



SOFTWARE ENGINEERING

Select Your Role

Administrator

HR

Manager

Employee

PAY-TRACK

Sara Akbar, Noor Fatima, Munim Baig
22i-0846, 22i-1036, 22i-1080-J

28th APRIL, 2025

Introduction

Overview

PayTrack automates salary processing, leave tracking, and employee management to improve efficiency and accuracy.

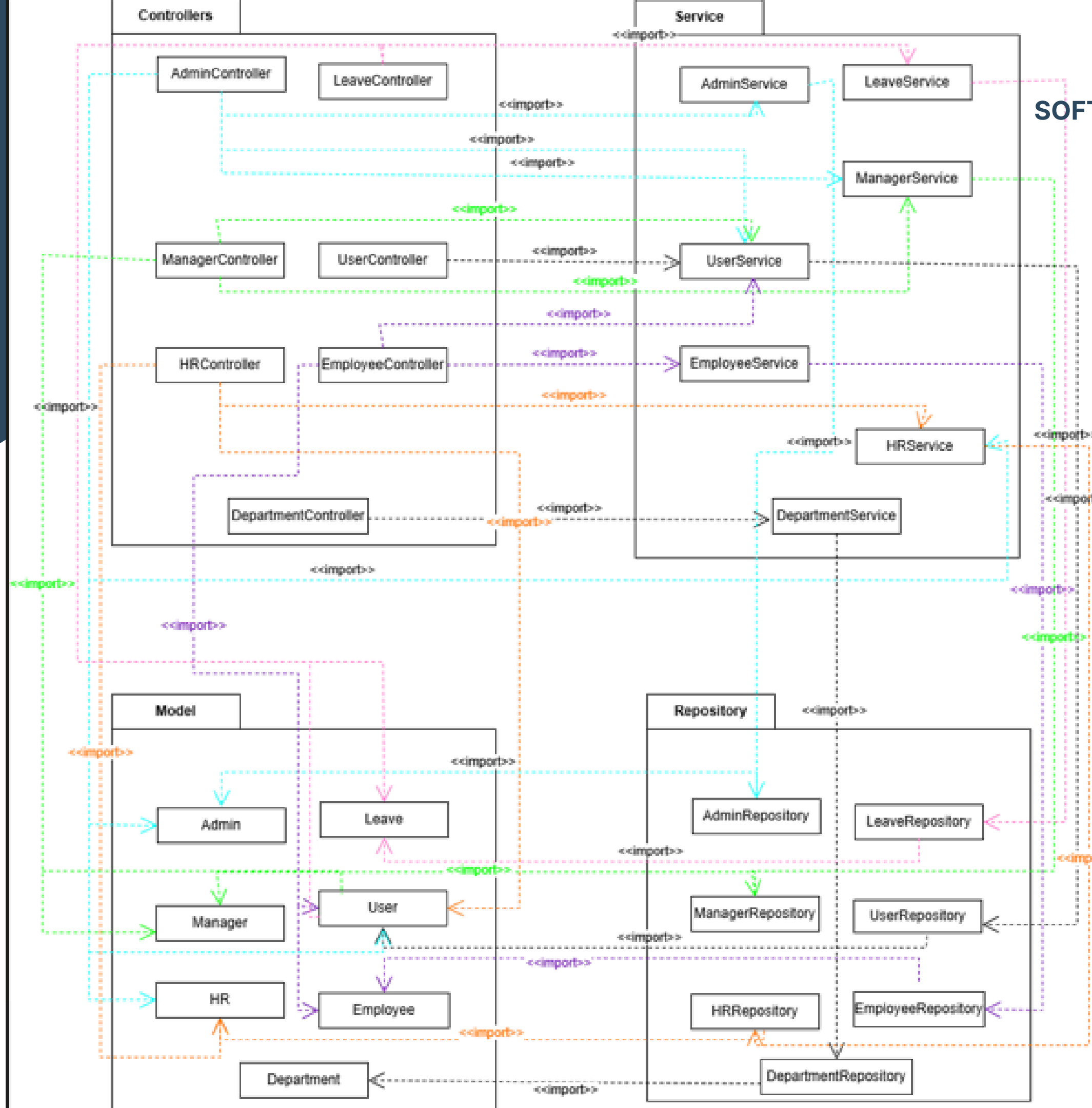
Key Features

- Automated Payroll
- Leave Management
