Mid-Term Delivery Documentation

PayDay - Time Management System

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Initial Business Model summary

The (revised) project concept/idea

PayDay is a time management system that digitizes timesheets. The idea behind PayDay is to speed up the process of paying employees. Employees, managers and the finance department will have an easier time going through the process of paying employees. This, in turn, increases efficiency and overall saves time and money for the company. PayDay essentially gives employees more power and control in the employees' payment process, as well as saves the amount of time employees spend on the timesheet process.

Our idea will have two main functions: digitizing timesheets and a rostering board.

With digitizing timesheets, the idea is that employees will have the freedom to fill in their own timesheets. Their rates will be attached to the job they do (employees won't have permissions to edit it)[Timesheet View], and they will have to send their timesheet to their manager when they have it filled out. The timesheet will add up all their hours and multiply it against the rate so the employees know how much they are going to be paid before tax. The employees then send their timesheets to their manager for approval. To avoid confusion employees will only be allowed to send a one-time sheet a month unless the manager has approved the re-submission of another timesheet.

For managers, they will have the same view of the timesheet as the employees. They will be able to put in their working time, their rates will be already attached with no permissions to modify it. As for approval, their timesheets will have to be sent to the owner of the company for approval. The only difference is that they will have an extra option, which will be the "Employee Timesheets" option [Manager View]. This will contain all the timesheets employees have sent to be approved.

If a manager or the owner forgets to approve timesheets, they will be sent an email or notification on their phone stating that there are timesheets to approve. This process will only trigger 4 days before timesheets are due. An email will be sent out every day until they have approved all the timesheets they have been sent.

The timesheets that are approved are then sent to the finance department, where payment will be sent out to the employees. The timesheets that the finance department will receive

will be categorized by departments. Here they can click on the timesheets and see the amount to be paid to the employee.

The rostering board will be updated on a weekly or monthly basis, with times the employee is working. Employees will also be able to request days off, request which days they could work (option only to people who are part-time), and swap shifts with fellow employees. All of this will only be possible with the approval of a manager.

The value propositions

The jobs of our customers are: ensure their employees get paid on time and correctly, make sure there is not excessive workload caused by the payment of employees process, display in a clear and concise manner the working time of their employees, convey that the image that they are a forward-thinking company that embraces technological advancements and most importantly save time.

Our product would ensure our customers are able to carry out their jobs successfully. The value proposition of PayDay solves the problem of the old inefficient methods of timesheets. With our product, you are able to pay your employees on time, correctly, and efficiently, with no confusion with timesheets. Both on the employee and employer side, and also no confusion with employee's working times. With our product, employers will save time and ease irritation from something as simple and essential as paying employees.

Our product PayDay, is easily operable and very accessible. It saves time the actors of the payment of employees process spends on timesheets, and greatly reduce the risk of accidentally underpaying/overpaying an employee due to the misunderstanding of timesheets.

The interface for our product will be very simple and will only contain what is needed so it will be very easily navigable, even to those who are not the best with technology [Employee view][Manager view][Finance view].

With our product, Payday, we are essentially changing the way companies do their timesheets for the better. We are creating a way to get rid of any confusion, and speed up the process drastically. Both employees and owners of SMEs would happily embrace PayDay as it means:

1. Employees get paid correctly and on time
2. Less confusion would be had
3. The finance team, employees and managers will be able to focus on other pressing matters, other than timesheets
4. PayDay would save a lot of time for companies, and time = money

Payment of employees process

From primary research, we have found that most companies have the same payment of wages process. First, we start with the employees filling their own timesheets. They accomplish this through either using pen and paper (paper timesheet provided by company) or using excel timesheets. This is then passed down to their manager for approval. The

manager then sends the approved timesheet to finance or if it vetoed, they go back to the employee and gives the reason it has been vetoed.

We found that each company differs in the type of timesheet that is passed down to their manager. Some companies will only accept paper timesheets created by them, and others will only accept excel timesheets with a template they have created. Very rarely will a company accept both paper and excel timesheets. The only companies that accepted this were very small companies companies that have only been newly created.

Looking at the process, it looks like there are no problems with it. It looks like an easy and efficient process. It is when the process is put under a microscope is where you will find that it is very time consuming and hard to deal with.

With paper-based timesheets, the company has to first print out the timesheets, then they must distribute it to employees that work in the company. There is also the fact that an employee might not be in for the day they give out the timesheets. The employee must then go out of their way to acquire the timesheet. The employee then fills out their timesheet for the week. After they have successfully created their timesheet, they must track down their manager to get it approved. Not always knowing where the manager is at all times, this may take a fair bit of time to track them down. Once the employee finds their manager, the manager then accepts the timesheet and stores it to approve all the employee's timesheets all at once. Once the manager has all the timesheets of all the employees under their supervision, they then approve or veto them. If the timesheet is vetoed, they must track down the employee with the vetoed timesheet and explain the reason it was vetoed. This can be very time consuming for the manager as there would be times where, depending on the number of employees under their supervision, a big number of timesheets could be vetoed. The manager would then track down all the employees with the vetoed timesheets. The process repeats until the timesheets have been approved. Timesheets that have been approved are then sent to finance. The finance department must then file them correctly as employees get paid on a monthly or fortnightly basis and timesheets get passed down to them on a weekly basis. Filing the timesheets would take a long time as it requires a lot of attention to be done right.

