overview

Timesheet

Project Overview

The Timesheet Management System is designed to track employee time utilization, measure resource performance, and provide valuable insights into project execution. The system enables organizations to record, monitor, and analyze the time spent by employees on various projects and tasks.

By capturing accurate timesheet data, the organization can improve project planning, optimize resource allocation, monitor productivity, and support informed business decisions.

Objectives

- Track employee working hours across projects and tasks.
- Measure and analyze resource performance and productivity.
- Monitor project progress and utilization rates.
- Calculate project costs based on resource effort and billable hours.
- Generate reports for management and business analysis.
- Improve project planning, forecasting, and budgeting.
- Ensure transparency and accountability in time tracking.

Key Benefits

Resource Performance Analysis

- Evaluate employee productivity and utilization.
- Identify high-performing resources and areas for improvement.
- Monitor workload distribution across teams.

Project Costing

- Calculate project costs based on effort and hourly rates.
- Compare planned versus actual effort and expenses.
- Support accurate project budgeting and financial reporting.

Business Insights

- Analyze resource allocation trends.
- Identify bottlenecks and inefficiencies.
- Support strategic decision-making through data-driven reports.

Operational Efficiency

- Reduce manual timesheet management.
- Improve accuracy in effort tracking.
- Streamline approval workflows and reporting processes.

Expected Outcomes

The Timesheet Management System will provide a centralized platform for recording and managing employee work hours, enabling better resource management, accurate project costing, enhanced business analysis, and improved operational efficiency across the organization.

Project Scope

Project Scope

The primary purpose of the Timesheet Management System is to provide a centralized platform for managing projects, tracking employee effort, monitoring resource utilization, and generating business insights through comprehensive reporting.

The system supports multiple user roles with role-based access and responsibilities. In the initial phase, the following three roles will be implemented:

1. Project Manager (PM)

The Project Manager is responsible for project planning and resource allocation.

Responsibilities:

- Create and manage projects.
- Define project timelines and objectives.
- Assign team members to projects.
- Monitor project progress and resource utilization.
- Review and approve timesheet entries.

2. Employee

Employees are responsible for recording the time spent on project-related activities.

Responsibilities:

- Submit daily timesheets.
- Log billable and non-billable hours against assigned projects.
- Update task progress and work status.
- Maintain accurate records of time spent on various activities.

3. Account Manager

The Account Manager oversees project financials, business performance, and reporting.

Responsibilities:

- Access project and resource utilization reports.
- Monitor project costs and profitability.
- Analyze billable versus non-billable effort.
- Generate business and management reports.
- Review overall project performance and organizational metrics.

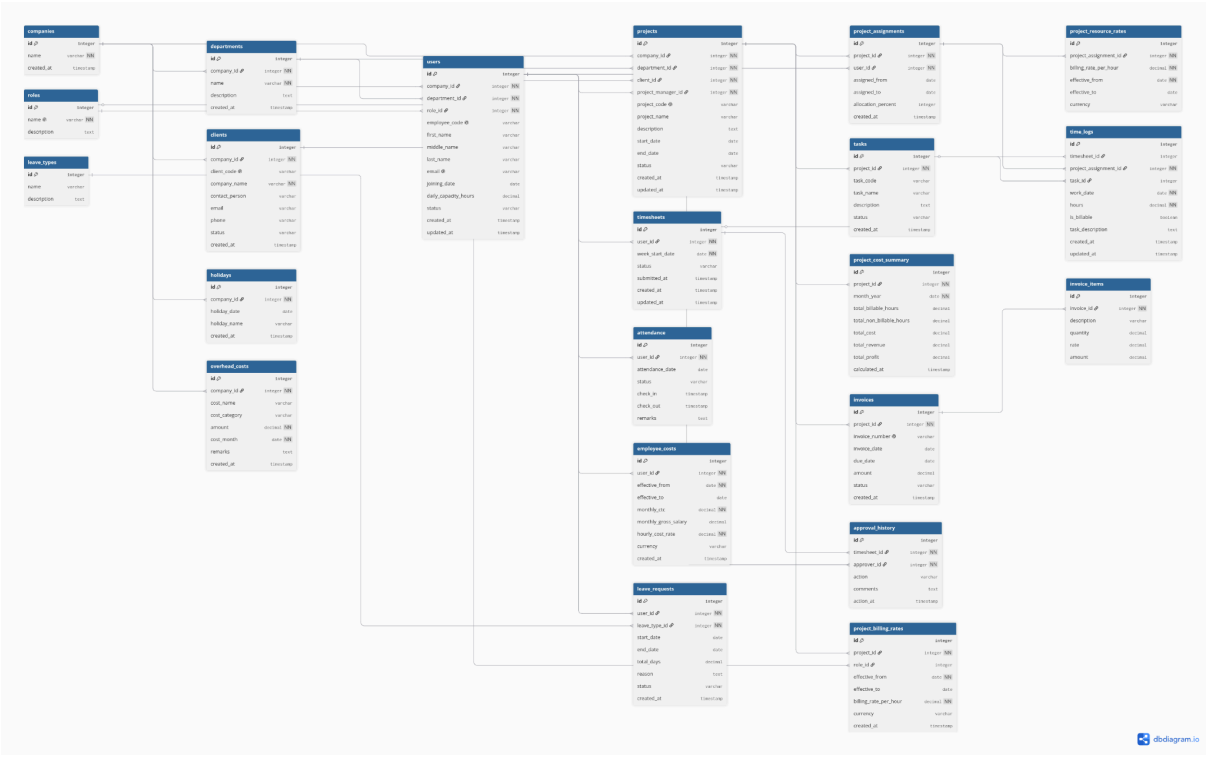
Business Value

The system enables organizations to:

- Improve visibility into employee productivity.
- Track billable and non-billable efforts accurately.
- Monitor project costs and profitability.
- Optimize resource allocation and utilization.
- Generate comprehensive reports for management decision-making.
- Enhance operational efficiency through structured time tracking and reporting.

Database Design Document

Database Design Document



Version

1.0

Project Name

Timesheet System

Purpose

The Timesheet Management System is designed to manage employee timesheets, project allocations, attendance, leave management, project costing, profitability analysis, billing, and invoicing within an organization.

The system supports:

- Multi-company architecture
- Department and employee management
- Project and client management
- Resource allocation
- Timesheet tracking and approval workflows
- Attendance and leave management
- Costing and profitability analysis

- Billing and invoicing

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1. System Architecture Overview

The database is organized into the following modules:

1. Organization Management
2. User & Role Management
3. Client & Project Management
4. Resource Allocation
5. Timesheet Management
6. Approval Workflow
7. Attendance & Leave Management
8. Costing & Profitability
9. Billing & Invoicing

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2. Organization Management

Companies

Stores company information.

Column	Type	Description
id	Integer	Primary Key
name	Varchar	Company Name
created_at	Timestamp	Record Creation Date

Departments

Stores departments under a company.

Column	Type
id	Integer

company_id	Integer
name	Varchar
description	Text
created_at	Timestamp

Relationship:

- One Company → Many Departments

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3. User & Role Management

Roles

Defines user roles in the system.

Examples:

- Admin
- HR
- Project Manager
- Team Lead
- Employee

Column	Type
id	Integer
name	Varchar
description	Text

Users

Stores employee details.

Column	Type
id	Integer
company_id	Integer

department_id	Integer
role_id	Integer
employee_code	Varchar
first_name	Varchar
middle_name	Varchar
last_name	Varchar
email	Varchar
joining_date	Date
daily_capacity_hours	Decimal
status	Varchar
created_at	Timestamp
updated_at	Timestamp

Status Values:

- Active
- Inactive
- Resigned

Relationships:

- Company → Users
- Department → Users
- Role → Users

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4. Client Management

Clients

Stores client information.

Column	Type
id	Integer

company_id	Integer
client_code	Varchar
company_name	Varchar
contact_person	Varchar
email	Varchar
phone	Varchar
status	Varchar
created_at	Timestamp

Relationship:

- Company → Many Clients

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5. Project Management

Projects

Stores project information.

Column	Type
id	Integer
company_id	Integer
department_id	Integer
client_id	Integer
project_manager_id	Integer
project_code	Varchar
project_name	Varchar
description	Text
start_date	Date

end_date	Date
status	Varchar
created_at	Timestamp
updated_at	Timestamp

Status Values:

- Planning
- Active
- On Hold
- Completed
- Cancelled

Relationships:

- Company → Projects
- Department → Projects
- Client → Projects
- Project Manager (User) → Projects

Tasks

Stores project tasks.

Column	Type
id	Integer
project_id	Integer
task_code	Varchar
task_name	Varchar
description	Text
status	Varchar
created_at	Timestamp

Status Values:

- Open
- In Progress
- Completed

Relationship:

- Project → Tasks

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6. Resource Allocation

Project Assignments

Assigns employees to projects.

Column	Type
id	Integer
project_id	Integer
user_id	Integer
assigned_from	Date
assigned_to	Date
allocation_percent	Integer
created_at	Timestamp

Examples:

- Employee A → 100% allocated to Project X
- Employee B → 50% allocated to Project Y

Relationships:

- Project → Assignments
- User → Assignments

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7. Timesheet Management

Timesheets

Stores weekly timesheet headers.

Column	Type
id	Integer
user_id	Integer
week_start_date	Date
status	Varchar
submitted_at	Timestamp
created_at	Timestamp
updated_at	Timestamp

Status Values:

- Draft
- Submitted
- Approved
- Rejected

Relationship:

- User → Timesheets

Time Logs

Stores daily work entries.

Column	Type
id	Integer
timesheet_id	Integer
project_assignment_id	Integer
task_id	Integer
work_date	Date
hours	Decimal
is_billable	Boolean

task_description	Text
created_at	Timestamp
updated_at	Timestamp

Relationship:

- Timesheet → Time Logs
- Project Assignment → Time Logs
- Task → Time Logs

Business Rules:

- Hours should not exceed daily capacity.
- Work date must belong to the timesheet week.
- Time log should reference a valid project assignment.

