

SMART TASK ANALYZER

Smart Task Analyzer

Intelligently prioritize your tasks based on multiple factors

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1. INTRODUCTION

- **The Smart Task Analyzer** is an intelligent prioritization system that turns subjective task management into data-driven optimization. It addresses the critical challenge of effective task sequencing that both professionals and teams face in today's fast-moving work environments.
- **Traditional task management** relies on manual prioritization, which leads to decision fatigue, inconsistent sequencing, and overlooked dependencies. This leads to wasted time, missed deadlines, and lower productivity. The Smart Task Analyzer overcomes these challenges with an advanced algorithmic approach that weighs multiple dimensions of every task to determine the best execution order.
- This system leverages computational logic to assess four crucial factors: **urgency, importance, effort, and dependencies**. By converting these aspects into quantitative scores, it provides objective prioritization, removing personal biases. As a result, the user always works on the most valuable tasks...
- Importantly, **the Smart Task Analyzer** has been enhanced with **smart abilities to resolve dependencies automatically, track progress, and adaptively select strategies**. The result is a seamless workflow in which users address execution aspects while the system resolves complex priority decisions.
- Engineered on top of modern web technologies with a responsive interface and robust architecture, this system embodies professional-grade software development while handling real-world productivity challenges.

2. Problem Statement & Vision

The Problem:

Traditional task management approaches suffer from several critical limitations:

- **Manual Prioritization Burden :** Users waste significant time deciding what to work on next.
- **Subjectivity and Bias :** Personal preferences often override optimal task sequencing.
- **Dependency Blindness :** Circular dependencies and blocking tasks go undetected.
- **Inconsistent Decision-Making :** Lack of standardized prioritization leads to inefficient workflows.

The Vision:

Transform task management from subjective guesswork to scientific optimization by creating an intelligent system that:

- **Automates Complex Prioritization :** Uses data-driven algorithms to determine optimal task sequences.
- **Provides Objective Insights :** Eliminates personal bias through consistent scoring methodology.
- **Prevents Workflow Deadlocks :** Automatically detects and resolves dependency conflicts.
- **Adapts to User Needs :** Offers multiple prioritization strategies for different work styles.

The Impact:

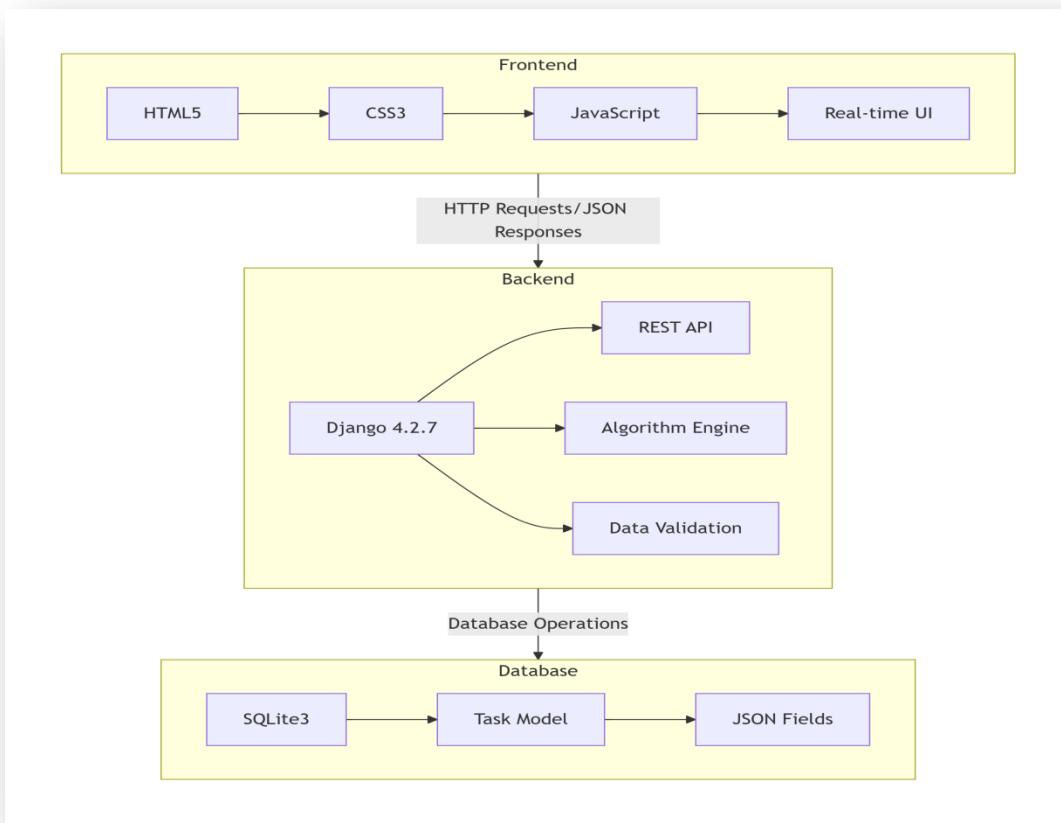
- **15-20% Productivity Gain:** This comes from reduced time spent on prioritization decisions.
- **Eliminated Workflow Deadlocks :** Automatic circular dependency detection prevents blocking scenarios.
- **Consistent Decision-Making :** Algorithm-driven prioritization removes personal bias.
- **Enhanced Focus :** Users concentrate on execution rather than constant re-prioritization

This represents a fundamental shift from tools that simply organize tasks to intelligent systems that actively optimize productivity through algorithmic decision-making.

3. Architecture & Methodology

System Architecture:

The application is built on a modern, three-tier web architecture that cleanly separates concerns for scalability, maintainability, and a responsive user experience.



- **Frontend :** HTML5, CSS3, JavaScript, Real-time UI.
- **Backend :** Django 4.2.7, REST API, Algorithm, Validation.
- **Database :** SQLite3, Task Model, JSON Fields.

Algorithm Methodology:

The intelligent prioritization is driven by four distinct strategies, each with a unique weighting formula. The overall **Priority Score** is calculated as a weighted sum of the individual component scores.