With excel timesheets, it is more efficient but not by much. It is still an archaic way to handle timesheets. You also put more stress on your finance department as they could not be the most inclined technologically, and they're forced to create an online filing system for each employee in the company and maintain it.

PayDay process

With our product PayDay, the payment of the wages process will be greatly sped up and will further simplify it for all the actors in the process. Which in turn will increase productivity and also save the company money.

The process will start with the employee searching for our website with their smartphones, tablets, computers, etc. In order to log in to their profile, they will need to input their company code[1], employee ID, and password. The employee would then click on the "timesheet"

option and input their times and also their job [Employee view]. The rate will be attached to the job [2][Timesheets view]. The employee will then click on the “save” option to save the information they have inputted. They log out then repeat the process the week after with the information already being saved from the week before.

Employees will click the “Send to Manager for approval” button at the end of each month (differs with each company). Once all the employees under the manager’s supervision have sent in their timesheets, the manager will get an email notification to either approve or veto them. If the manager vetoes a timesheet an email will be sent to the employee with the reason why it was vetoed, and they will be able to send another timesheet. If the manager approves the timesheet, it will be sent straight to finance where it will be automatically categorized for them. The timesheet will be categorized by the departments in the company [Finance view]. The finance department will only need to click on the timesheet to see how much needs to be paid to each employee.

The process is short, quick, easily understood, and greatly simplifies the payment of the employee process. It also minimizes the amount of time your employees spend on timesheets. The less time they spend on timesheets, the more time they can spend on projects that will add value to the company.

The target users and customers

The type of market we are selling our product, PayDay, is to a niche market. A niche market is a specific customer segment. The type of customers we are targeting are owners and employees of Small-to-Medium Enterprises.

Employees are the main users of our product. It is tailor-made for them so that they are able to have control over their timesheets, they have an easier time filling them out and sending it to their manager, and overall spend less time on the process. They are able to input their own time, see how much they will be paid before tax, and also their roster for the month.

The main target of our product is the owners of SMEs. Owners of SMEs have the final say when it comes to the company incorporating something like PayDay. It is the owners we have to convince to buy and use our product. Employees can help persuade them but it is ultimately up to the owner whether to incorporate our product into their company.

The likely market size

The market we are targeting for our product, Payday, are small to medium enterprises, SMEs. According to the CSO, in Ireland, there are about 250,033 Enterprises[3]. SMEs accounted for 99.8% of the entire enterprise population. That's a staggering 249,532 in Ireland alone.

Since we are based in Dublin, we will be restricted to companies in Dublin, in the meantime. From my analysis, with Dublin having the largest population (people and companies), there will be 60 - 70 percent of our market in Dublin.

Our product is not designed for a specific type of SME. it can be used by a wide range, from office-based SMEs to construction types of SMEs. In terms of the market for our product, there is no shortage whatsoever. Being based in Dublin, where most SMEs are located, there are no problems with communicating with our market.

The proposed revenue streams
To get constant revenue from PayDay, we are planning to set up a subscription pricing model. Companies will be able to pay on a monthly, quarter yearly, every 6 months, or yearly. Giving companies many options of subscription will only serve to entice companies to subscribe to our product. Every company is different and we have to be able to accommodate as many companies as we are able.

With a subscription pricing model, we are able to have a constant flow of revenue. Since it is not a once-off payment, we don't have to worry as much about making constant sales. We are able to secure the longevity of the company because of the constant inflow of revenue. However, in the early stages of our company, our main concern is to get enough customers so that we make a profit. In order to do this, we will need many more customers in the early stages than you would need with products with one-off payment pricing models.

A strategy we are planning to incorporate into our pricing model is the purchase of extra licenses. We will sell our product and 15 licenses for a fixed subscription price. If a company wants more licenses we will sell it to them as an additional price on top of their chosen subscription. We will sell licenses multiples of 10 starting at 30.

Summary Functional Specification & Technical Description

General Description

1. Product/System function

User Processes

Log in
Employees input their ID, company ID, and password.

Registering
The customer goes to PayDay website and registers as a company. The customer then chooses which subscription he/she may need. The customer then pays for the subscription and a company code is created. Company code will be used as a key for other employee registration.

Creating user profiles.
The user clicks on the register button and inputs their company_ID which will allow them to create a user profile where they can create an employee_ID/username and create a password.

Updating timesheets.
Here a user inputs their time for the week in timesheet section and clicks save. Next week when they input their time the previous hours will be saved.

System Processes

Calculation of timesheets.
Here is where the employees have filled out the timesheet for the month we will then take the total hours worked and the rate of the jobs they have worked on and calculate the total wage for an employee before tax.

Database relations
Registered users will save the timesheets which will be sent to the database. The timesheets are organized in the database by the employee_ID/Username. When the manager goes to approve timesheets, the data will be pulled from the database.

Web app accessibility
From the start of our project development accessibility has been the key objective for us. We are committed to creating a web-app that is accessible both in UX and UI concepts.