- HR Dashboard

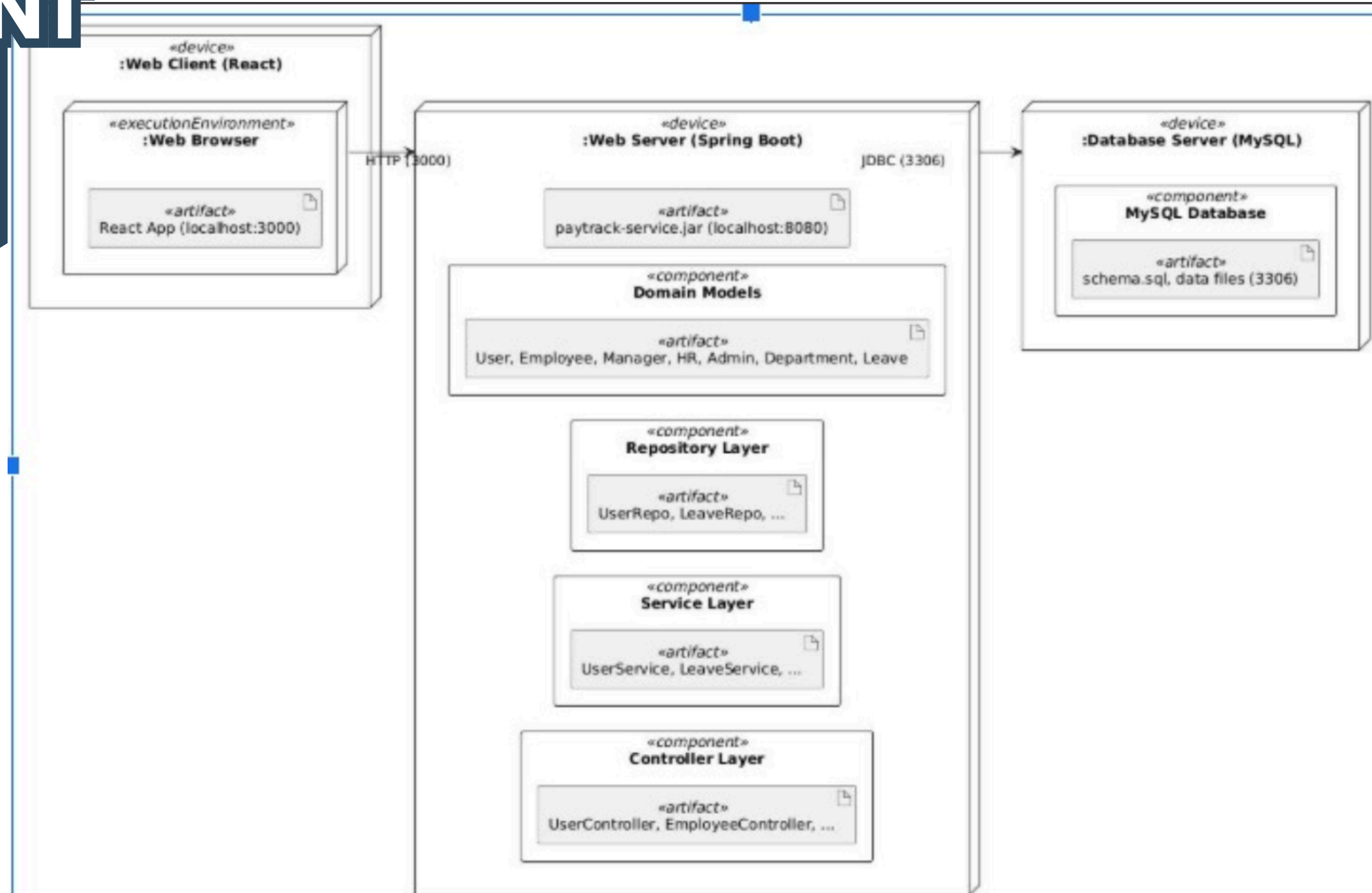


PACKAGE DIAGRAM

SOFTWARE ENGINEERING

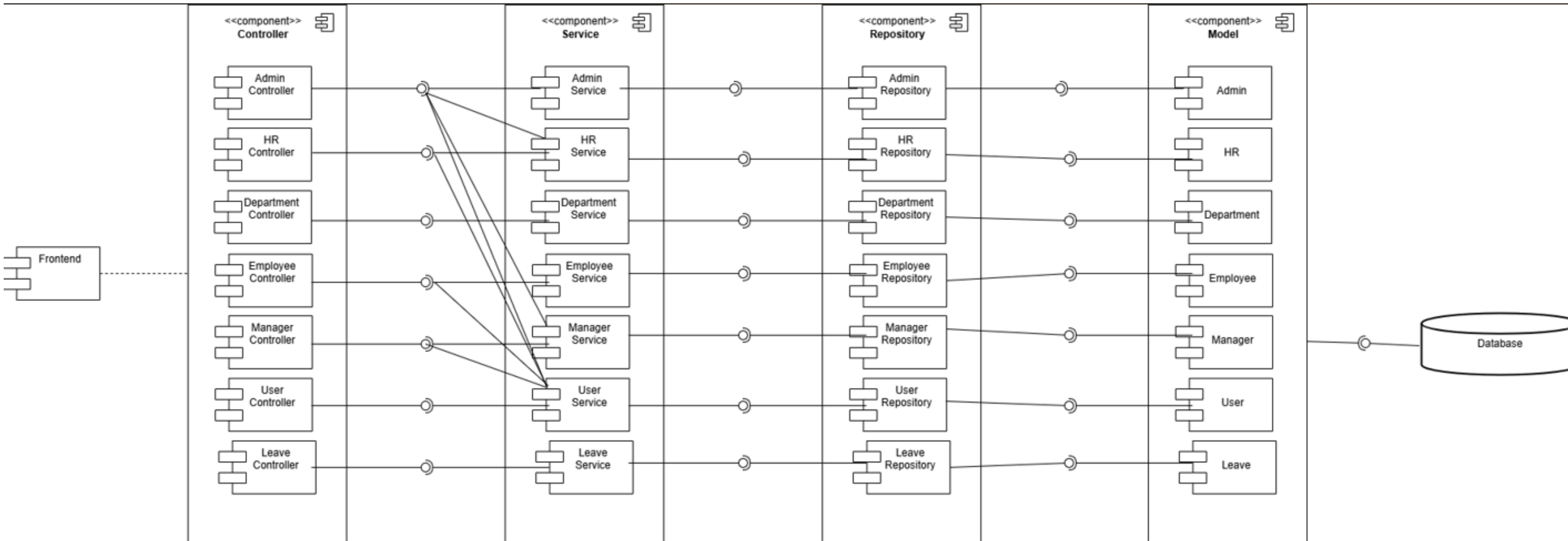


DEPLOYMENT DIAGRAM

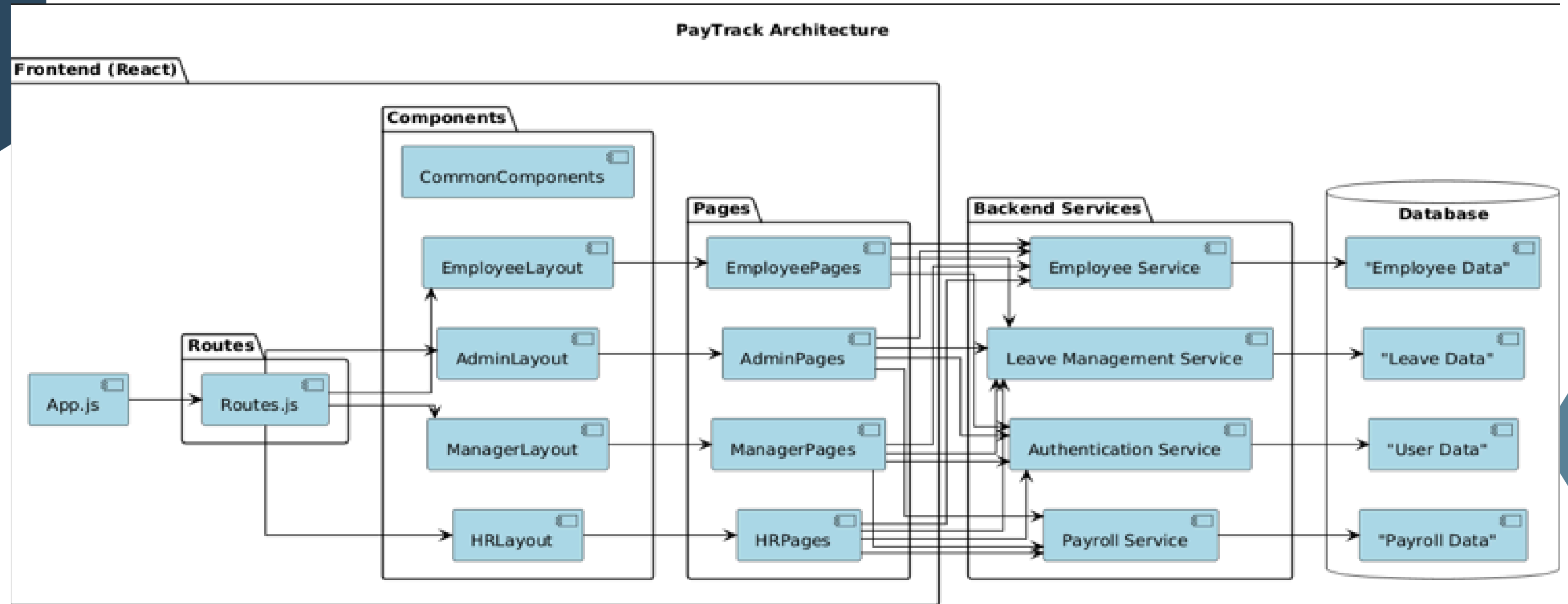


COMPONENT DIAGRAM

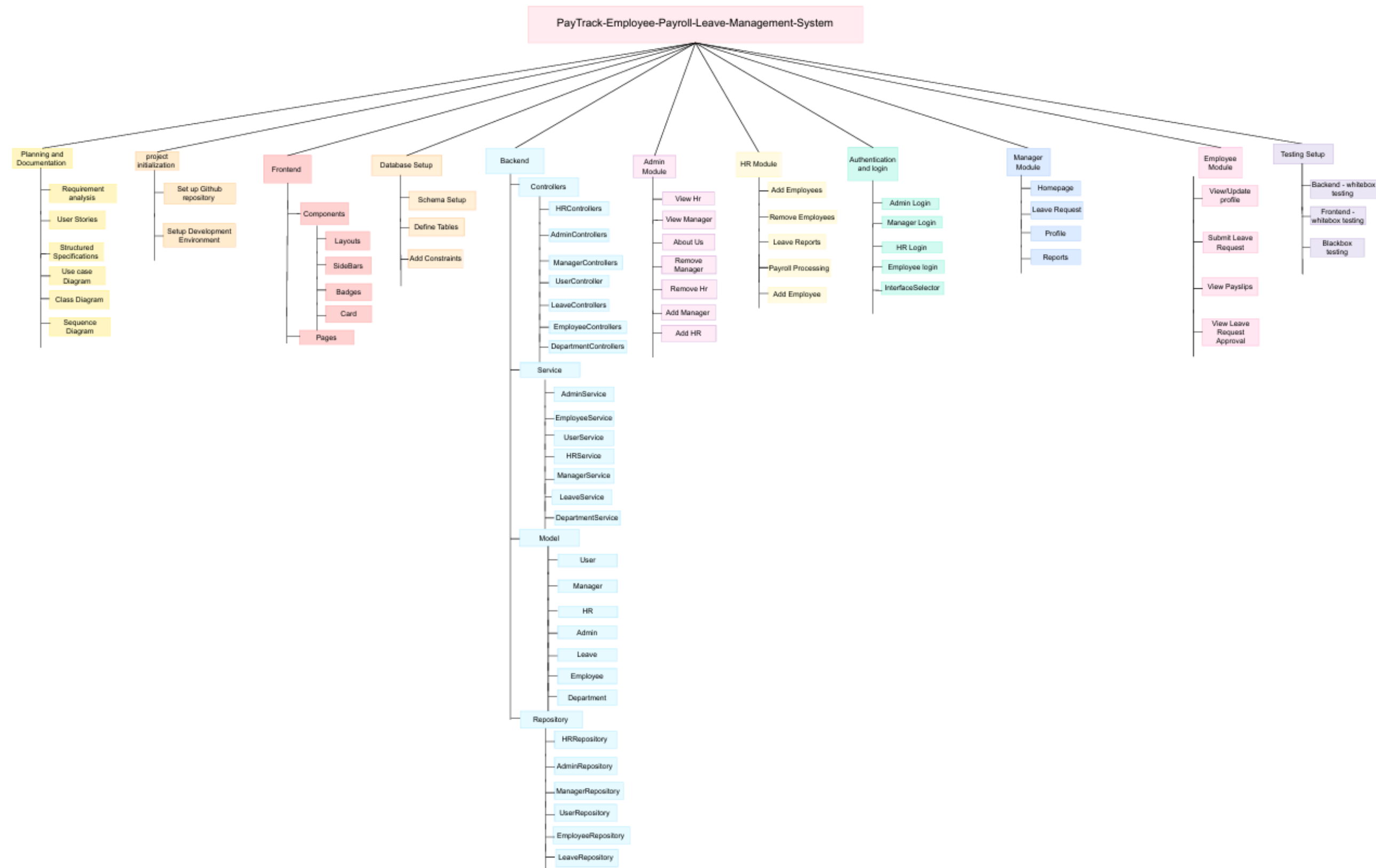
SOFTWARE ENGINEERING



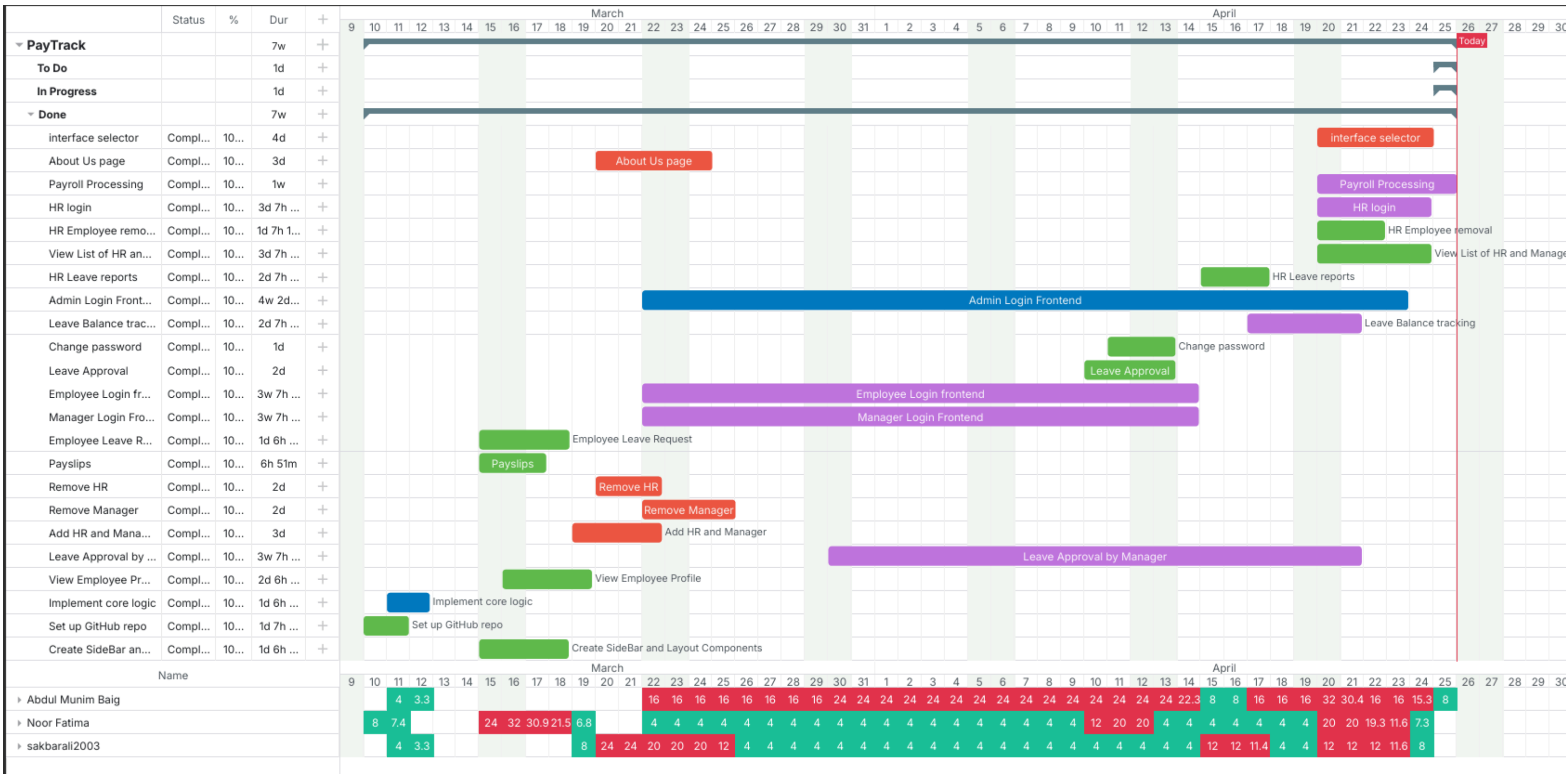
ARCHITECTURE DIAGRAM



WORK BREAKDOWN STRUCTURE



GANTT CHART



SPRINT PLANNING

SPRINT BACKLOG

