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EasySched – workload scheduling web app

Building Distributed Systems project

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Tallinn 2023

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1 Introduction

EasySched is an application which is mainly designed for managers and employees of retail stores but can be used by anyone who needs to create a schedule for their workers.

EasySched allows the manager to enter the workload of their employees and have the application automatically create a humane schedule. The employees can enter the times they wish to have off and those are accounted for as best as possible. Sale campaigns, vacations, trainings etc. are also accounted for when planning the workers for each day.

The purpose of EasySched is to alleviate the manual work from managers to create a schedule for their employees. EasySched will be better than a random generator and other solutions because the schedule will be as humane as a manager created it themselves. For example, when an employee has been planned for a full-day shift for 3 days straight, they will get days off after that and will not have every day be a full-day.

2 Application overview

2.1 Use cases of the application

The application is meant to be used by managers of retail stores to create schedules for their employees and for the said employees to see and interact with the schedule.

Functionality designed for the manager:

- List their employees and mark down their workload.
- Assign each employee a competency index, e.g., on a 1-10 scale to indicate how experienced/competent each employee is.
- If some strong synergies or conflicts exist between the employees, list their suitability.
- Mark down the vacations of the employees.
- See the requested free days of the employees and decide which ones to account for.
- See an overview of the employees with their upcoming workdays and vacations / days off.
- List the upcoming events like campaigns and trainings.
- And most importantly, use the forementioned data to automatically create a humane schedule for their employees and share it with them in the application.

The application is also designed for the employees to use the schedule and let their manager know about the data which the manager can oversee.

Main functionality for the employees:

- Enter their requests for days off.
- See the schedule which the manager shares with them.
- See information about their (and their co-workers) days at work for the upcoming 8 days.
- Send requests to their co-workers for trading shifts.
- See the upcoming events – trainings, campaigns etc.

In later version of development, organizational administrators will also be added to the application. The idea behind that is to have a manager on the organizational level and have them give the access to the platform for the direct managers of store employees. That way all

events can be managed on an organizational level and the higher management also has an overview of the schedules in specific departments.

2.2 Database design

The database of the system is designed to store vacations, special requests, events, schedules, shifts, exchanges of shifts, and users with a history. The user data only has a present value with no history. That is by choice as EasySched is not designed to be a full staff management application, but instead a workload planning application. If in the future expansion to a complete staff management application is done, then all user history (with much more data and tables) needs to be created. The entity relationship diagram (ERD) of the database can be seen in the appendix 1.

2.3 Sample designs of end user experience

Some designs are created showing how the application might look like for the end user when using the main functionality.

In appendix 2 there is the design of the employee seeing their next 8 days at work. It shows the department and organization where the days apply. That is in case they are employed at more than one departments at that organization or even at different organizations.

