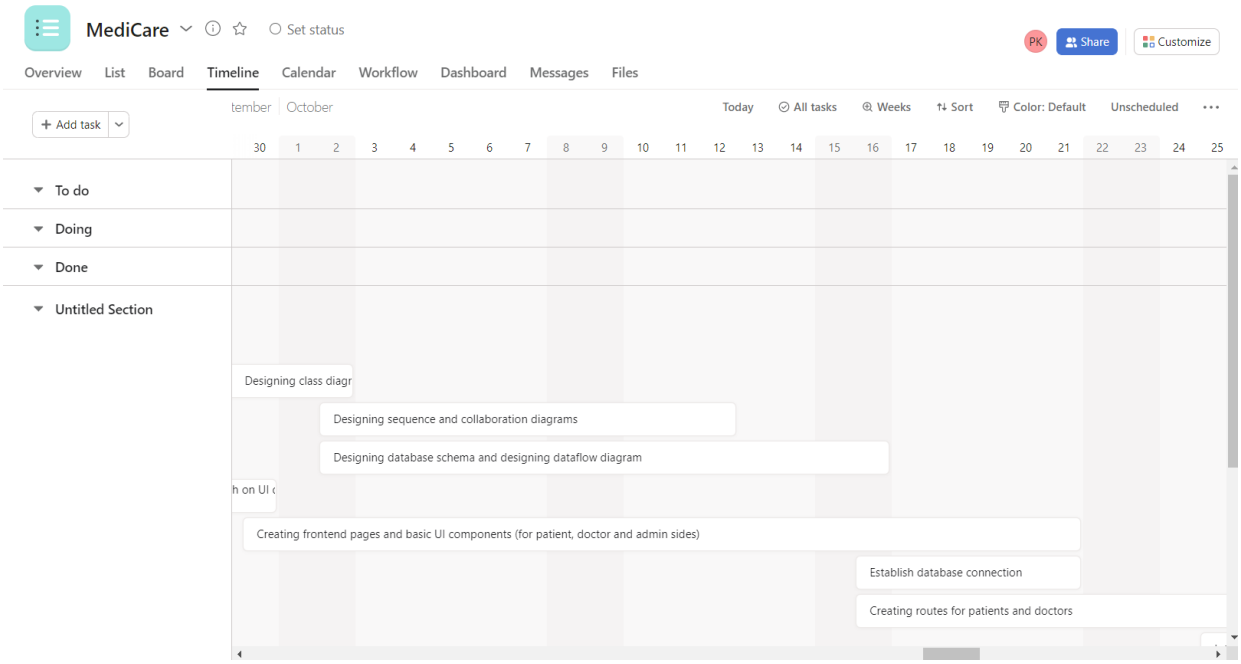
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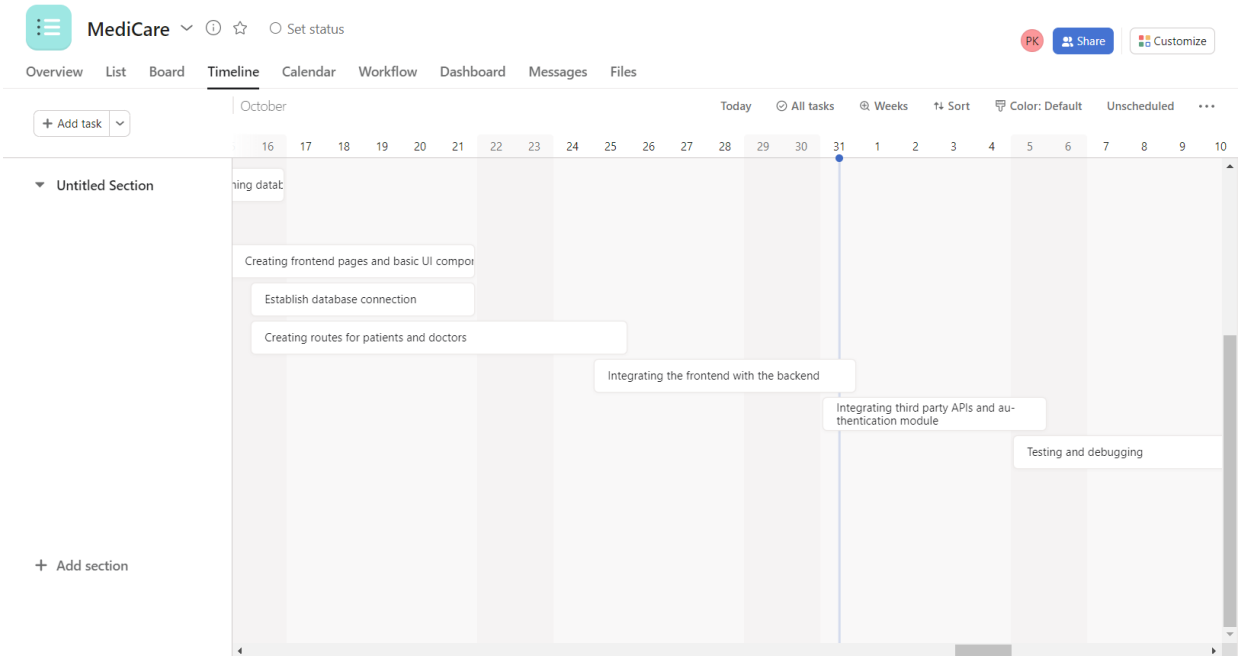
Creating routes for patients and doctors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