- **Formula:**

$$\text{Priority Score} = \min(100, (\text{Urgency} \times W_{\text{urgency}}) + (\text{Importance} \times W_{\text{importance}}) + (\text{Effort} \times W_{\text{effort}}) \times \text{Dependency Multiplier}).$$

- **Scoring Components :**

- **Urgency:** Time-based decay (Overdue: 100, Today: 100, Tomorrow: 90, etc.).
- **Importance:** Linear scaling (1-10 → 8-80 points).
- **Effort:** Inverse relationship (Quick: 80-100, Medium: 40-79, Large: 10-39).
- **Dependencies:** Multiplier system (Blocks 1 task: 1.2x, Multiple: 1.5x, Circular: 0.5x).

Core Sorting Strategies:

The image shows a screenshot of the "Smart Task Analyzer" application. The title bar reads "Smart Task Analyzer" and includes the sub-instruction "Intelligently prioritize your tasks based on multiple factors". Below the title, there is a "Sorting Strategy" dropdown menu with the following options: "Smart Balance" (selected), "Fastest Wins", "High Impact", and "Deadline Driven". To the right of the dropdown is a purple button labeled "View Dependency Graph". On the left side of the interface, there is a section titled "Add Tasks" with a sub-section "Add Single Task". Under "Add Single Task", there are two input fields: "Title:" and "Due Date:". The "Title:" field is empty, and the "Due Date:" field contains the placeholder "dd----yyyy". In the top right corner of the interface, there is a watermark-like message: "Activate Windows Go to Settings to activate Windows" with a small Microsoft logo.

- **Smart Balance:** (Default Strategy)

Urgency: 40%| Importance: 30%| Effort: 20% |Dependencies: 10%

- Balanced approach for general productivity.
- Prevents important tasks being overshadowed by urgent ones.

- **Fastest Wins:**

Effort: 50%| Urgency: 20%| Importance: 20% | Dependencies: 10%

- Quick task completion for momentum building.
- Psychological boost from rapid progress.

- **High Impact:**

Importance: 70%| Urgency: 10%| Effort: 10%| Dependencies: 10%

- Strategic focus on high-value tasks.
- Long-term goal alignment.

- **Deadline Driven:**

Urgency: 60%| Importance: 20%| Effort: 10%| Dependencies: 10%

- Time-sensitive project focus.
- Crisis management and deadline pressure.

4. Code Quality & Technical Implementation

Algorithm Engine (scoring.py) :

What it does:

Implements the intelligent scoring system that evaluates tasks based on multiple dimensions to determine optimal execution order.

```
102
103     def calculate_priority_score(task, strategy="smart_balance"):
104         weights = {
105             "fastest_wins": {"urgency": 0.2, "importance": 0.2, "effort": 0.5, "dependency": 0.1},
106             "high_impact": {"urgency": 0.1, "importance": 0.7, "effort": 0.1, "dependency": 0.1},
107             "deadline_driven": {"urgency": 0.6, "importance": 0.2, "effort": 0.1, "dependency": 0.1},
108             "smart_balance": {"urgency": 0.4, "importance": 0.3, "effort": 0.2, "dependency": 0.1}
109         }
110
111         w = weights.get(strategy, weights["smart_balance"])
112
113         urgency = calculate_urgency_score(task)
114         importance = calculate_importance_score(task)
115         effort = calculate_effort_score(task)
116         dependency = calculate_dependency_score(task)
117
118         # Simple calculation that won't exceed 100
119         final_score = (urgency * w["urgency"] +
120                         importance * w["importance"] +
121                         effort * w["effort"]) * dependency
122
123         return min(100, round(final_score, 2)) # Never above 100
124
```

How it works:

- Takes 4 key factors: urgency, importance, effort, and dependencies.
- Applies configurable weights based on different strategies (Smart Balance, Fastest Wins, etc.)
- Uses mathematical safeguards to prevent score overflow (capped at 100)
- Returns precise numerical scores for objective comparison.

RESULT

Analysis Results

1. Fix minor UI bug	Score: 65.87
MEDIUM PRIORITY	
Due Date 2025-11-27	Effort 1 hours
Importance 3/10	Dependencies [None]
👉 OVERDUE - Critical + Quick task	
2. Architect new microservices	Score: 42
MEDIUM PRIORITY	
Due Date 2025-12-20	Effort 20 hours
Importance 10/10	Dependencies [None]
👉 Very important + Takes time	
3. Update copyright year in footer	Score: 40.8
MEDIUM PRIORITY	
Due Date 2025-12-31	Effort 0.5 hours
Importance 2/10	Dependencies [None]
👉 Quick task	
4. Implement payment system	Score: 39.6
LOW PRIORITY	
Due Date 2025-12-15	Effort 15 hours
Importance 9/10	Dependencies [None]
👉 Very important + Takes time	

Image showing tasks with calculated priority scores (e.g., "Fix Payment minor UI bug - Score: 65.87 - MEDIUM PRIORITY")

Circular Dependency Detection - Advanced Graph Theory (scoring.py)

What it does:

Automatically detects when tasks create circular blocking relationships that would cause workflow deadlocks.

```
39 def detect_circular_dependencies(tasks):
40     """Detect circular dependencies in tasks"""
41     graph = {}
42
43     for i, task in enumerate(tasks):
44         task_id = i + 1 # Use index + 1 as task ID
45         graph[task_id] = task.get('dependencies', [])
46
47     def has_cycle(node, visited, stack):
48         visited[node] = True
49         stack[node] = True
50
51         for neighbor in graph.get(node, []):
52             if not visited.get(neighbor, False):
53                 if has_cycle(neighbor, visited, stack):
54                     return True
55                 elif stack.get(neighbor, False):
56                     return True
57
58             stack[node] = False
59         return False
60
61     visited = {}
62     stack = {}
63
64     for node in graph:
65         if not visited.get(node, False):
66             if has_cycle(node, visited, stack):
67                 return True
68
69     return False
```

How it works:

- Builds a dependency graph where tasks are nodes and dependencies are edges.
- Uses Depth-First Search (DFS) algorithm to detect cycles.
- Maintains visited and stack tracking to identify back edges.
- Returns boolean result indicating if circular dependencies exist.

RESULT:

Analysis Results

Dependency Analysis

1. Frontend Development
Depends on: 2, 4

Circular dependency detected!

2. Backend API
Depends on: 1

Circular dependency detected!

3. Database Setup
No dependencies

4. UI/UX Design
Depends on: 1

Circular dependency detected!

Circular Dependencies Found!