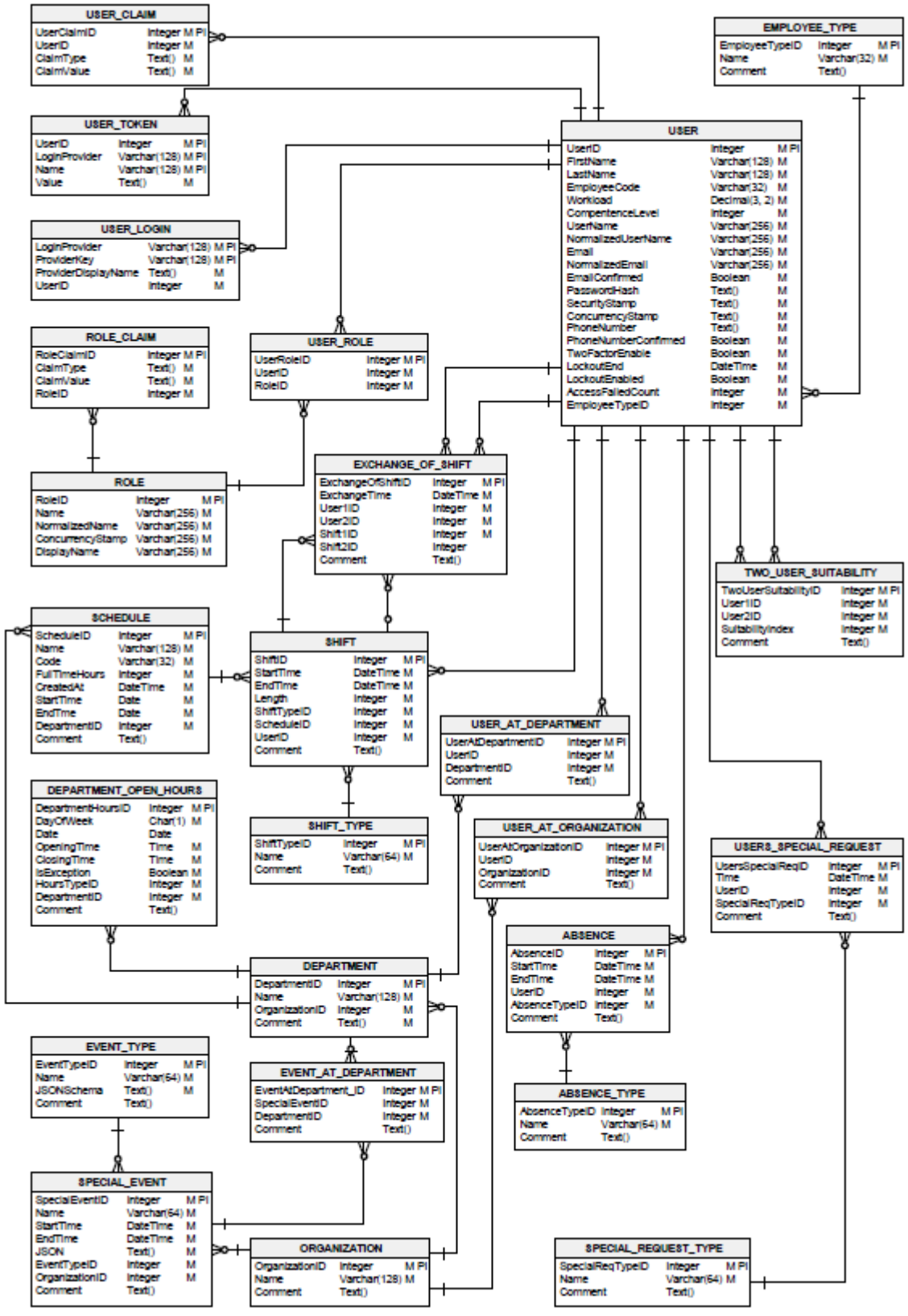
The view of the employee looking at their workday can be seen in appendix 3. There can be seen all the other employees working that day and their start and end times. It’s also possible to offer an exchange to any employee working that day.

The basic view for the manager creating a schedule is featured in appendix 4. The manager can opt for accounting for different options when creating a schedule.

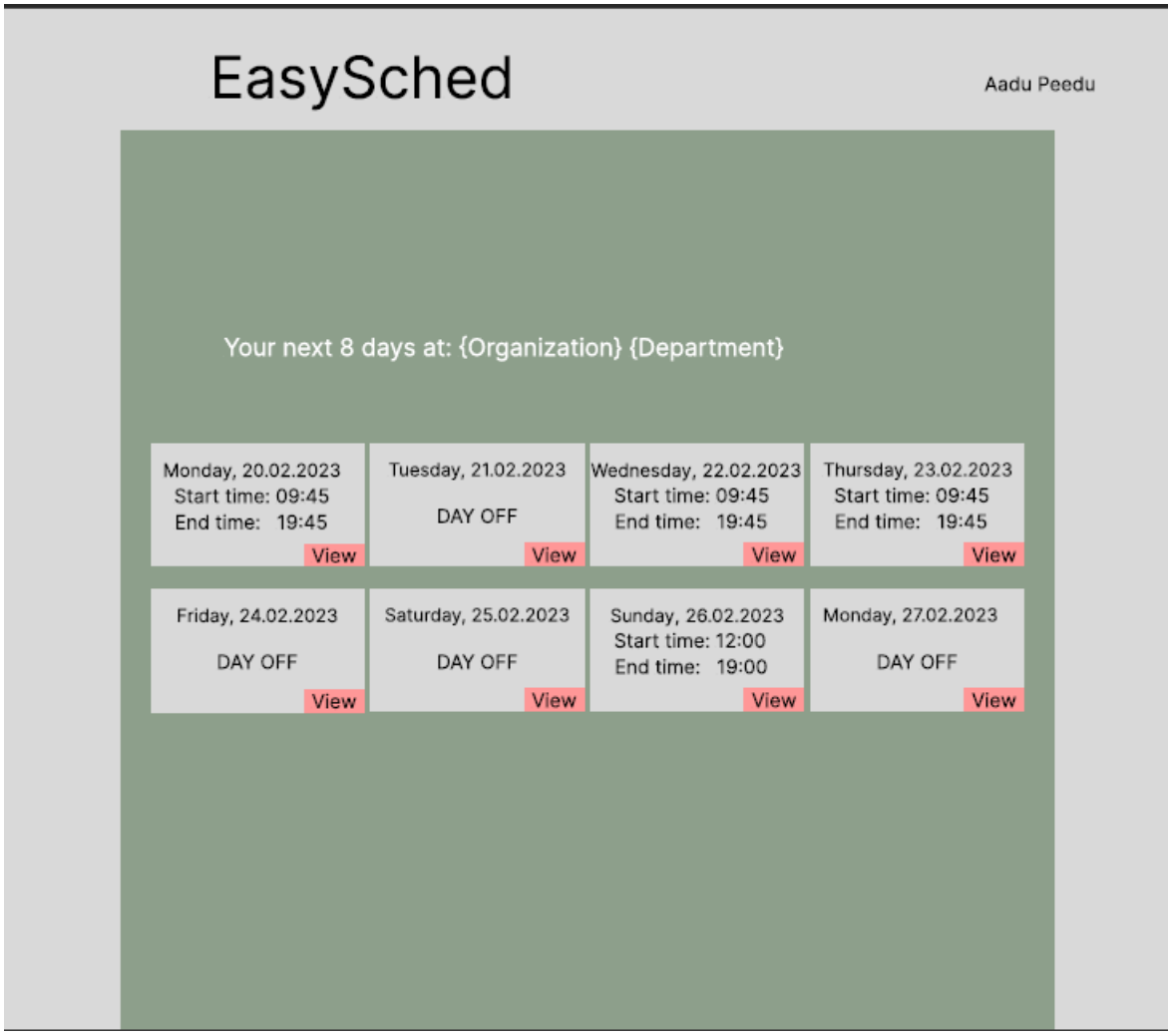
In appendix 5 the view for the manager of seeing their employees with the workload and competency index is shown. With every employee there are the buttons for seeing their suitability with other employees and their schedule.

The main screen of the overall schedule is in appendix 6. That view generic for the manager and employees.

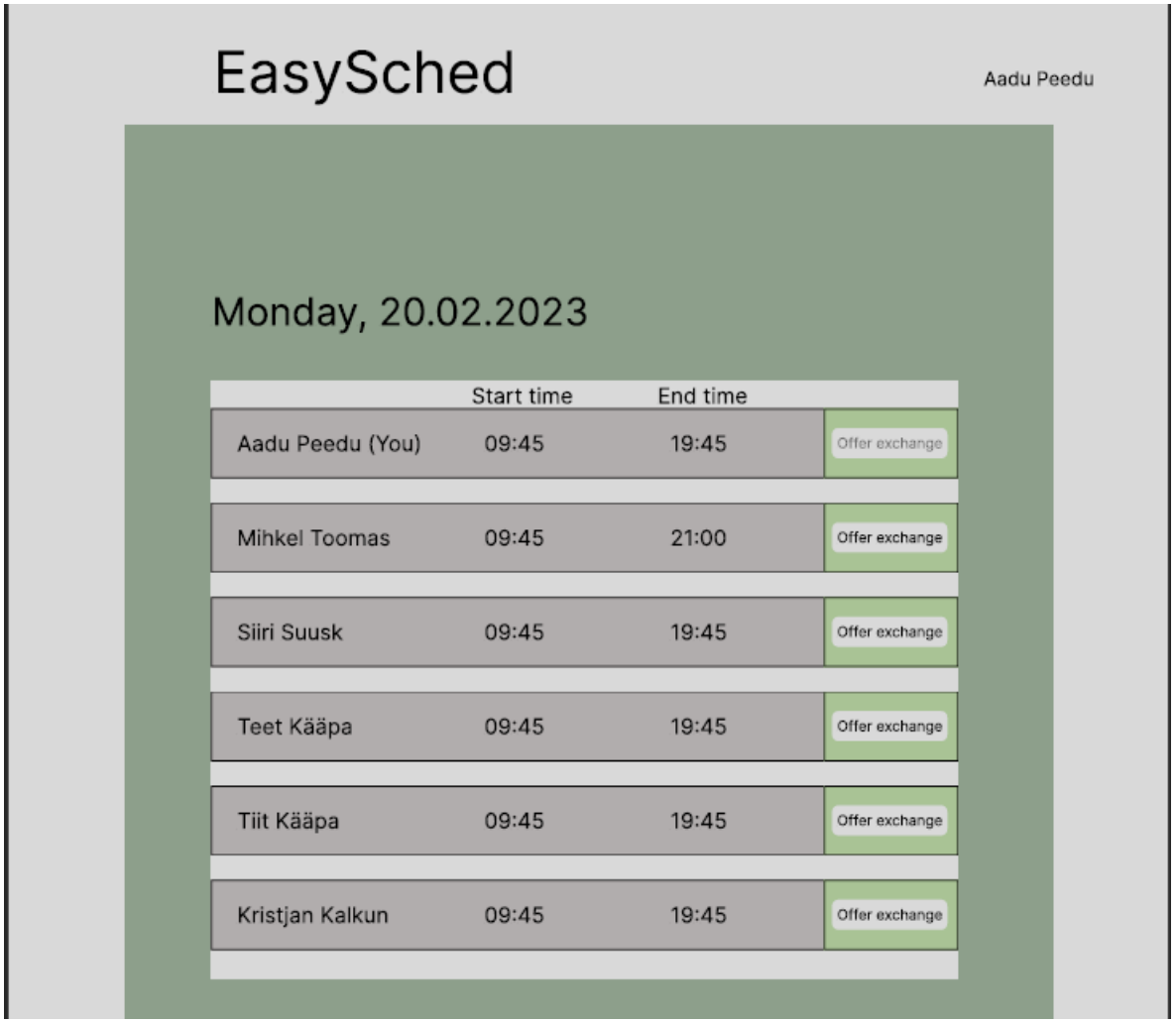
Appendix 1 – ERD Schema



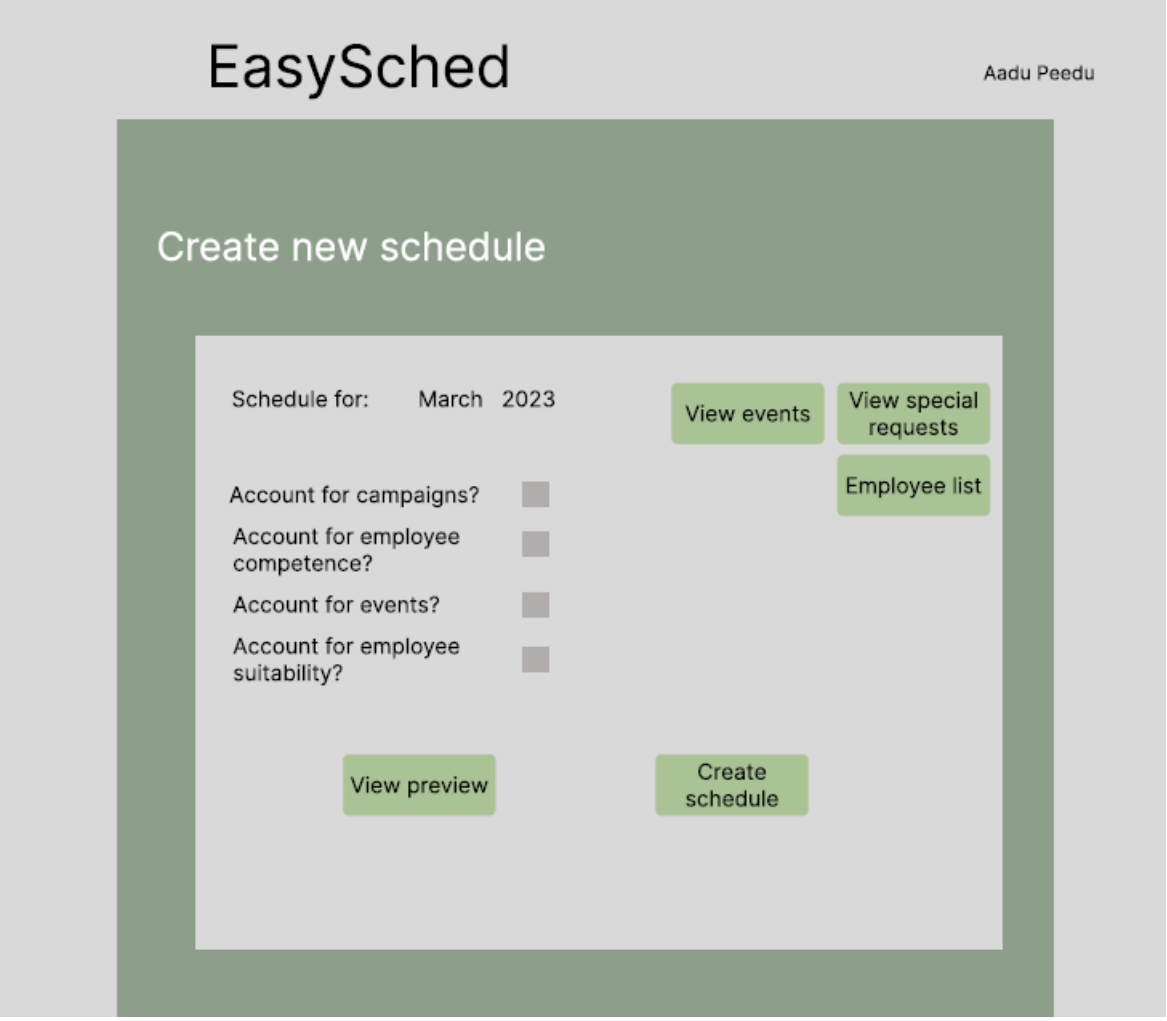
Appendix 2 – The employee's view of upcoming days



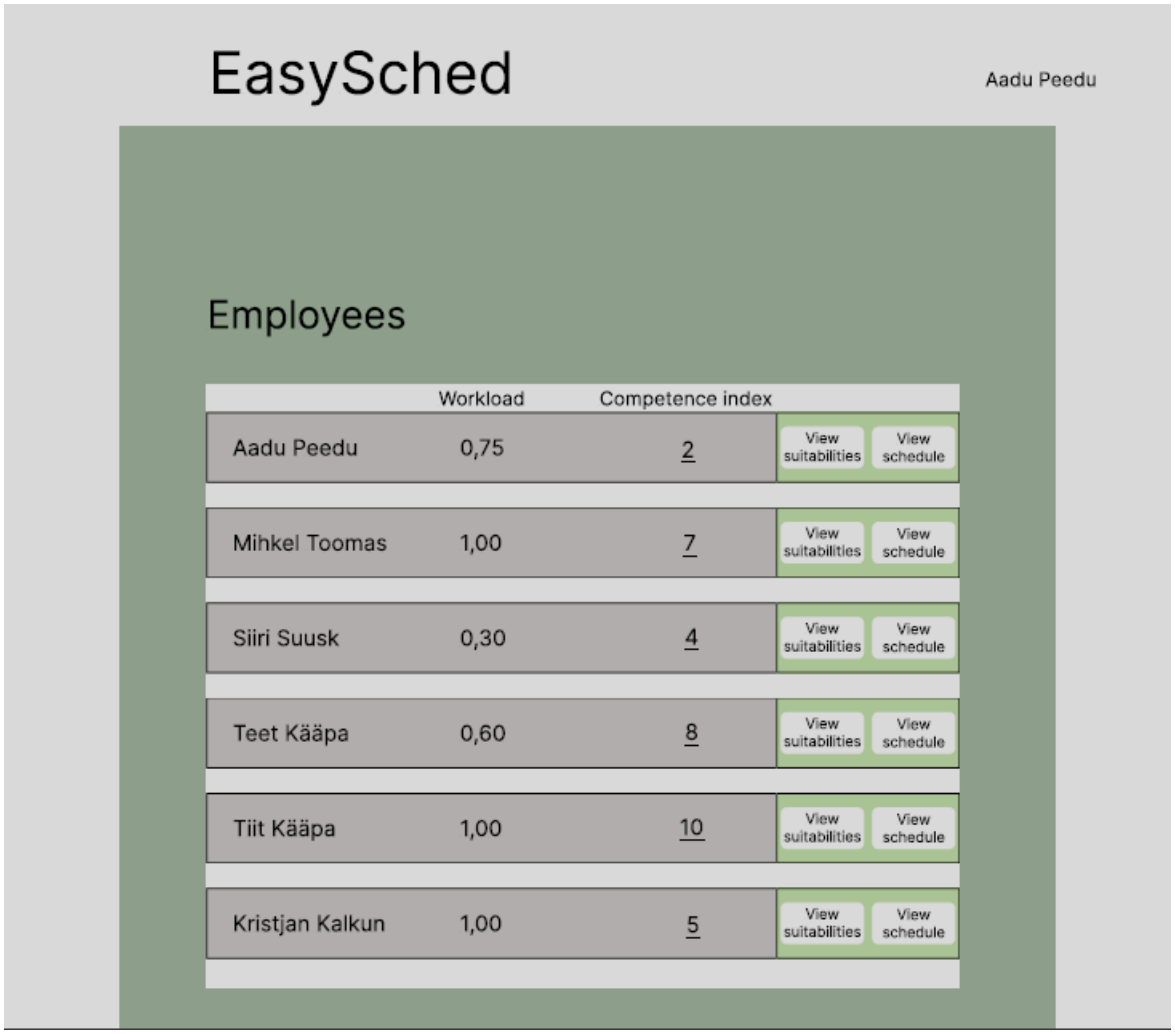
Appendix 3 – The employee's view of a workday



Appendix 4 – The manager's view of creating a new schedule



Appendix 5 – The manager's view of their employees



Appendix 6 – The generic view of the schedule