



Employee Scheduling & Roster Management Application

FUNCTIONAL SPECIFICATION

Liam Durkan – C00264405

Supervisor: Paul Barry



Table of Contents

<i>Introduction</i>	2
<i>Project Description</i>	4
<i>Core Functionality</i>	8
<i>Precedent for the Application</i>	9
Appendix A	10
Non-Core Functionality	10

Introduction

A roster is a timetable that is used to schedule employees for shifts within a business such as cafes, restaurants, hotels and shops. These schedules are created by managers or supervisors and are a visual representation of an employee's assigned shift, and the position they will work for the shift. Rosters can vary in structure as each business has unique requirements. Most businesses in the hospitality sector have a template for their roster. The weekly schedule is then created using Excel or by writing on the template by hand.

In the hospitality sector, two common roster formats are the flexible roster and the duty roster:

Flexible Roster

A flexible roster is the most common structure. A flexible roster gives total control over shift times. Mistakes, such as understaffing or overstaffing can be a common issue with flexible rosters.

Front of House Roster			Week : 41			Date: 9 th – 15 th	
Name	Monday Bank Holiday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
John	Coffee Prep 1 9:00 - 15:00	Floor 2 10:00 - 16:00	OFF	OFF	Coffee Prep 2 11:00 - 18:00	Coffee Prep 2 11:00 - 18:00	Coffee Prep 2 11:00 - 18:00
David	Till 1 9:00 - 15:00	Till 1 9:00 - 15:00	Till 1 9:00 - 15:00	OFF	OFF	OFF	OFF
Emily	Floor 1 9:00 - 15:00	Floor 1 9:00 - 15:00	OFF	Floor 3 11:00 - 17:00	Floor 4 11:00 - 17:00	OFF	Floor 2 10:00 - 16:00
Michael	Floor 2 10:00 - 16:00	Floor 2 10:00 - 16:00	Floor 2 10:00 - 16:00	OFF	Floor 2 10:00 - 16:00	Floor 2 10:00 - 16:00	Floor 1 9:00 - 15:00
Sarah	OFF	OFF	OFF	Floor 2 10:00 - 16:00	Coffee Prep 1 9:00 - 15:00	Coffee Prep 1 9:00 - 15:00	Coffee Prep 1 9:00 - 15:00
Katie	Coffee Prep 2 11:00 - 18:00	OFF	OFF	Coffee Prep 1 9:00 - 15:00	Floor 1 9:00 - 15:00	OFF	Floor 2 10:00 - 16:00
Michelle	Floor 3 11:00 - 17:00	Floor 3 11:00 - 17:00	Coffee Prep 1 9:00 - 15:00	OFF	OFF	Till 2 12:00 - 18:00	OFF
Stephen	Floor 4 11:00 - 17:00	OFF	Floor 1 9:00 - 15:00	Floor 1 9:00 - 15:00	Floor 3 11:00 - 17:00	Floor 3 11:00 - 17:00	Floor 3 11:00 - 17:00
William	Till 2 12:00 - 18:00	Floor 3 11:00 - 17:00	Floor 2 10:00 - 16:00	OFF	Till 2 12:00 - 18:00	Till 1 9:00 - 15:00	OFF
Daniel	OFF	OFF	Floor 3 11:00 - 17:00	OFF	Till 1 9:00 - 15:00	Floor 4 11:00 - 17:00	Floor 4 11:00 - 17:00

Duty Rosters

A duty roster is another widely used roster structure in the hospitality sector. It is a strict template with set times and duties for the shift. The advantage of a duty roster is that it avoids scheduling too many staff onto one shift. Duty rosters generally contain fewer mistakes when it comes to overstaffing/understaffing, this is due to a consistent number of staff members allocated to a role during a shift. A duty roster provides a structured visual aid to the person responsible for creating the roster. In the example below, the yellow boxes represent the required number of staff. While the green represents potential shifts for additional staff on a busy day, such as a public holiday.