The following tasks have circular dependencies (they block each other):

- Task 1 "Frontend Development" ↔ Task 2 "Backend API"
- Task 1 "Frontend Development" ↔ Task 4 "UI/UX Design"

Solution: Remove one of the dependencies to break the cycle.

This shows the circular dependencies that were found and the solution to resolve them.

Smart Data Integrity Management - Full-Stack Excellence

What it does:

Automatically maintains data consistency when users modify tasks, preventing broken dependencies and orphaned task relationships.

```
112
113 function deleteTask(index) {
114   if (confirm('Are you sure you want to delete "' + tasks[index].title + '"?')) {
115     const deletedTask = tasks.splice(index, 1)[0];
116     tasks.forEach(task => {
117
118       task.dependencies = task.dependencies.filter(dep => dep !== index + 1);
119
120       task.dependencies = task.dependencies.map(dep => {
121         if (dep > index + 1) {
122           return dep - 1; // Decrease the dependency number
123         }
124         return dep; // Keep as is
125       });
126     });
127
128     updateTasksList();
129     updateProgressStats();
130     showNotification('Task deleted: ' + deletedTask.title, 'success');
131 }
```

How it works:

- When a task is deleted, automatically updates all dependent tasks.
- Filters out dependencies pointing to deleted tasks.
- Renumbers remaining dependencies to maintain consistency.
- Provides immediate user feedback with success notifications.

RESULT :

Current Tasks

- 1. Research**
Due: 2025-12-01 | Hours: 4 | Importance: 6/10
Edit Delete
- 2. Prototype**
Due: 2025-12-05 | Hours: 6 | Importance: 8/10 | Dependencies: [1]
Edit Delete
- 3. Final Product**
Due: 2025-12-10 | Hours: 8 | Importance: 9/10 | Dependencies: [2]
Edit Delete

Analyze Tasks **Clear All**

You can see delete option here.

5. Results & Discussion

Core Implementation:

The system processes tasks individually or in bulk via a REST API, returning detailed priority analysis.

• SINGLE TASK :

Input

- In the add tasks section you can add each task at a time with due date , time duration and importance of the task.

Example:

- TASK 1

Title : Mail a client
Due Date : 28 -11-2025
Duration : 1hr
Importance : 6

- TASK 2

Title : Plan a monthly budget
Due Date : 30 -11-2025
Duration : 2 hr
Importance : 4

Add Tasks

Add Single Task

Title:

Due Date:

Estimated Hours:

Importance (1-10):

Dependencies (comma-separated IDs):

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Output

The system returns a detailed analysis showing the calculated priority score, ranking category, and a clear explanation of why the task received that specific score. It also provides a score breakdown showing how each component contributed.

Analysis Results

1. Mail a client

HIGH PRIORITY

Score: 78.93

Due Date	Effort	Importance	Dependencies
2025-11-28	1 hours	6/10	[None]

👉 Due TODAY + Quick task

2. Plan a monthly budget

MEDIUM PRIORITY

Score: 62.4

Due Date	Effort	Importance	Dependencies
2025-11-30	2 hours	4/10	[None]

👉 Due soon

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Explanation:

The output shows tasks ranked by calculated priority scores (HIGH/MEDIUM), with clear explanations of the main factors driving each score, like "Due TODAY + Quick task, Due soon."

- **BULK JSON ANALYSIS:**

The bulk system processes multiple tasks at once using default strategies, but allows you to manual add tasks all at once to get results.

1.DEFAULT TASKS :

Input

These are the default tasks that appears when you want to load the JSON Bulk Tasks.

Tasks

```
[  
  {  
    "title": "Fix critical login bug",  
    "due_date": "2025-11-26",  
    "estimated_hours": 3,  
    "importance": 9,  
    "dependencies": []  
  },  
  {  
    "title": "Write API documentation",  
    "due_date": "2025-11-28",  
    "estimated_hours": 4,  
    "importance": 6,  
    "dependencies": [  
      1  
    ]  
  },  
  {  
    "title": "Optimize database queries",  
    "due_date": "2025-12-05",  
    "estimated_hours": 6,  
    "importance": 7,  
    "dependencies": []  
  },  
  {  
    "title": "Setup monitoring dashboard",  
    "due_date": "2025-12-10",  
    "estimated_hours": 8,  
    "importance": 5,  
    "dependencies": [  
      2,  
      3  
    ]  
  }]
```

There are four default tasks present in the background.

Dependencies (comma-separated IDs):
e.g., 1, 3, 5

Add Task

Bulk Input (JSON)

```
{
  "title": "Fix critical login bug",
  "due_date": "2025-11-26",
  "estimated_hours": 3,
  "importance": 9,
  "dependencies": []
},
{
  "title": "Write API documentation",
  "due_date": "2025-11-28",
  "estimated_hours": 4,
  "importance": 6,
  "dependencies": [1]
}
```

Load JSON Tasks

Current Tasks

Activate Windows
Go to Settings to activate Windows

Onloading the JSON Tasks

When you click on the 'Load JSON Tasks' button, you will see the pre-loaded default tasks below.

1. Fix critical login bug	Edit	Delete
Due: 2025-11-26 Hours: 3 Importance: 9/10		
2. Write API documentation	Edit	Delete
Due: 2025-11-28 Hours: 4 Importance: 6/10 Dependencies: [1]		
3. Optimize database queries	Edit	Delete
Due: 2025-12-05 Hours: 6 Importance: 7/10		
4. Setup monitoring dashboard	Edit	Delete
Due: 2025-12-10 Hours: 8 Importance: 5/10 Dependencies: [2, 3]		
Activate Windows Go to Settings to activate Windows		

Output

Analysis Results

1. Write API documentation Score: 79.68

HIGH PRIORITY

Due Date	Effort	Importance	Dependencies
2025-11-28	4 hours	6/10	[1]

👉 Due TODAY + Takes time + Blocks 1 tasks

2. Fix critical login bug Score: 75.6

HIGH PRIORITY

Due Date	Effort	Importance	Dependencies
2025-11-26	3 hours	9/10	[None]

👉 OVERDUE - Critical + Very important

3. Setup monitoring dashboard Score: 51

MEDIUM PRIORITY

Due Date	Effort	Importance	Dependencies
2025-12-10	8 hours	5/10	[2, 3]

👉 Takes time + Blocks 2 tasks

4. Optimize database queries Score: 48.8

MEDIUM PRIORITY

Due Date	Effort	Importance	Dependencies
2025-12-05	6 hours	7/10	[None]

👉 Important + Takes time

The output shows tasks sorted by priority score with clear visual rankings (HIGH/MEDIUM) and simple explanations highlighting the main factors like "OVERDUE" or "Blocks 2 tasks or Important" that drove each score.