2. User Characteristics and Objectives

Our product is a web app. This means it can be accessed by smartphones, laptops, tablets, etc. that have internet access and a web browser. We chose to make our product a web app as it is very easily accessible.

Our product is aimed towards SME owners that want to increase efficiency in their company, want to save time and money, want to make the wages process easier for their employees, want to pay their employees correctly and on time, and want to make the process easier for those who take part in the payment of wages process.

Our product has been designed in the simplest way possible so employees who may not be technologically inclined will be able to do what they need to do without any problems (input their working times, check roster, check weekly tasks, etc.). For the main function, timesheets, it has been designed using a calendar format with users being able to input their time under the days they have worked.

3. Operational Scenarios

Before our customers can use our systems, they must first register their company and choose a subscription they want to avail of. This can all be done through our website.

The owner of the company registers their company, then an employee of the company creates a user profile using the company ID (product key) we will provide them once

payment has been authorized. An employee will create their user profile and in their first time logging into their profile they must choose which manager they are being supervised by. Once this has been done, an employee will have created a user profile fully and successfully.

4. Constraints

Time

Time will be the biggest constraint for the project. We have to meet the deadline of the project set out by DCU for the end of April 2020.

Django

Not having sufficient previous experience with Django will be a challenge when developing this web app.

Pandas

Creating a database for this project will require the use of pandas to fetch the data from the database. This will be a challenge as we never used this before.

Coding Experience

Coding experience and skills have diminished during the years due to the course structure.

Functional requirements

PayDay web app would consist of a handful of very important functions. Functions may change depending on who is the end-user of the app. When we take the functionality of daily timesheets. On one hand, the end-user as an employee would have to be able to input the start and finish times on a certain day they worked. They are then required to submit the worked days to their manager. This can be done weekly or monthly depending on their company's policy. The functionality of the daily timesheets when it comes to the end-user as a manager change. The manager has to see all the employee's times and be able to approve or veto the times. PayDay will be capable of also counting up the wages by the end of the month by multiplying the rate and hours worked for each employee. This will be the before-tax wages.

PayDay can also be used for rostering. As PayDay is a versatile web app, this can come in handy in many industries. Rostering can be used by the manager to roster his/her employees for certain days. Employees are able to see the roster page as well as apply for a day swap. A notification is then sent to the manager to either approve or decline the day swap request.

Below mentioned are the functions that are the building blocks of PayDay spanning from simple register, Log in functions to a more complex such as database connectivity and updating of timesheets.

1. Registering

Description:

A customer must first choose which subscription (pay either monthly, every 6 months or yearly) they want to opt for. A standard subscription would be to buy 20 licenses for a fixed price, then buy more licenses as the company grows. After a subscription has been chosen they must then register their company. In order to register a company, we will need information about the company. We will need the company name, address, how many managers are in the company, and person of contact (phone number, work email address, etc.). A company ID and a manager company ID will be sent out to the person of contact. This company ID can be used as a key to register employees and also for employees to log into their profile once they have finished registering. The process is the same for a manager company ID.

Criticality:

This function is critical as companies are unable to use our product without registering their company.

Technical issues:

The registration form will be created using HTML. an issue that could arise is that the form is not compatible with different types of technologies that could be used, smartphones, and tablets, etc.

Dependencies:

This function is not dependent on any other requirement

2. Log in

Description:

A customer will enter our URL into their chosen browser. It will bring the customer into our product login page. Here, the customer would need to input their company ID, Employee ID, and Password to log into their profile.

Criticality:

A user is required to log in with the correct credentials to use PayDay.

Technical issues:

The system should look up all the usernames and be able to match the password that the user inputs. This is done for security purposes.

Dependencies:

This is dependent on user registering for PayDay.

3. Creating a User Profile

Description:
For an employee to create their profile, they must click on “Create a new profile”. They will then be prompted to enter the company ID. after they have entered the company ID, and that the company still have licenses that are not in use, they will be sent to a registering page. Here, they will be asked to input their name, create an employee ID, and Password.

Criticality:
This is an important function as new users need to create a profile so the system knows whos who.

Technical issues:
Distinguishing managers and ordinary employees. A key should be attached to the manager profile.

Dependencies:
Creating a profile is dependent on the owner’s purchasing licenses for the company.

4. Updating Timesheets

Description:
This function allows the users to update the hours on a certain day on their timesheets. They can then save it for later or choose to submit to the manager.

Criticality:
They are required to update and ultimately submit timesheets to the manager so the finance department can then process their wages.

Technical issues:
Using a database in the correct manner.

Dependencies:
Function is dependent on the user tracking his/her times on the timesheet.

5. Calculation of timesheets

Description:
The finance department should see how many hours the employee worked and what hours they did at which specific job. A calculation is then made of the total wages before tax.

Criticality:
This function is part of the timesheeting function. It's essential to know how much an employee is getting paid before tax.

Technical issues:
Improper calculation of different jobs and their rates.

Dependencies:
On the user filling out the timesheet in a correct manner.

6. Database relations

Description:
PayDay users will have their information stored in a database. The user profile will be stored in the database. When they interact with the web app data will be collected and stored such as timesheet hours. Managers will be able to see the times of the employee by pulling the information from a database.

Criticality:
In order to have a properly functioning web app, we need the information to be pulled from a database in a reliable and accurate manner.