Front of House Roster			Week: 41				Date: 9 th – 15 th		
Duty	Shift	Monday Bank Holiday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	
Till 1	9:00 - 15:00	David	David	David	William	Daniel	William	Emily	
Till 2	12:00 - 18:00	William				William	Michael	David	
Coffee Prep 1	9:00 - 16:00	John	John	Michael	Katie	Sarah	Sarah	Sarah	
Coffee Prep 2	11:00 - 18:00	Katie				John	John	John	
Floor 1	9:00 - 15:00	Emily	Emily	Stephen	Stephen	Katie	David	Michelle	
Floor 2	10:00 - 16:00	Michael	Michael	William	Sarah	Michelle	Michelle	Katie	
Floor 3	11:00 - 17:00	Michelle	William	Daniel	Emily	Stephen	Stephen	Stephen	
Floor 4	11:00 - 17:00	Stephan				Emily	Daniel	Daniel	
Floor 5	12:00 - 18:00								
Floor 6	12:00 - 18:00								

Both roster structures have their advantages and disadvantages. The duty roster, with its fixed roles and shifts is ideal for businesses that have consistent fluctuations in business per week. It requires greater initial planning to create 'the perfect template' but is a better long-term solution. The flexibility roster, although a necessity for some businesses, tends to be more common as it is the most intuitive for a person to create.

Both rosters above depict the same schedule. At first glance, it is clear that a duty roster provides more clarity and less potential for mistakes to be made.

Project Description

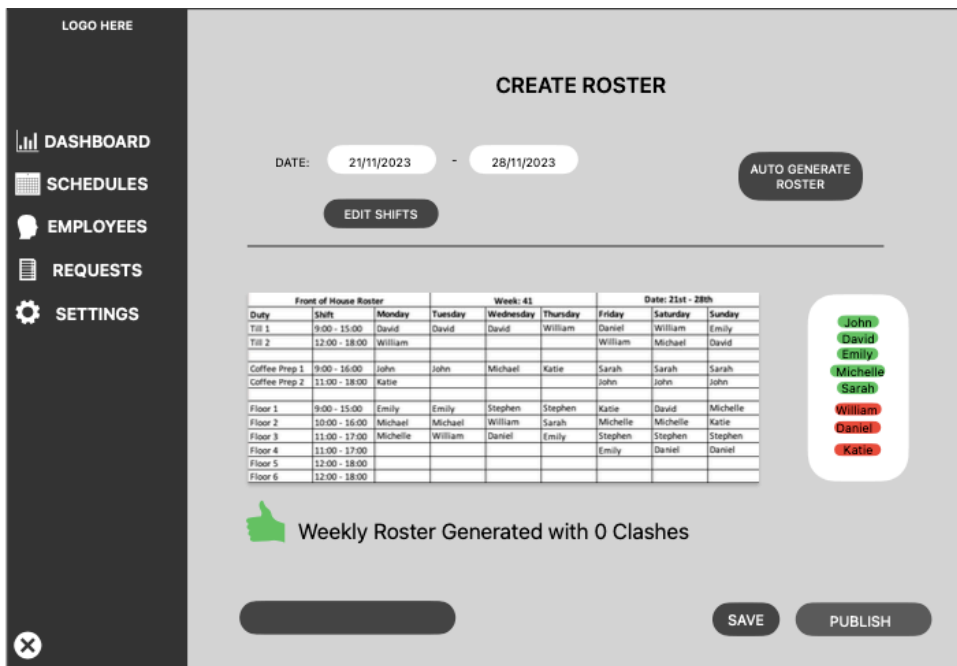
This project aims to build an application that streamlines employee scheduling and roster creation for the hospitality industry. The application will generate rosters using algorithms that take into account constraints such as staff availability and time off. There are two types of user profiles in the application, an admin (manager) and an employee user. Employees can view their roster, submit time off requests, edit their availability & request to swap shifts with another employee. The admin user can generate and edit rosters, approve time off requests, create and edit employees.