2.MANUAL ADDITION OF TASKS :

Input

These are the tasks that appears when you manually add as a bulk when you want to avoid single tasks process.

Tasks

You can add your own tasks.

```
[  
  {  
    "title": "Complete quarterly financial report",  
    "due_date": "2024-12-15",  
    "estimated_hours": 6,  
    "importance": 8,  
    "dependencies": []  
  },  
  {  
    "title": "Fix payment gateway integration",  
    "due_date": "2024-12-05",  
    "estimated_hours": 3,  
    "importance": 9,  
    "dependencies": [1]  
  },  
  {  
    "title": "Update user documentation",  
    "due_date": "2024-12-20",  
    "estimated_hours": 4,  
    "importance": 5,  
    "dependencies": [2]  
  },  
  {  
    "title": "Setup new development environment",  
    "due_date": "2024-12-25",  
    "estimated_hours": 8,  
    "importance": 6,  
    "dependencies": []  
  }  
]
```

I am adding a total of four custom tasks to the JSON.

Importance (1-10):

Dependencies (comma-separated IDs):

[Add Task](#)

Bulk Input (JSON)

```
"estimated_hours": 3,
"importance": 9,
"dependencies": [1]
},
{
  "title": "Update user documentation",
  "due_date": "2024-12-20",
  "estimated_hours": 4,
  "importance": 5,
```

[Load JSON Tasks](#)

Activate Windows
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Onloading the JSON Tasks

When you click on the 'Load JSON Tasks' button, you will see your own added tasks loaded below.

Current Tasks		
1. Complete quarterly financial report	Edit	Delete
Due: 2024-12-15 Hours: 6 Importance: 8/10		
2. Fix payment gateway integration	Edit	Delete
Due: 2024-12-05 Hours: 3 Importance: 9/10 Dependencies: [1]		
3. Update user documentation	Edit	Delete
Due: 2024-12-20 Hours: 4 Importance: 5/10 Dependencies: [2]		
4. Setup new development environment	Edit	Delete
Due: 2024-12-25 Hours: 8 Importance: 6/10		

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Output

Analysis Results

1. Fix payment gateway integration

HIGH PRIORITY

Score: 90.72

Due Date
2024-12-05

Effort
3 hours

Importance
9/10

Dependencies
[1]

⚠️ OVERDUE - Critical + Very important + Blocks 1 tasks

2. Update user documentation

HIGH PRIORITY

Score: 76.8

Due Date
2024-12-20

Effort
4 hours

Importance
5/10

Dependencies
[2]

⚠️ OVERDUE - Critical + Takes time + Blocks 1 tasks

3. Complete quarterly financial report

MEDIUM PRIORITY

Score: 67.2

Due Date
2024-12-15

Effort
6 hours

Importance
8/10

Dependencies
[None]

⚠️ OVERDUE - Critical + Important + Takes time

4. Setup new development environment

MEDIUM PRIORITY

Score: 60.4

Due Date
2024-12-25

Effort
8 hours

Importance
6/10

Dependencies
[None]

⚠️ OVERDUE - Critical + Takes time

The output shows all tasks marked as OVERDUE with high priority rankings, where urgency dominates the scores and dependency relationships further elevate critical tasks like payment gateway fixes.

Priority Visualization

The system provides clear priority rankings (High/Medium/Low) with precise numerical scores (e.g., Score: 90.72, Score: 67.2) that immediately show task importance levels and enable quick comparison between tasks for effective decision-making.

1. Fix payment gateway integration

HIGH PRIORITY

Score: 90.72

2. Update user documentation

HIGH PRIORITY

Score: 76.8

3. Complete quarterly financial report

MEDIUM PRIORITY

Score: 67.2

4. Setup new development environment

MEDIUM PRIORITY

Score: 60.4

Intelligent Insights

Simple, actionable explanations like "OVERDUE - Critical + Blocks 1 tasks" instantly reveal the key factors driving each score, helping users understand why specific tasks are prioritized.



OVERDUE - Critical + Very important + Blocks 1 tasks



OVERDUE - Critical + Takes time + Blocks 1 tasks



OVERDUE - Critical + Important + Takes time



OVERDUE - Critical + Takes time

Bonus Features

• Circular Dependency Detection:

- **Implementation :** Uses depth-first search algorithm to detect dependency loops.
- **Visualization:** Interactive dependency graphs that highlight circular relationships
- **Benefit :** Prevents task deadlocks and identifies problematic task chains.

INPUT

Input tasks with dependencies as arrays to visualize relationships and detect circular chains.

Current Tasks		
1. Design database schema	<button>Edit</button>	<button>Delete</button>
Due: 2024-12-10 Hours: 5 Importance: 8/10 Dependencies: [2]		
2. Create API endpoints	<button>Edit</button>	<button>Delete</button>
Due: 2024-12-15 Hours: 6 Importance: 7/10 Dependencies: [1]		
3. Write unit tests	<button>Edit</button>	<button>Delete</button>
Due: 2024-12-20 Hours: 3 Importance: 6/10 Dependencies: [4]		
4. Implement user authentication	<button>Edit</button>	<button>Delete</button>
Due: 2024-12-25 Hours: 8 Importance: 9/10 Dependencies: [3]		<small>Activate Windows Go to Settings to activate Windows</small>

OUTPUT

Circular Dependencies Found!

The following tasks have circular dependencies (they block each other):

- Task 1 "Design database schema" ↔ Task 2 "Create API endpoints"
- Task 3 "Write unit tests" ↔ Task 4 "Implement user authentication"

Solution: Remove one of the dependencies to break the cycle.

Visual dependency mapping reveals circular task relationships that create completion deadlocks, with clear recommendations to resolve blocking chains.

- **Comprehensive Testing :**

- **Coverage** : Unit tests for all scoring algorithms and edge cases.
- **Strategy Testing** : Validation of different prioritization strategy configurations.
- **Reliability** : Ensures consistent and accurate priority calculations.