Technical issues:
Pandas will be used to pull data which we have not used before.

Dependencies:
We need a way to interact with the database to pull information.

7. Web app accessibility

Description:
PayDay is designed to be used by people who are not technically sound. While designing the web app we have to constantly be thinking about the user first.

Criticality:
If the web-app is not accessible by our target audience we will lose out on sales. If issues arise later on we will receive a large amount of customer service calls.

Technical issues:
Creating a 100% accessible site is quite difficult some aspects may be left out. The potential use of REACT will be an issue.

Dependencies:
The Web-app has to comply with basic accessibility rules.

Software Architecture

PayDay is a cloud-based web app and is planned to be hosted on Heroku. Heroku supports python apps which is what we will be using when developing this app. To be more specific we will be using Django web framework to develop PayDay. Django will be our strong foundation that we can build on. We will create apps within Django to facilitate different functions of PayDay. In order to hold all the user data, we need a database. We are using MySQL for the database side specification. In order to have it more appealing to the eye, we will be using Bootstrap 4 for a more accessible user experience. We will consider implementing some React.js in order to make it more interactive. React can be also used to build an appealing interface. This will only be implemented if time allows. No big plans for React currently.

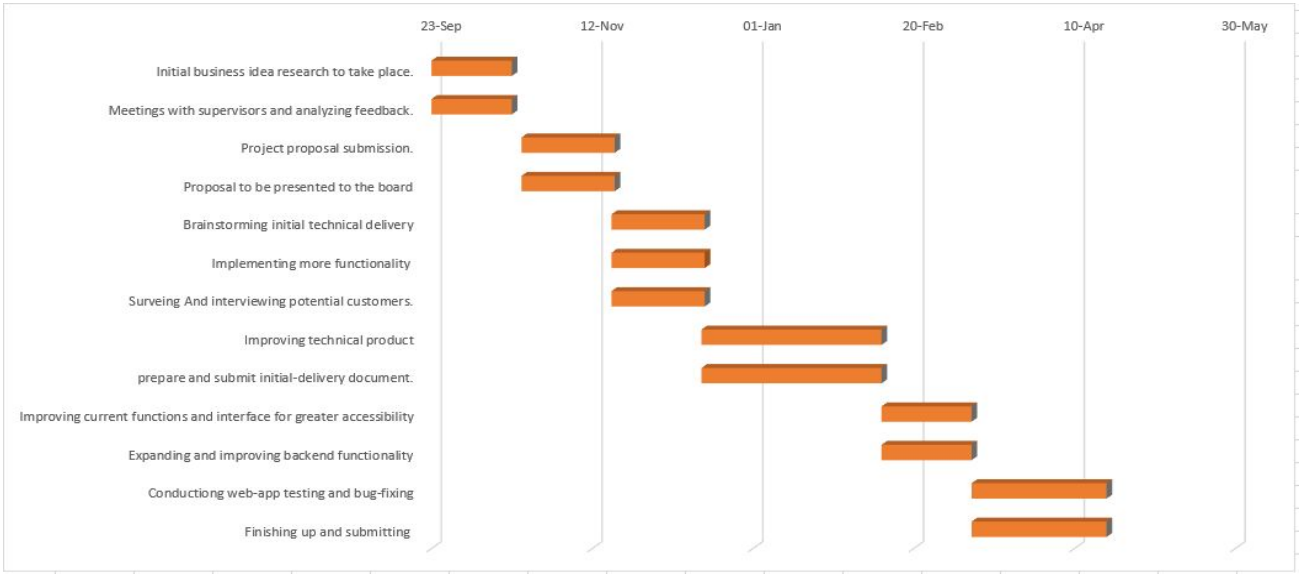
The Diagram [3] below in the appendix shows how our 3 differents users will be interacting with the system. Following the dataflow, we can clearly see how the system works when users are interacting with it. As users interact with the system, all the data is being pulled from the database and also updated in the database. Digging deeper, looking at diagram [5] we can see how PayDay will essentially work. Django uses the Model, View, Template approach. We will work on the UI in the template and utilise bootstrap there. Django itself will be interacting directly with the DB to pull and update user information.