- View Rosters

Front of House Roster		Week: 41						
		Date: 9 th - 15 th						
Duty	Shift	Monday Bank Holiday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Till 1	9:00 - 15:00	David	David	David	William	Daniel	William	Emily
Till 2	12:00 - 18:00	William				William	Michael	David
Coffee Prep 1	9:00 - 16:00	John	John	Michael	Katie	Sarah	Sarah	Sarah
Coffee Prep 2	11:00 - 18:00	Katie				John	John	John
Floor 1	9:00 - 15:00	Emily	Emily	Stephen	Stephen	Katie	David	Michelle
Floor 2	10:00 - 16:00	Michael	Michael	William	Sarah	Michelle	Michelle	Katie
Floor 3	11:00 - 17:00	Michelle	William	Daniel	Emily	Stephen	Stephen	Stephen
Floor 4	11:00 - 17:00	Stephan				Emily	Daniel	Daniel
Floor 5	12:00 - 18:00							
Floor 6	12:00 - 18:00							

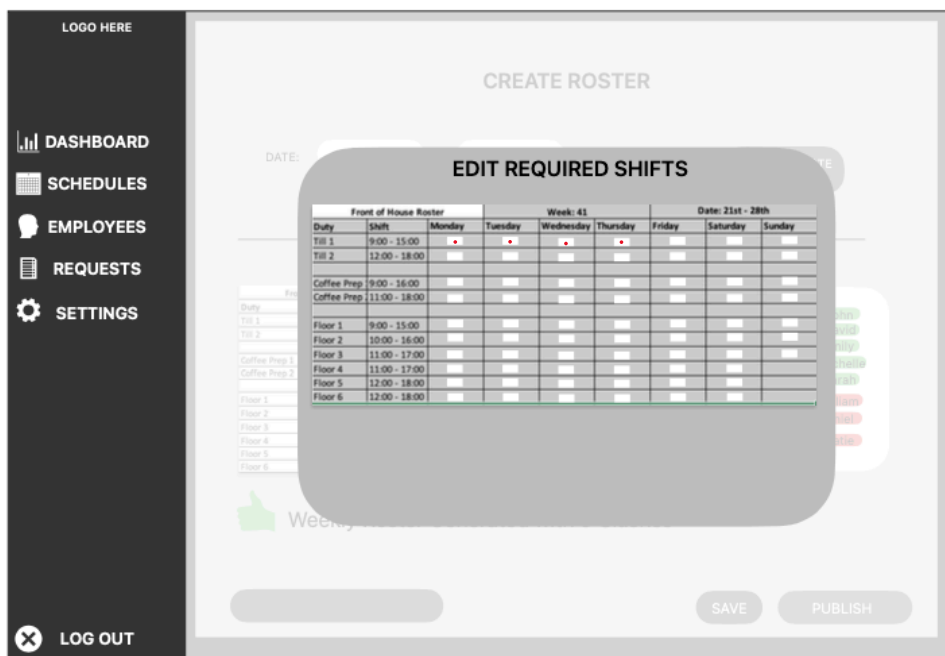
➔ Users can view previously published rosters, the current roster and any future rosters.

- Create Rosters



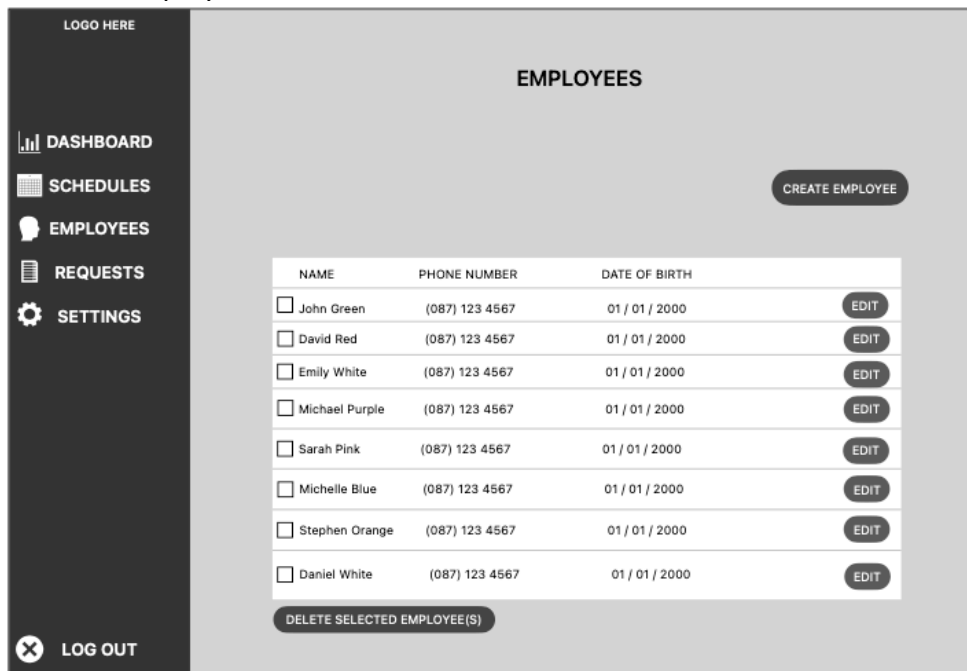
- ➔ Admin users can generate a new roster.
- ➔ Admin users can edit the generated roster.
- ➔ Admin users can save or publish the roster.