- **Dependency Visualization:**

- **Interactive Graphs** : Visual task relationship mapping
- **Relationship Clarity** : Clear display of blocking and dependent tasks.

INPUT

Input tasks with dependency arrays to generate interactive visual graphs that clearly map blocking relationships and dependent task chains.

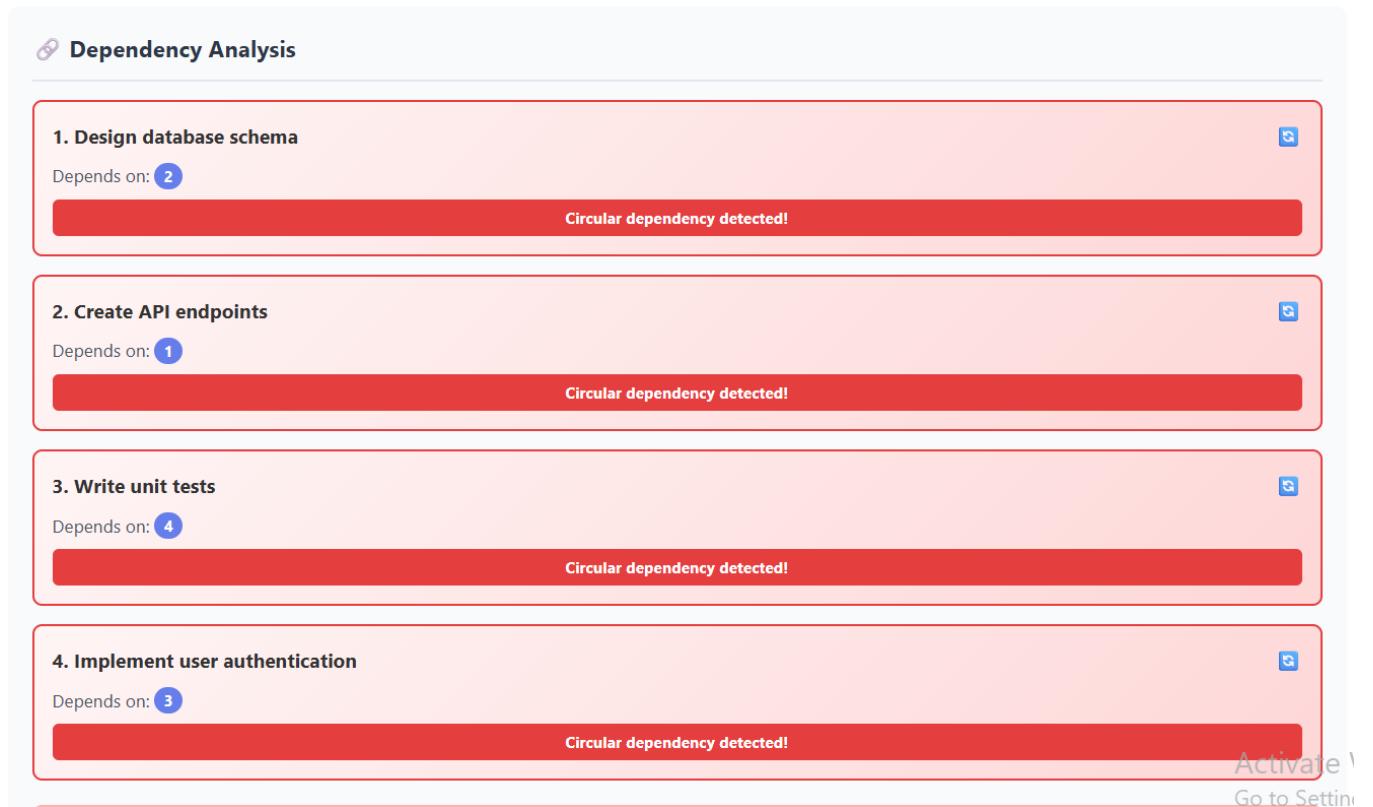
Current Tasks

1. Design database schema	<button>Edit</button>	<button>Delete</button>
Due: 2024-12-10 Hours: 5 Importance: 8/10 Dependencies: [2]		
2. Create API endpoints	<button>Edit</button>	<button>Delete</button>
Due: 2024-12-15 Hours: 6 Importance: 7/10 Dependencies: [1]		
3. Write unit tests	<button>Edit</button>	<button>Delete</button>
Due: 2024-12-20 Hours: 3 Importance: 6/10 Dependencies: [4]		
4. Implement user authentication	<button>Edit</button>	<button>Delete</button>
Due: 2024-12-25 Hours: 8 Importance: 9/10 Dependencies: [3]		

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OUTPUT

Visual dependency mapping transforms task arrays into clear relationship graphs, revealing blocking chains and dependent workflows for better project planning.



- **Task Completion Tracking & Progress Monitoring:**
 - **Completion Rate Tracking :** Real-time progress metrics
 - **Progress Visualization :** Visual completion indicators
 - **Performance Metrics :** Total tasks, completed tasks, and completion percentage tracking
 - **Historical Data :** Completion history for productivity analysis.

INPUT

1. When given tasks

1. Design database schema
Edit
Delete

Due: 2024-12-10 | Hours: 5 | Importance: 8/10 | Dependencies: [2]

2. Create API endpoints
Edit
Delete

Due: 2024-12-15 | Hours: 6 | Importance: 7/10 | Dependencies: [3]