BACKLOG ID	USER STORIES	INITIAL ESTIMATE	14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
			DAY#1	DAY#2	DAY#3	DAY#4	DAY#5	DAY#6	DAY#7
1	Employee Leave Request	2	1			1			
2	Leave Approval by Manager	2			1			1	1
3	Payroll Processing	2					1		1
4	Employee Salary Slip Access	3		1		1	1	1	
5	View Employee Profile	2	1		1				
	Remaining Effort	11	9	8	6	4	2	0	-2
	Ideal Trend	11	9.9	10.45	10.63333333	10.725	10.78	10.81666667	10.84285714

SPRINT BACKLOG

BACKLOG ID	USER STORIES	INITIAL ESTIMATE	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar
			DAY#1	DAY#2	DAY#3	DAY#4	DAY#5
1	Add HR and Managers	2		1			
2	Remove HR and Managers	2	1				
3	Employee Login and Authentication	1				1	
4	Manager Login and Authentication	1			1		
5	HR Login and Authentication	1				1	
6	Admin Login and Authentication	1			1		
	Remaining Effort	8	7	6	4	2	2
	Ideal Trend	8	7.2	7.6	7.733333	7.8	7.84

SPRINT PLANNING

SPRINT BACKLOG							
BACKLOG ID	USER STORIES	INITIAL ESTIMATE	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar
			DAY#1	DAY#2	DAY#3	DAY#4	DAY#5
1	Payroll Processing	1	1				1
2	Employee Salary Slip Access	2		1			
3	Leave Balance Tracking	3			1		
4	HR Employee Removal	1	1	1			1
5	Employee Leave Approval Status	1				1	1
6	HR Leave Reporting	1	1				
7	View List of HR and Managers	1		1		1	
	Remaining Effort	10	7	5	4	3	0
	Ideal Trend	10	9	9.5	9.666667	9.75	9.8

User Stories

Employee Leave Request

- User Story:
 - "As an employee, I want to request leave so that I can take time off when needed."
- Sub-User Stories:
 - As an employee, I want to select the type of leave (casual, sick, paid, unpaid) so that my request is categorized correctly.