- Edit Constraints for Generated Roster



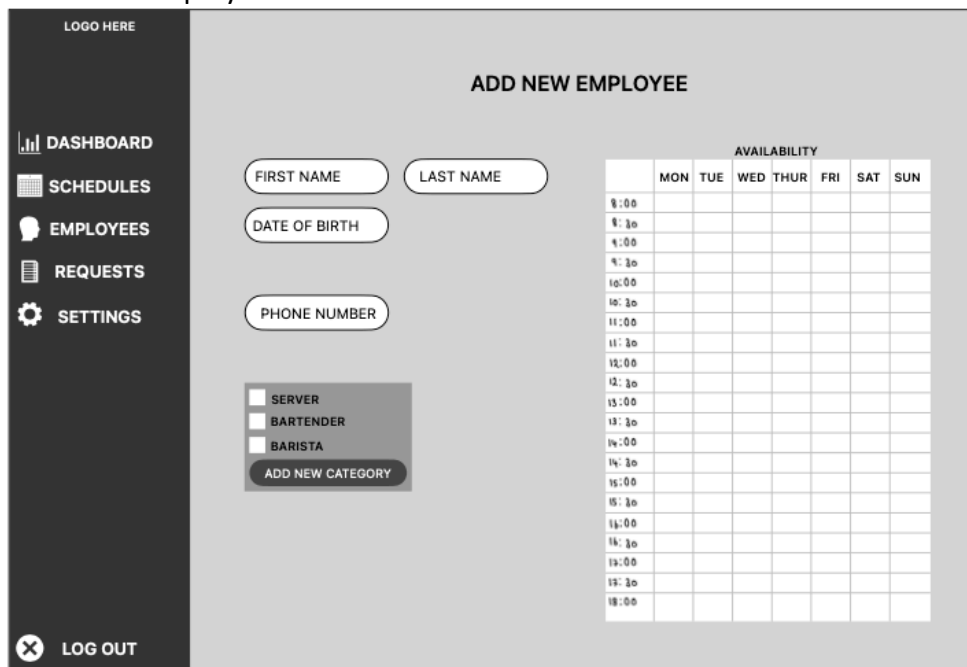
- ➔ Admin users can edit the required shifts for business operations.
- ➔ Admin users can add and remove duties from the roster.

- View Employees



- ➔ Admin users can view the list of current employees with their details.
- ➔ Employees can be edited and deleted.

- Create Employees



- ➔ Admin users can create new employees.
- ➔ Employees can set their availability for hours they can work.