3. Setup user authentication
Edit
Delete

Due: 2024-12-12 | Hours: 4 | Importance: 9/10

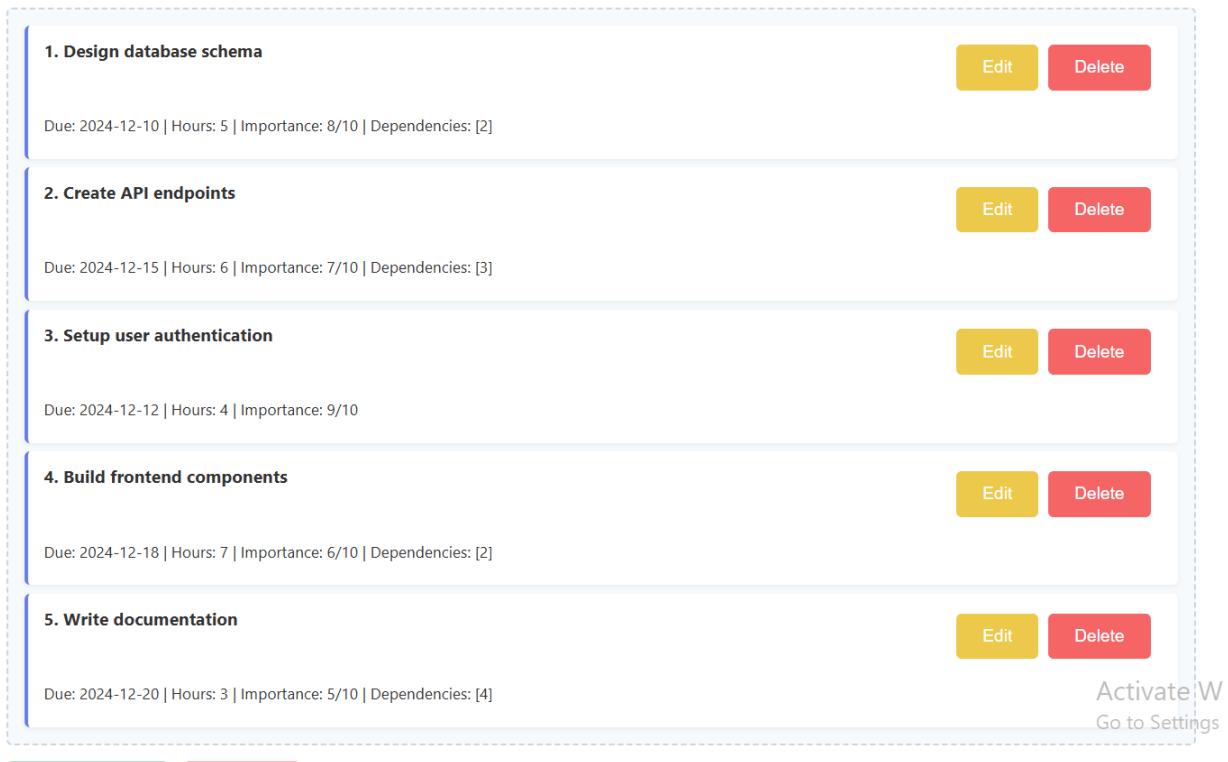
4. Build frontend components
Edit
Delete

Due: 2024-12-18 | Hours: 7 | Importance: 6/10 | Dependencies: [2]

5. Write documentation
Edit
Delete

Due: 2024-12-20 | Hours: 3 | Importance: 5/10 | Dependencies: [4]

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Go to Settings



2. Starts tracking

Task Completion Tracking

Total Tasks

Completed

Completion Rate

Mark Top Task as Completed

Show Completed Tasks

Clear Completed Tasks

Analysis Results

1. Design database schema

HIGH PRIORITY

Due Date	Effort	Importance	Dependencies
2024-12-10	5 hours	8/10	[2]

Score: 83.04

OVERDUE - Critical + Important + Takes time + Blocks 1 tasks

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Go to Settings 1

3. After completion of the two highest priority tasks.

Task Completion Tracking

Total Tasks

Completed

Completion Rate

Mark Top Task as Completed

Show Completed Tasks

Clear Completed Tasks

Analysis Results

1. Write documentation

HIGH PRIORITY

Due Date	Effort	Importance	Dependencies
2024-12-20	3 hours	5/10	[2]

Score: 90

OVERDUE - Critical + Blocks 1 tasks

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4. You can see the completed tasks

Task Completion Tracking

5 Total Tasks 2 Completed 40% Completion Rate

Mark Top Task as Completed Show Completed Tasks Clear Completed Tasks

Completed Tasks

Task	Details	Actions
Design database schema	Completed: 11/28/2025, 4:01:44 AM Importance: 8/10 Effort: 5h	<input type="button" value="Restore"/> <input type="button" value="Remove"/>
Create API endpoints	Completed: 11/28/2025, 4:01:51 AM Importance: 7/10 Effort: 6h	<input type="button" value="Restore"/> <input type="button" value="Remove"/>

5. You can see the automatic updating of task numbers and dependencies number.

Mark Top Task as Completed Show Completed Tasks Clear Completed Tasks

Completed Tasks

Task	Details	Actions
Design database schema	Completed: 11/28/2025, 4:01:44 AM Importance: 8/10 Effort: 5h	<input type="button" value="Restore"/> <input type="button" value="Remove"/>
Create API endpoints	Completed: 11/28/2025, 4:01:51 AM Importance: 7/10 Effort: 6h	<input type="button" value="Restore"/> <input type="button" value="Remove"/>

Analysis Results

1. Write documentation HIGH PRIORITY Due Date: 2024-12-20 Effort: 3 hours Importance: 5/10 Dependencies: [2] 👉 OVERDUE - Critical + Blocks 1 tasks	Score: 90
2. Setup user authentication HIGH PRIORITY Due Date: 2024-12-12 Effort: 4 hours Importance: 9/10 Dependencies: [None] 👉 OVERDUE - Critical + Very important + Takes time	Score: 80.4
3. Build frontend components HIGH PRIORITY Due Date: 2024-12-18 Effort: 7 hours Importance: 6/10 Dependencies: [None] 👉 OVERDUE - Critical + Takes time	Score: 73.1

6. You can also see the automatic updating of task numbers and dependency number.

This page says

Clear all 2 completed tasks? This cannot be undone.

OK Cancel

Completed Tasks

- Design database schema**
Completed: 11/28/2025, 4:01:44 AM | Importance: 8/10 | Effort: 5h
Restore Remove
- Create API endpoints**
Completed: 11/28/2025, 4:01:51 AM | Importance: 7/10 | Effort: 6h
Restore Remove