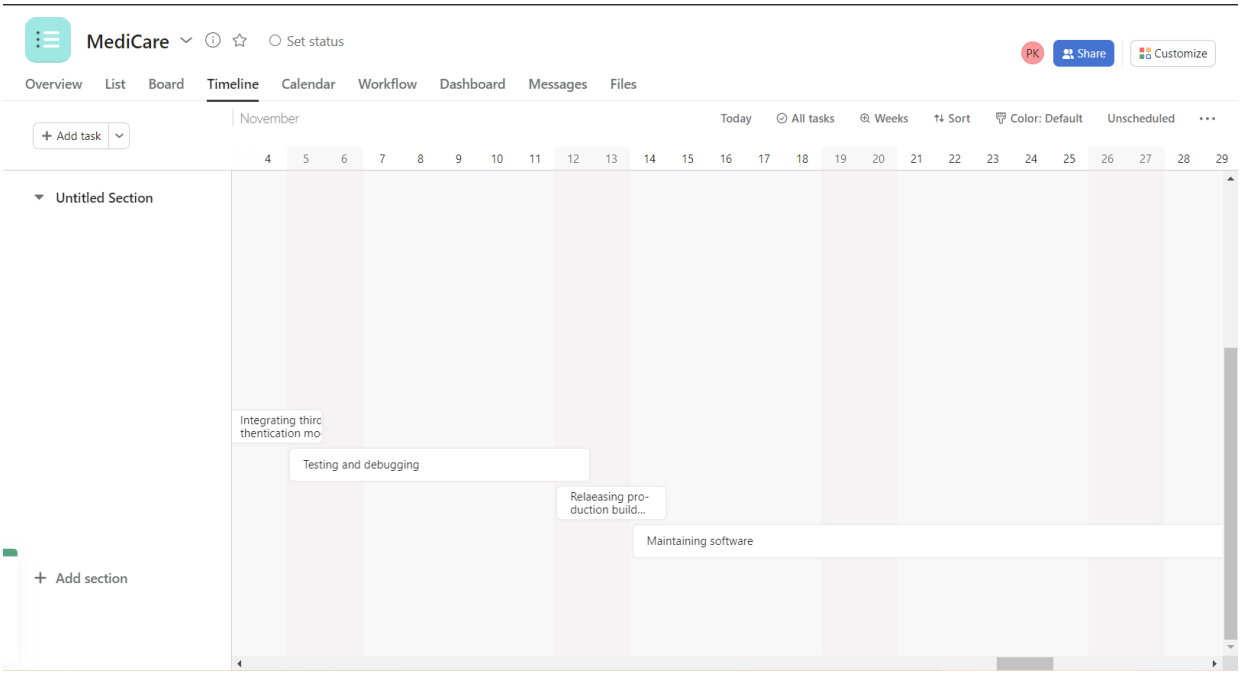

Conclusion:

Hence, from this experiment understood how to create a wbs and created the structure breakdown of our project and created gnat table and chart for the same.