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8. Approval Workflow

Approval History

Tracks approval actions.

Column	Type
id	Integer
timesheet_id	Integer
approver_id	Integer
action	Varchar
comments	Text
action_at	Timestamp

Actions:

- Submitted
- Approved
- Rejected
- Reopened

Relationship:

- Timesheet → Approval History
- Approver (User) → Approval History

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9. Attendance Management

Attendance

Tracks employee attendance.

Column	Type
id	Integer
user_id	Integer
attendance_date	Date
status	Varchar
check_in	Timestamp
check_out	Timestamp
remarks	Text

Status Values:

- Present
- Absent
- Leave
- Holiday
- Half Day

Relationship:

- User → Attendance

Holidays

Stores company holidays.

Column	Type
id	Integer
company_id	Integer
holiday_date	Date
holiday_name	Varchar
created_at	Timestamp

Relationship:

- Company → Holidays

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10. Leave Management

Leave Types

Stores leave categories.

Examples:

- Casual Leave
- Sick Leave
- Earned Leave

Column	Type
id	Integer
name	Varchar
description	Text

Leave Requests

Stores employee leave requests.

Column	Type
id	Integer

user_id	Integer
leave_type_id	Integer
start_date	Date
end_date	Date
total_days	Decimal
reason	Text
status	Varchar
created_at	Timestamp

Status Values:

- Pending
- Approved
- Rejected

Relationships:

- User → Leave Requests
- Leave Type → Leave Requests

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11. Costing & Profitability Module

Employee Costs

Stores employee cost rates.

Column	Type
id	Integer
user_id	Integer
effective_from	Date
effective_to	Date
monthly_ctc	Decimal

monthly_gross_salary	Decimal
hourly_cost_rate	Decimal
currency	Varchar
created_at	Timestamp

Purpose:

Used for project cost calculations.

Project Billing Rates

Stores role-wise billing rates.

Column	Type
id	Integer
project_id	Integer
role_id	Integer
effective_from	Date
effective_to	Date
billing_rate_per_hour	Decimal
currency	Varchar
created_at	Timestamp

Project Resource Rates

Stores employee-specific billing rates.

Column	Type
id	Integer
project_assignment_id	Integer

billing_rate_per_hour	Decimal
effective_from	Date
effective_to	Date
currency	Varchar

Overhead Costs

Stores monthly operational expenses.

Column	Type
id	Integer
company_id	Integer
cost_name	Varchar
cost_category	Varchar
amount	Decimal
cost_month	Date
remarks	Text
created_at	Timestamp

Examples:

- Rent
- Internet
- Software Licenses
- Utilities

Project Cost Summary

Stores monthly profitability calculations.

Column	Type
id	Integer

project_id	Integer
month_year	Date
total_billable_hours	Decimal
total_non_billable_hours	Decimal
total_cost	Decimal
total_revenue	Decimal
total_profit	Decimal
calculated_at	Timestamp

Formula:

Total Profit = Total Revenue − Total Cost

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12. Invoicing Module

Invoices

Stores generated invoices.

Column	Type
id	Integer
project_id	Integer
invoice_number	Varchar
invoice_date	Date
due_date	Date
amount	Decimal
status	Varchar
created_at	Timestamp

Status Values:

- Draft

- Sent
- Paid
- Overdue

Invoice Items

Stores invoice line items.

Column	Type
id	Integer
invoice_id	Integer
description	Varchar
quantity	Decimal
rate	Decimal
amount	Decimal

Relationship:

- Invoice → Invoice Items

Formula:

Amount = Quantity × Rate

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13. Key Business Rules

1. Employee email must be unique.
2. Employee code must be unique.
3. Client code must be unique.
4. Project code must be unique.
5. Invoice number must be unique.
6. Allocation percentage should not exceed 100% across active assignments.
7. Timesheet can only be approved after submission.
8. Leave dates should not overlap approved leave requests.
9. Billable revenue is calculated using project billing rates.
10. Project profitability is calculated monthly.
11. Attendance and timesheet data should be cross-validated.
12. Historical cost and billing rates must be preserved using effective dates.

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14. Entity Relationship Summary

Company
├── Departments
├── Users
├── Clients
├── Projects
├── Holidays
└── Overhead Costs

Projects
├── Tasks
├── Project Assignments
├── Billing Rates
├── Invoices
└── Cost Summary

Users
├── Timesheets
├── Attendance
├── Leave Requests
├── Employee Costs
└── Project Assignments

Timesheets
├── Time Logs
└── Approval History

Invoices
└── Invoice Items

Conclusion

The Timesheet Management System database is designed to support end-to-end workforce management, project tracking, resource allocation, attendance monitoring, timesheet approvals, project profitability analysis, and customer billing. The schema ensures data integrity through relational constraints while enabling scalability for multi-company operations.