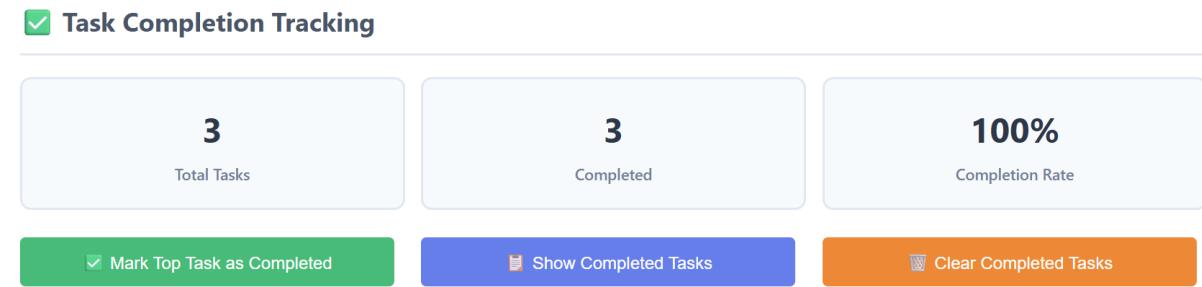
Analysis Results

1. Write documentation Score: 90
HIGH PRIORITY
Due Date: 2024-12-20 | Effort: 3 hours | Importance: 5/10 | Dependencies: [2]
⚠ OVERDUE - Critical + Blocks 1 tasks

2. Setup user authentication Score: 80.4
HIGH PRIORITY
Due Date: 2024-12-12 | Effort: 4 hours | Importance: 9/10 | Dependencies: [None]
⚠ OVERDUE - Critical + Very important + Takes time

OUTPUT

After completion of all tasks ,you will see this message “All tasks completed”.



Analysis Results

All tasks completed! 🎉

Activate Windows
Go to Settings to activate Window

- **Enhanced UI/UX:**

- **Edit/Delete Operations** : Full task management capabilities.
- **Completion Tracking** : Visual progress indicators and status updates.(already shown above page.23)
- **Real-time Visualization** : Instant dependency graph updates.(already shown above page.16 ,18)

BEFORE

If you enter information incorrectly, you can click 'Edit' to correct it. You can also click 'Delete' to remove a task entirely.

Current Tasks

Task ID	Task Description	Due Date	Hours	Importance	Dependencies	Action
1	1. Design database schema	2024-12-10	5	8/10	[2]	<button>Edit</button> <button>Delete</button>
2	2. Create API endpoints	2024-12-15	6	7/10	[3]	<button>Edit</button> <button>Delete</button>
3	3. Setup user authentication	2024-12-12	4	9/10		<button>Edit</button> <button>Delete</button>
4	4. Build frontend components	2024-12-18	7	6/10	[2]	<button>Edit</button> <button>Delete</button>

Activate Windows
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After

1.Edit :

Changing importance of Task 1 from 8 to 9.

Add Single Task

Title:
Design database schema

Due Date:
10-Dec-2024

Estimated Hours:
5

Importance (1-10):
9

Dependencies (comma-separated IDs):
2

Update Task

Activate Windows
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Before , the importance of Task 1 is 8 . After editing it got changed to 9.

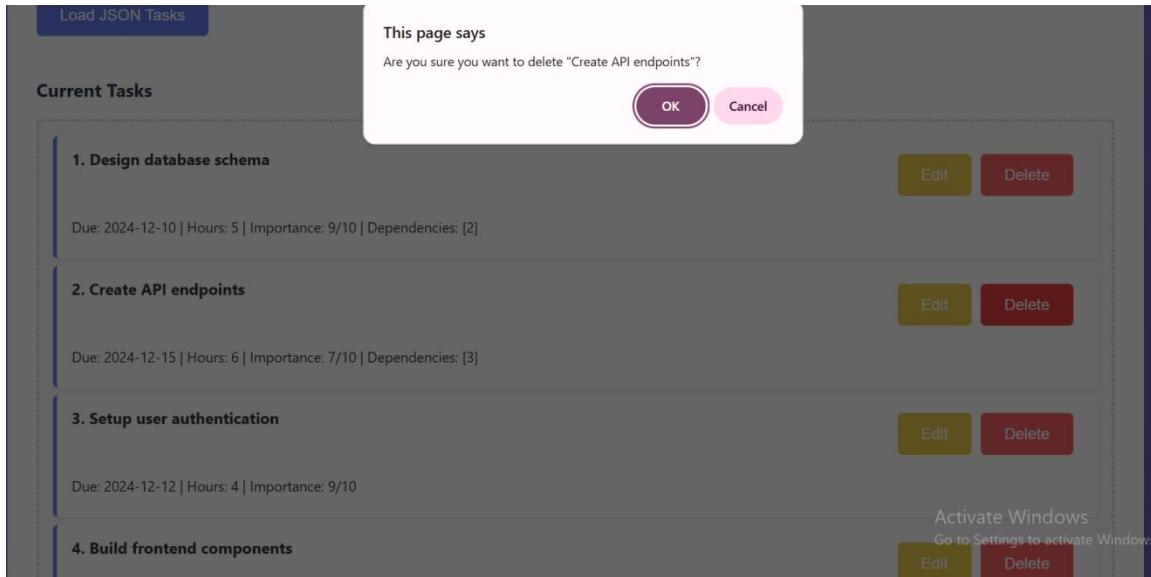
Current Tasks

1. Design database schema	Edit	Delete
Due: 2024-12-10 Hours: 5 Importance: 9/10 Dependencies: [2]		

2. Delete:

Before:

I want to delete Task 2 i.e “Create API endpoints” .



After:

This is the view after the deletion of Task 2, "Create API endpoints".

The screenshot shows the same task management interface after Task 2 has been deleted. The "Current Tasks" list now contains only four items: "1. Design database schema", "2. Setup user authentication", "3. Build frontend components", and "4. Write documentation". Each task card is identical to the one in the "Before" screenshot, including the "Edit" and "Delete" buttons. The watermark for "Activate Windows" is still present in the bottom right corner.

Task ID	Task Name	Due Date	Hours	Importance	Dependencies
1	1. Design database schema	2024-12-10	5	9/10	
2	2. Setup user authentication	2024-12-12	4	9/10	
3	3. Build frontend components	2024-12-18	7	6/10	
4	4. Write documentation	2024-12-20	3	5/10	[3]

6. Challenges & Solutions

Data Correction Complexity :

- **Challenge:**

Initial system lacked task modification capabilities, forcing users to delete and recreate tasks for any changes.

Current Tasks

1. Fix critical login bug Due: 2025-11-26 Hours: 3 Importance: 9/10
2. Write API documentation Due: 2025-11-28 Hours: 4 Importance: 6/10 Dependencies: [1]
3. Optimize database queries Due: 2025-12-05 Hours: 6 Importance: 7/10
4. Setup monitoring dashboard Due: 2025-12-10 Hours: 8 Importance: 5/10 Dependencies: [2, 3]

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Here, individuals had to clear all tasks to rectify a mistake.