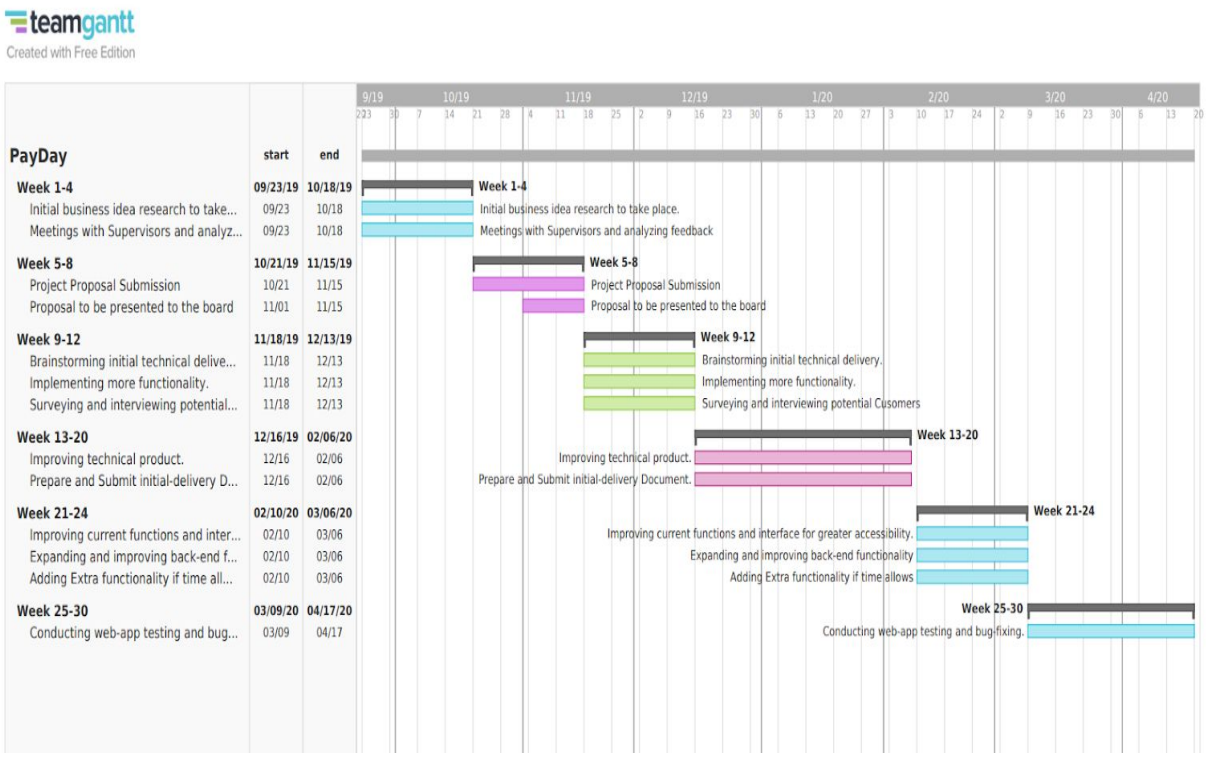
Overall prototype.

The overall PayDay prototype that will be prepared for the due date will a simplified web-app that will have critical functions. These functions would include both login and registering for PayDay. The selling point of PayDay is the timesheeting function of the web-app. This function will allow the user to input their times against a certain job they have performed which will be pre-filled by the manager. The function would then calculate the number of hours performed during the working month and multiply by the rate. A total wage would be given out to the user before tax.

We are going to be testing our accessibility design for the user interface during our development to ensure that even as a prototype our web-app is accessible and easy to use. Regarding testing accessibility on different devices. We will be utilising laptops and PC's both running windows and linux. Using both of those devices will ensure that our web-app scales well on different display size. Both devices will be tested by using at least 2 web-browsers each. When it comes to testing the web-app on a hand-held devices, PayDay will be tested on a Samsung and 1+ 6T mobile phones.

Project Timeline





Weeks 1-4:

- Initial business idea research to take place.
- Meetings with supervisors and analyzing feedback.

Weeks 5-8

- Project proposal submission.
- Proposal to be presented to the board where we will gain very valuable feedback. This will be beneficial for the rest of the project.

- Both Team members have a specific aspect of the project to be presented by them. This is based on their strengths.
- Coding bootcamp to improve and remember coding skills.

Weeks 9-12

- Brainstorming initial technical delivery.
- Implementing more functionality.
- Surveying and interviewing potential customers.

Weeks 13-20

- Improving technical product
- Prepare and submit initial-delivery document.
- Whiteboarding sessions to take place.

Weeks 21-24

- Improving current functions and interface for greater accessibility.
- Expanding and improving backend functionality
- Adding extra functionality such as enabling web-app to send notifications to managers and prompting them to approve timesheets.