Payroll processing

User Story:

- "As an HR manager, I want to process employee payroll so that salaries are disbursed on time."

Sub-User Stories:

- As an HR manager, I want to calculate salaries based on leave records.
- As an HR manager, I want to apply deductions (e.g., taxes, benefits, unpaid leave) automatically.
- As an HR manager, I want to generate monthly salary slips for all employees.

User Stories

Leave Balance Tracking

User Story:

- "As a manager, I want to track employees' leave balances so that I can decide if they are eligible for more leave."

Sub-User Stories:

- As a manager, I want to see an employee's remaining leave days before approving a request.
- As a manager, I want to generate a leave balance report for my team to monitor their available leave.

User Story:

- "As an employee, I want to check the approval status of my pending leave requests so that I know whether my leave has been approved or rejected."

Sub-User Stories:

- As an employee, I want to view all my pending leave requests in a dedicated section so that I can track their status easily.
- As an employee, I want to see the reason for rejection if my leave is not approved so that I understand the decision.
- As an employee, I want to filter my pending leave requests by date or leave type so that I can easily locate specific requests.

Employee Leave Approval Status

PRODUCT BACKLOG

PRODUCT BACKLOG						
ID	AS A	I want to be able to	So that....	Priority	Sprint	Status
1	Employee	request leave	I can take time off when needed	must	1	done
2	Manager	approve or reject leave requests	I can manage team availability	must	1	done
3	HR	process employee payroll	salaries are disbursed on time	must	3	done
4	Employee	view my salary slip	I can keep track of my earnings	must	3	done
5	Employee	view and update my profile	my information remains up to date	must	1	done
6	Manager	track employees' leave balances	I can decide if they are eligible for more leave	must	3	done
7	HR	add new employees to the system	their details are recorded for payroll and leave management	must	1	done
8	HR	remove employees from the system	records remain up to date and payroll and leave data are properly managed	must	3	done
9	Employee	check the approval status of my pending leave requests	I know whether my leave has been approved or rejected	must	3	done
10	HR	generate leave reports that summarize each employee's leave usage and averages	I can effectively monitor leave patterns and manage workforce planning	must	3	done
11	Admin	add new HR managers and department managers	they can manage employees effectively	must	2	done
12	Admin	remove HR managers and department managers	the system stays up-to date with active staff	must	2	done
13	Admin	view a list of all HR managers and department managers	I can track assigned personnel	must	3	done
14	Manager Login	log in to the system securely	I can access my personalized dashboard and role-specific functionalities	must	2	done
15	Admin Login	log in to the system securely	I can access my personalized dashboard and role-specific functionalities	must	2	done
16	HR Login	log in to the system securely	I can access my personalized dashboard and role-specific functionalities	must	2	done
17	Employee Login	log in to the system securely	I can access my personalized dashboard and role-specific functionalities	must	2	done

BLACK BOX TESTING

Test Case ID	Description	Inputs	Expected Output	Actual Output	Type	Status
TC01	Verify login with valid credentials	Username: Noor, Password: n122	Redirect to Employee Profile	Successfully redirected to profile page	Equivalence Partitioning	Pass
TC02	Verify login with empty username	Username: "", Password: 123456	Error: Please fill out this field	Doesn't redirect to profile page, pops a help message	Equivalence Partitioning	Fail
TC03	Add Employee with valid details	Name: John Doe, Salary: 50000	Employee added successfully	Shows an alert message of adding the employee	Equivalence Partitioning	Pass
TC04	Add Employee with missing salary	Name: Jane Doe, Salary: ""	Error: Salary is required	Fails to add employee	Equivalence Partitioning	Fail
TC05	Add Employee with incorrect email (missing @)	Email: noor.com	Error: Invalid format alert message	Alert message asking the user to add @	Equivalence Partitioning	Fail