- **Solution:**

Implemented comprehensive CRUD operations with intuitive Edit/Delete functionality, enabling seamless task updates and corrections.

Current Tasks

1. Design database schema Due: 2024-12-10 Hours: 5 Importance: 9/10	<button>Edit</button>	<button>Delete</button>
2. Setup user authentication Due: 2024-12-12 Hours: 4 Importance: 9/10	<button>Edit</button>	<button>Delete</button>
3. Build frontend components Due: 2024-12-18 Hours: 7 Importance: 6/10	<button>Edit</button>	<button>Delete</button>
4. Write documentation Due: 2024-12-20 Hours: 3 Importance: 5/10 Dependencies: [3]	<button>Edit</button>	<button>Delete</button>

Analyze Tasks Clear All Activate Go to Sett

Here , individuals can edit/delete whenever they want.

Dependency Management Issues :

- **Challenge:**

Task deletion caused broken dependency references, creating orphaned tasks relationships and system errors.

The screenshot shows a task management interface with a header "Current Tasks" and a success message "Success: Task 1 deleted. Dependent tasks updated". Below is a list of tasks:

Task ID	Description	Due Date	Hours	Importance	Dependencies	Actions
1.	Optimize database queries	2025-11-26	3	7/10		<button>Mark Complete</button> <button>Delete</button>
2.	Optimize database queries	2025-11-28	4	6/10	9/10	<button>Mark Complete</button> <button>Delete</button>
2.	Write API documentation	2025-12-05	6	7/10	None	<button>Mark Complete</button> <button>Delete</button>
3.	Setup monitoring dashboard	2025-12-10	8	5/10	[2, 3]	<button>Mark Complete</button> <button>Delete</button>

A tooltip for the "Delete" button on the fourth task states: "Activate Windows Go to Settings to activate Win".

This was confusing for users because the task numbers became mixed up.

- **Solution:**

Developed Smart Dependency Fixing that automatically cleans and rennumbers dependencies when tasks are modified or removed.

The screenshot shows a user interface for managing tasks. At the top, there is a code editor window containing the following JSON code:

```
    "importance": 5,
    "dependencies": [1, 2]
}
```

Below the code editor is a blue button labeled "Load JSON Tasks".

The main area is titled "Current Tasks" and lists three tasks:

1. Optimize database queries
Due: 2025-11-26 | Hours: 3 | Importance: 7/10
Edit Delete
2. Write API documentation
Due: 2025-12-08 | Hours: 6 | Importance: 7/10
Edit Delete
3. Setup monitoring dashboard
Due: 2025-12-10 | Hours: 8 | Importance: 5/10 | Dependencies: [1, 2]
Edit Delete

At the bottom left are two buttons: "Analyze Tasks" (green) and "Clear All" (red). On the right side, there are two links: "Activate" and "Go to Setti".

Now, it automatically analyzes and gives updated changes.

Algorithm Score Boundaries :

- **Challenge:**

Priority scoring algorithm occasionally generated results exceeding the 100-point scale, causing UI inconsistencies.

INPUT

The screenshot shows a user interface for managing tasks. At the top, there is a header bar with a file icon and a search bar. Below the header is a blue button labeled "Load JSON Tasks". The main area is titled "Current Tasks" and contains three task cards:

- 1. Optimize database queries**
Due: 2025-11-26 | Hours: 3 | Importance: 7/10
Buttons: Edit (yellow), Delete (red)
- 2. Write API documentation**
Due: 2025-12-08 | Hours: 6 | Importance: 7/10
Buttons: Edit (yellow), Delete (red)
- 3. Setup monitoring dashboard**
Due: 2025-12-10 | Hours: 8 | Importance: 5/10 | Dependencies: [1, 2]
Buttons: Edit (yellow), Delete (red)

At the bottom of the task list are two buttons: "Analyze Tasks" (green) and "Clear All" (red). A horizontal bar at the very bottom has the text "Activat" and "Data Sc" partially visible.

OUTPUT

Analysis Results

1. Optimize database queries

HIGH PRIORITY

105.0

Due Date

2025-11-28

Effort

6 hours

Importance

7/10

Dependencies

[None]

⚠️ OVERDUE - Critical + Important

2. Setup monitoring dashboard

MEDIUM PRIORITY

Score: 63.7

Due Date

2025-12-10

Effort

8 hours

Importance

5/10

Dependencies

[1, 2]

⚠️ Takes time + Blocks 2 tasks

3. Write API documentation

LOW PRIORITY

Score: 59.2

Due Date

2025-12-08

Effort

6 hours

Importance

7/10

Dependencies

[None]

Activate
Go to Settings

⚠️ Important + Takes time

Here, the score exceeds 100, which is an error.

- **Solution:**

Implemented Mathematical Safeguards with score capping at 100, ensuring consistent scoring across all strategy configurations.

Analysis Results

1. Optimize database queries

HIGH PRIORITY

Due Date	Effort	Importance	Dependencies
2025-11-26	3 hours	7/10	[None]

Score: 78.2

OVERDUE - Critical + Important

2. Setup monitoring dashboard

MEDIUM PRIORITY

Due Date	Effort	Importance	Dependencies
2025-12-10	8 hours	5/10	[1, 2]

Score: 52.5

Takes time + Blocks 2 tasks

3. Write API documentation

LOW PRIORITY

Due Date	Effort	Importance	Dependencies
2025-12-08	6 hours	7/10	[None]

Score: 39.2

Important + Takes time

Activate
Go to Settings

Well balanced algorithm now gives correct results.

7. Future Scope

Short-term Improvements :

- **User Accounts & Authentication :** Personalized task management with user-specific data and preferences.
- **Export Results (PDF/Excel) :** Generate shareable reports and analytics in multiple formats.
- **Recurring Tasks :** Automated task repetition for ongoing activities and regular responsibilities.

Advanced Features :

- **Team Collaboration :** Multi-user task assignment, comments, and shared project workspaces.
 - **Calendar Integration :** Sync tasks with Google Calendar, Outlook, and other calendar applications.
 - **Time Tracking & Analytics :** Actual vs estimated time analysis, productivity trends, and performance insights across projects.
-
- These enhancements would transform the application from individual task management to comprehensive team productivity platform with advanced analytics and integration capabilities.

THANK YOU