Weeks 25-30

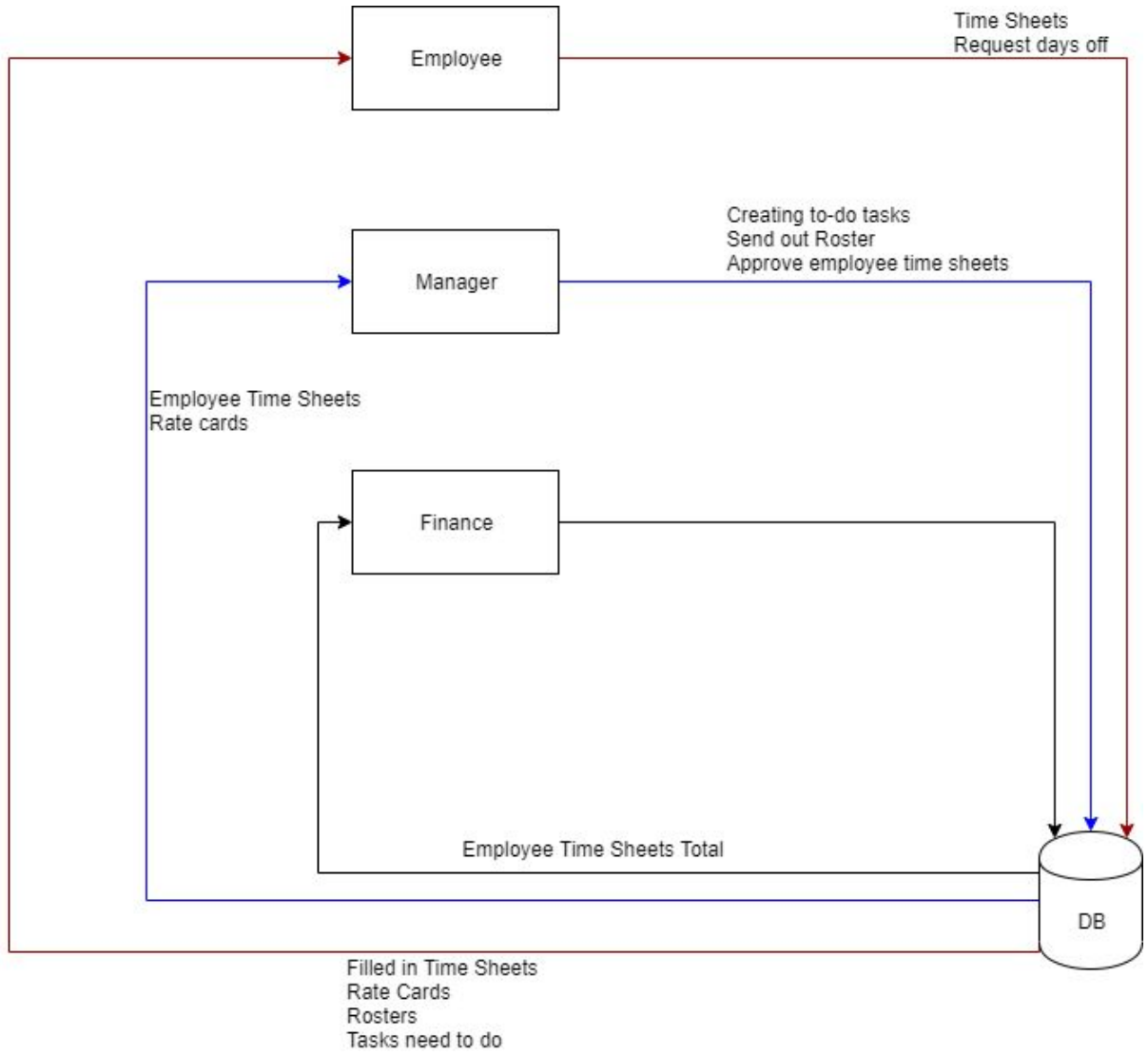
- Conducting web-app testing and bug-fixing.
- Further technical development.
- May consider adding some interactivity using REACT.
- As both of the team members has his own strengths and weaknesses we will work in close collaboration and apply our strengths to different tasks and sections of the project

Appendix

[1] Company code = a unique code that will be given to each company to represent them.

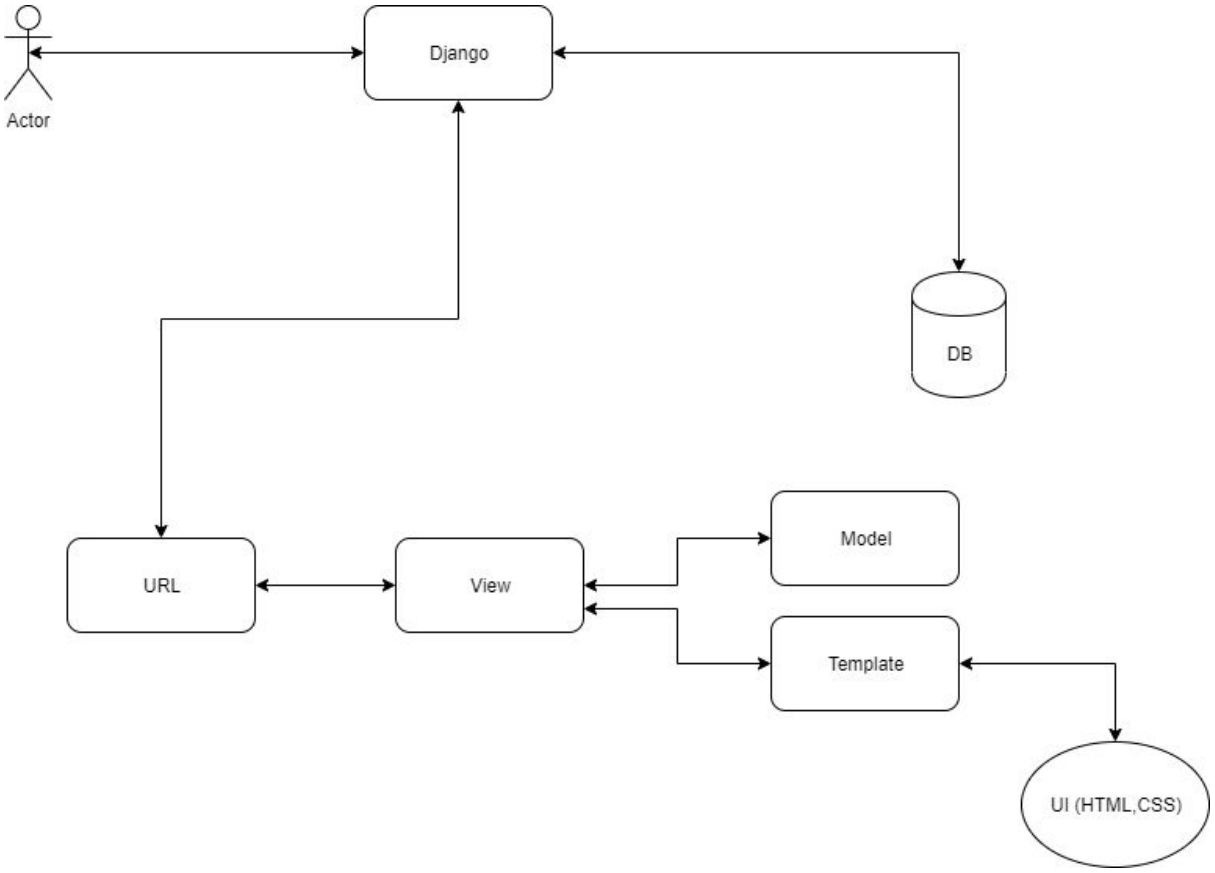
[2]in some companies there will be instances where 1 employee could work either job 1 or job 2 in one week. Both jobs having different rate of pay as job 2 is more difficult than job 1