BLACK BOX TESTING

TC06	Adding employee with many missing fields of input	Salary: Phone number:	Error message and alert mentioning to add these fields	Alert message to add values in these fields	Equivalence Partitioning	Fail
TC07	Generate payslip for active employee	EmployeeID: 123	Payslip generated	Payslip generated	Equivalence Partitioning	Pass
TC08	Generate payslip for invalid employee	EmployeeID: 999	Error: Employee not found	Can't generate for employee who is not in DB	Equivalence Partitioning	Fail
TC09	View salary details when logged in	Username: Noor, Password: n122	Display salary details	Displays salary after any deductions	Equivalence Partitioning	Pass
TC10	Manager approves valid pending leave request	PaymentID: 456	Payment status updated to "Approved"	Changes status of the leave request	Equivalence Partitioning	Pass

WHITE BOX TESTING

SOFTWARE ENGINEERING

demo

demo

Element	Missed Instructions	Cov	Missed Branches	Cov	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
com.example.demo.controller	<div><div></div></div>	76%	<div><div></div></div>	78%	34	115	56	244	19	70	1	8
com.example.demo.service	<div><div></div></div>	74%	<div><div></div></div>	77%	22	71	32	133	16	53	0	7
com.example.demo.model	<div><div></div></div>	86%		n/a	8	61	13	88	8	61	0	7
com.example.demo		37%		n/a	1	2	2	3	1	2	0	1
Total	418 of 1,826	77%	27 of 126	78%	65	249	103	468	44	186	1	23

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	8.69	2.72	16.53	8.95	
src	9.09	0	33.33	9.09	
App.js	100	100	100	100	
index.js	0	100	100	0	8-9
reportWebVitals.js	0	0	0	0	1-8
src/components	91.89	70	93.02	91.89	
AdminLayout.js	100	100	100	100	
AdminSidebar.js	100	100	100	100	
EmployeeLayout.js	100	100	100	100	
EmployeeSidebar.js	100	100	100	100	
HRLayout.js	100	100	100	100	
HRSidebar.js	100	100	100	100	
LeaveRequestCard.js	87.5	87.5	100	87.5	15
LeaveRequestTab.js	0	0	0	0	5-12
ManagerLayout.js	60	100	50	60	36-37
ManagerSidebar.js	100	100	100	100	
badge.js	100	100	100	100	
card.js	100	100	100	100	
tabs.js	100	100	100	100	
src/pages/Administrator	0.8	0	1.31	0.82	

LESSON LEARNT



Effective Collaboration is Key

We realized that dividing work based on individual strengths while maintaining open communication was crucial for progress. Regular check-ins kept everyone aligned and motivated.

Version Control is a Lifesaver

Using Git effectively helped us track changes, avoid conflicts, and merge our work seamlessly — a habit we'll carry forward in future projects.

UI/UX Matters

More Than We Thought: Building user-friendly interfaces taught us the importance of intuitive design and how small improvements can significantly enhance the user experience.

LESSON LEARNT



Backend-Frontend Sync is Crucial

Coordinating backend logic with frontend behavior made us appreciate the importance of clear API design and consistent data handling.

Time Management & Flexibility

Deadlines taught us discipline, but unexpected bugs taught us flexibility. Balancing both helped us grow as developers and as a team.

Every Role Matters

Whether it was login functionality, user story implementation, or styling a single page, we learned that every contribution, big or small, shapes the success of the final product

TEAM REFLECTIONS



Task Distribution

Responsibilities were divided according to each member's strengths, helping us work more efficiently and cover all areas like frontend, backend, and database.

Problem Solving Together

: Whenever we faced technical challenges (like integration issues or feature bugs), we brainstormed solutions together instead of working in isolation.

Learning and Growth

Every team member learned new technologies or improved their skills (e.g., Spring Boot, React, database management) during the project.

Time Management

We planned sprints and milestones early, which helped us deliver parts of the project step-by-step without last-minute pressure.

FINAL THOUGHTS

Working on the PayTrack project was a valuable experience that strengthened our teamwork, technical skills, and problem-solving abilities. We learned the importance of clear communication, proper planning, and mutual support in delivering a successful project. Although we faced challenges, our collaboration and adaptability helped us overcome them efficiently. This project not only enhanced our technical expertise but also taught us the real-world importance of teamwork and responsibility in software development. We are proud of what we achieved together and look forward to applying these lessons to future projects.

SOFTWARE ENGINEERING

Thank You
for your attention