- Edit Employee Information

LOGO HERE

EDIT EMPLOYEE

DASHBOARD

SCHEDULES

EMPLOYEES

REQUESTS

SETTINGS

SERVER
 BARTENDER
 BARISTA

ADD NEW CATEGORY

AVAILABILITY							
	MON	TUE	WED	THUR	FRI	SAT	SUN
8:00	🟢	🟢	🟢	🟢	🟢	🟢	🟢
8:30	🟢	🟢	🟢	🟢	🟢	🟢	🟢
9:00	🟢	🟢	🟢	🟢	🟢	🟢	🟢
9:30	🟢	🟢	🟢	🟢	🟢	🟢	🟢
10:00	🟢	🟢	🟢	🟢	🟢	🟢	🟢
10:30	🟢	🟢	🟢	🟢	🟢	🟢	🟢
11:00	🟢	🟢	🟢	🟢	🟢	🟢	🟢
11:30	🟢	🟢	🟢	🟢	🟢	🟢	🟢
12:00	🟢	🟢	🟢	🟢	🟢	🟢	🟢
12:30	🟢	🟢	🟢	🟢	🟢	🟢	🟢
13:00	🟢	🟢	🟢	🟢	🟢	🟢	🟢
13:30	🟢	🟢	🟢	🟢	🟢	🟢	🟢
14:00	🟢	🟢	🟢	🟢	🟢	🟢	🟢
14:30	🟢	🟢	🟢	🟢	🟢	🟢	🟢
15:00	🟢	🟢	🟢	🟢	🟢	🟢	🟢
15:30	🟢	🟢	🟢	🟢	🟢	🟢	🟢
16:00	🟢	🟢	🟢	🟢	🟢	🟢	🟢
16:30	🟢	🟢	🟢	🟢	🟢	🟢	🟢
17:00	🟢	🟢	🟢	🟢	🟢	🟢	🟢
17:30	🟢	🟢	🟢	🟢	🟢	🟢	🟢
18:00	🟢	🟢	🟢	🟢	🟢	🟢	🟢

➔ Employee users can edit their personal information & availability.

Core Functionality

Admin Users:

1. **Roster Generation:** The core functionality of this application is to generate rosters based on a set of constraints. The application will use an algorithm that takes the required shifts and pairs these with employee availability and time off requests.
 - i. Admin defines shifts the business requires for the week.
2. **Employee Management:** Employee users can be created, updated and deleted.
 - i. **Time Off:** Admin can approve requests for time off.
 - ii. **Availability:** Employees can set the weekly hours they can work.
 - iii. **Emergency Requests:** Emergency requests e.g. Illness/bereavement are requests for the current week. The system alerts the admin when it occurs accompanied by a list of employees not scheduled for the request period.
3. **Roster Management:** Rosters can be viewed and edited. Rosters can be published to employees.
 - i. **CRUD:** Past, current and future rosters can be viewed & edited.
 - ii. **Export Roster:** Rosters can be exported and published to employees.
 - iii. **Republish:** If the current roster is changed during the working week, employees will receive an email notification.

Employee User

1. **View Roster:** Employees can view published rosters.
 - i. An email notification on new roster release.
2. **Availability:** Employees can input their availability for when they can work.
 - i. **Availability:** Changes to availability have to be approved by an admin.
3. **Requests:** Employees can submit requests for time off
 - i. **Time Off:** Employees can submit a request for time off.
 - ii. **Swap Shifts:** Employees can request to swap a shift with another employee.
 - iii. **Emergency Request:** Employees can alert admin that they cannot work a shift due to an emergency.

Precedent for the Application

Creating rosters can be a complex task due to the number of variables and constraints that must be considered. Staff availability, time off and shift requests are just some of the factors. Labour laws, seasonal demand and budget have to be factored in as well during the process. Creating rosters is a delicate balance, when mistakes are made they cost money and can have negative consequences on business operations.

I've worked in the hospitality industry since I was 16 and the consistent issue I've faced across every job is poor roster creation. Typical issues staff experience weekly with a roster:

- Requested days off are often forgotten.
- Managers get frustrated when people need to swap shifts.
- Employees get rostered in outside of their availability e.g. College
- Distribute rosters on a Sunday night for the current week
- An oversight or clash on the schedule.

It is important to note, that these issues discussed above are not a lack of concern from a manager about employees' personal lives. It is a delicate balance to orchestrate a schedule for a workforce that all have unique requests. These requests are often communicated through various channels, such as text messages or casual conversations. With so many variables and endless requests, it is not unprecedented that a mistake is made.

Appendix A

Non-Core Functionality

Admin Users:

1. **Admin Dashboard:** Admin users can view a dashboard displaying all related information in one place such as upcoming time off for employees, a notification panel for pending requests.
2. **Email Alerts:** Receive email notifications when requests are submitted from staff.

Employee Users:

1. **Shift Request Handling:** Employees can select a preference for a particular shift. This is a soft constraint, the shift is not guaranteed but will be taken into account.
2. **Temporary availability:** Employees can add temporary availability e.g. midterm breaks.