[3] Data Flow Diagram = shows how data will be used by different users.

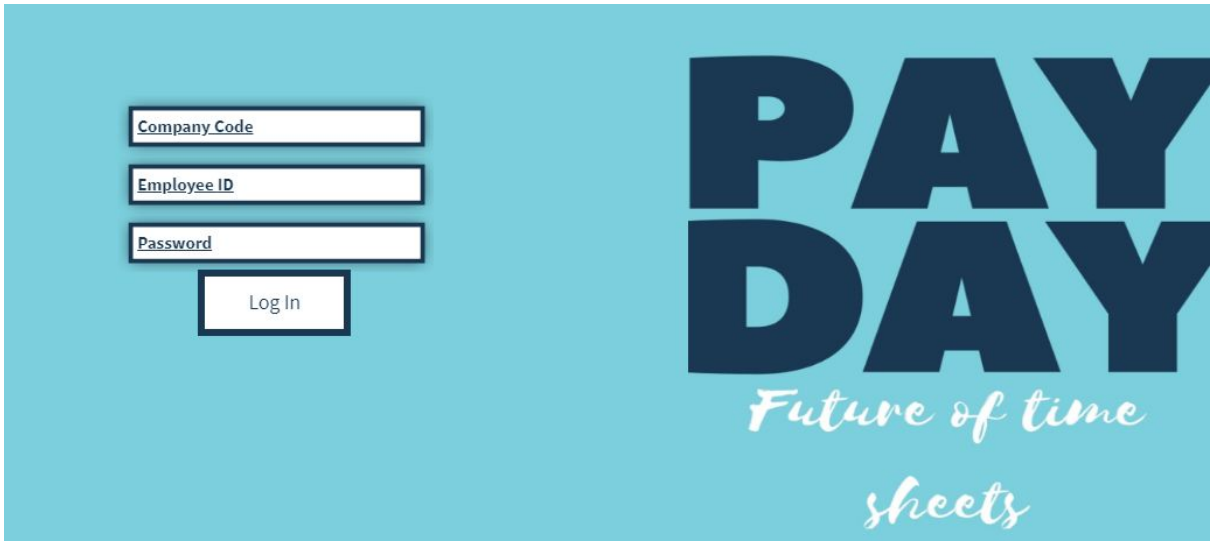


[4]- https://www.cso.ie/en/releasesandpublications/er/bd/businessdemography2016/

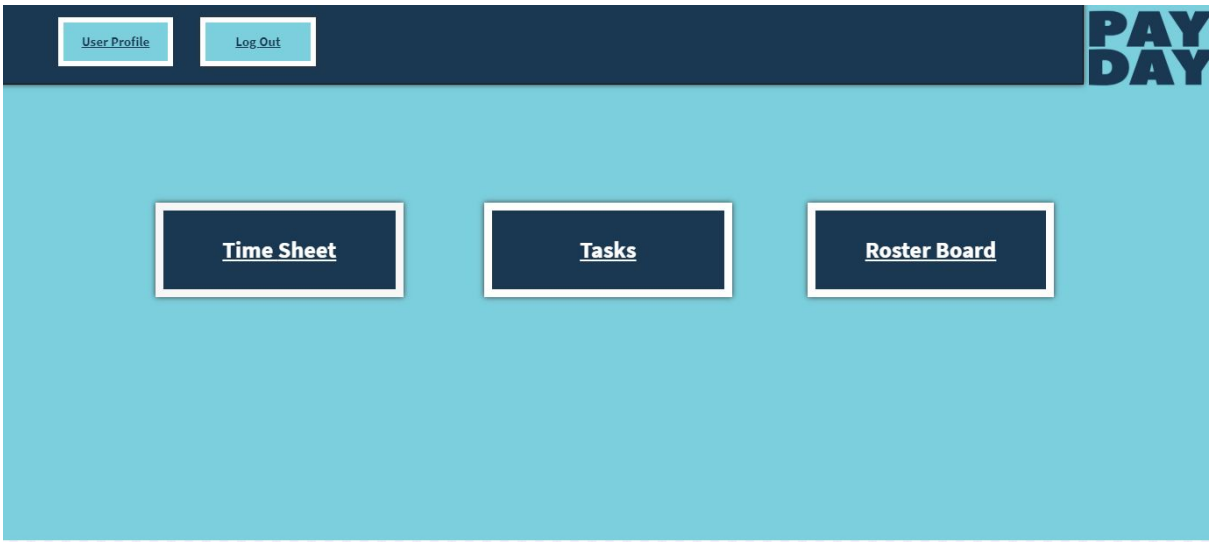
[5] Architecture of PayDay



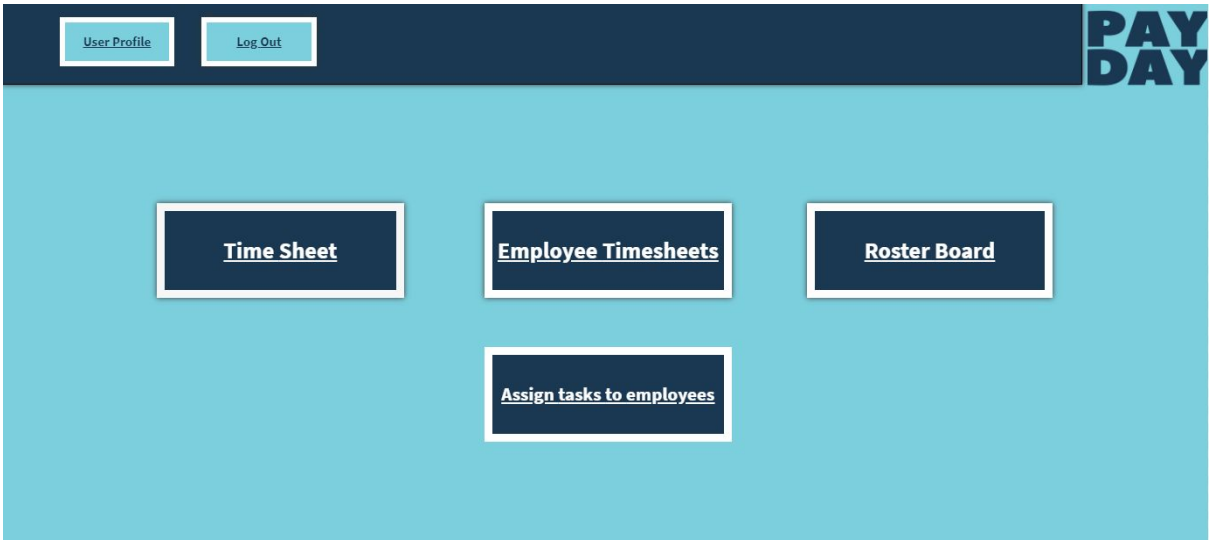
Log in:



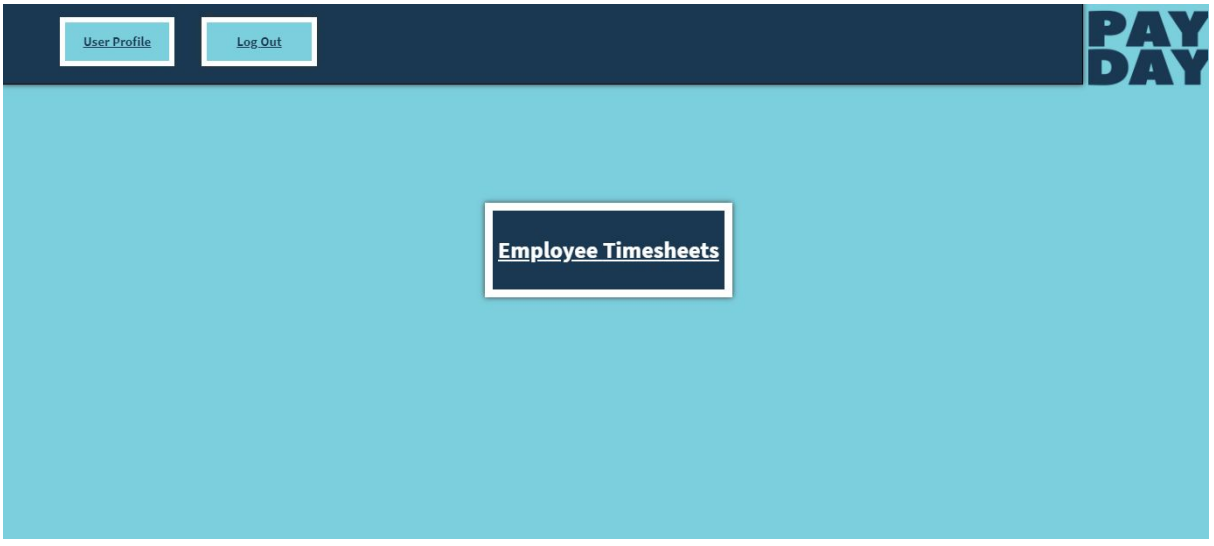
Employee View:



Manager View:



Finance view:



Timesheet View: