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Village London company web work organization management system

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Date……

Abstract

This section will provide a reader with a brief description of the overall project from start to very end of it.

The main problem statement which addresses this work is the need of actual real stakeholder in web-based business management system. Stakeholder's area of business is hospitality - restaurant called 'Village East', Bermondsey Street, London.
Stakeholder expressed a need in web-based system which can help to automate and make easier two major tasks: posting the roots for the employees and enable employees make holiday requests online.

By the end of the project those goals were achieved and the final working prototype is already up and running. It can be accessed by going to: http://villagestaff.16mb.com/ve/

The system itself is built on HTML5 , PHP and JavaScript. Within the scope of this project and interesting framework «Bootstrap» with the theme called Magister was used.

Project itself sets an interesting problem , which is quite common nowadays - making life easier through technology. There are lots of businesses and even individuals who are trying to make different «pen and paper» operations to become digital. There are several reasons for this.

First of all it does help to establish the data integrity. All the processes of the business become trackable. Chances to loose any data or essential documents become very low because they all are saved and backed up.

Secondly, it does simplify the process of communication a lot. Everything become online and can be reached from any location in the world.

Those are two main factors which were inspiring the stakeholder to start thinking about integrating of those system into the business.

Me being a main system developer was lucky enough to be hired by this company and started working on this project by making it at the same my final personal project.

Despite the fact that project itself is not really academical and does not require any strong research and background basis behind it, there was still a place for research.
This research was primarily based on different technologies which were used to succeed in reaching the project's goal. This also includes comparison of benefits of each technology and also decision of which one would be the most suitable in this particular case.

By the end of the project the final goal was achieved and the web-system itself fulfilled all the stakeholder's needs. However, this stage of the project is not the final one (final working prototype).
Work is going to be continued in order to add new features and to make system more stable and reliable.

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Introduction

The whole final project which was chosen to be the final dissertation and was evolving throughout the year is based on the real life project. The reason for choosing developing my project this way was based on the fact , that my current employer ('Village East') was in need of the web system, especially designed for this particular business. At the same time stakeholder new that I am currently on final year of Computer Science course and offered me an opportunity to design that kind of system for them.

The whole final project is focused on the need of the actual stakeholder in the some kind of CRM system (or part of the CRM). As a stakeholder «Village East» general manager specified after several meetings and discussions the system itself should be able to perform two major tasks : check the current working timetable(rota) and make holiday requests for employees. As a subtask , which can also be useful for the stakeholder we discussed the ability of the system to broadcast the notifications between all the team members in future. The system itself should have been web-based and be easily accessed by all the employees.

By the end of the project the goal was to produce the working prototype of the system according to the discussed and planned system requirements.
This goal has been successfully achieved , the main prototype is fully working and already uploaded to the server. Unfortunately, due to the lack of the main resource , which is time , the additional functionality (broadcasting) was not added , at the current stage of the project. However, project is not going to be finished yet, and it is going to be developing much further.

Those are the main vectors of the whole project. Further down, analysis and design, implementation and testing, requirements specification, background and literature review and evaluation are going to be described in details.

- *Background and literature review* - this section is mostly focused on the actual state of art of the project. This does also include information about the actual research which was performed in terms of defining the best technologies to be used for any particular task.

- *Requirements specification* - main requirements for the actual system are described in this section. In the scope of this particular project the requirements were changing quite often especially at the very begining , that's why there were recursive meetings with the stakeholder on this particular stage.

- *Analysis and design* - at this stage final requirements were reviewed and the actual design was created (via paper prototyping). This section also includes the description of the technologies , which are used in development, and the comparison between technologies.

- *Implementation and testing* - in this chapter the whole development process is being described. Starting from very first lines of code to the vert last working prototype. This section does also include technologies description , similar to the previous chapter but in more depth.

- *Demonstration and evaluation* - this section mainly focuses on the actual product - web system.

Here is the whole description (including screenshots) is provided. It does show how does the system actually works according to the predesigned functional requirements. This section also described milestones and problems which were faced during the whole process of development.

Literature and mostly web-resources which are going to be used to achieve the project success are described in this review as well. This mostly includes resources in terms of lack of knowledge or any specific functions which were embedded into the system.

The project is positioned as a real time project, which means that throughout the whole process of design and development the main goal was to meet the prescribed deadlines and timing. For this purpose the Gantt Chart was generated at the very begging of the project. This was a very helpful tool in terms of time management and monitoring which tasks were already completed and which ones are coming. All in all, there was no major problems in meeting those deadlines,but couple of dates were moved around and this is going to be described further.

One of the most interesting things which was happening on the whole development of the project was recursive and constant interaction between me and the stakeholder. This is a great experience
in terms of understanding the fundamental key factors of the real project development and real business interactions.

Next chapters (which I described earlier) are going to be providing in-depth, full information about the project.

Background and literature review

As was written in the introduction the whole project is focused on the stakeholder's need in the web-management system. Although , the project is real-time and not really academical , in terms of project success , the research needed to be performed. The research was mainly focused on identifying the main technologies which can the whole product be based on (and their comparison).

One of the main requirements which was set by the stakeholder was web basis of the system. So the system itself represents a website , which is located on the free hosting provider at the moment (until the system release). The main reason for this is that every single member of the staff should be able the access the system from any part of the world.

On the very first meeting and discussion couple of other variants were considered as well. The main was the mobile app. It might be very useful , especially because it is all the time on the go.
But in the scope of my university final project it would have been much more complicated to create produce an application for several reasons.
The first one is the fragmentation of the the phones. Every single person in the venue is using absolutely different operating systems: Symbian, Windows Phone, iOS, Android , Blackberry OS etc. So if to take into consideration that every member of the team should be able to access the service from any possible side of the world that would need to produce the app for every OS.

With my knowledge and limits of time that would not be real to succeed with that amount of applications needed to be developed.

One of the comments which the stakeholder made even before the first stage of prototyping have started was that the interface and usage of the system should be as easy as possible because the audience of the system will contain several types of the users including those who are not very fluent with computers.

By that point me and the stakeholder agreed that system should be just simple website but with certain functionality.

After this main point was agreed I have started researching similar services (how it was done already) and technologies which I can choose in order to achieve my goal and what does context web system does have in general.

[2]What does the **web based system** represent itself?
Generally, it is a service or application which is based on the servers and is accessible from any location in the world via the internet and web browser. [2]

In the scope of the business and especially the actual business which this work is based on, web based system can be very beneficial.

[1][3][4][5]First of all, well designed web-based system can automate a lot of processes happening on the daily basis inside the business. It can help to tackle inefficiencies and the same time free employees' time to focus on existing tasks instead of the organization moments.

One of the greatest examples of the actual benefits of the web-based systems is that a lot of the processes can be now done without using «pen and paper». Typically majority of the paper based business processes can be modernized and processes electronically.
In the scope of my currently stated problem, those things like holiday requests and rotas can be now accessed online.

Secondly, web-based system can be accessed everywhere in comparison to the traditional software applications. Access can be established from any location by client, user and 3rd party : the only requirement is internet connection and web-browser.
One of the examples is that from now on, the managers of the «Village East» will not need to sit in the office and manually print the rota for the staff all the time. They can just drop it on the website , even if they are at home or on holidays.

Thirdly, the vast majority of the web-based systems benefit from the cross platform compatibility. The only thing they require is internet connection. They can be access from any possible operating system which has web browser.
That was one of the main key aspects on our first discussion with the stakeholder and one of the reasons why the web-based system were chosen to be a model for this particular solution.

One of the other benefits , which web-based systems bring along is that they can be easily upgraded and updated. If there is a need in any additional functionality or design issues which should be solved , all this can be easily done by one person of the main server and will be updated for every user.[1][3][4][5]

All in all web - based systems are a great example of how modern businesses can be managed in much more secure, efficient and accessible way.

The second part of my research was based on the technologies which can be used in order to achieve the result.
[6]As me and the stakeholder came to a conclusion that the system will be website there were two major parts which were considered : front end - which is basically the interface and and services which user interacts with **directly** and the back-end - which user does interact with **indirectly** in support of the front-end services.[6]

Frond-end:
The front-end of the website is usually based on several programming languages and technologies.

[7]The very first one is HTML, which is the basic computer language designed to allow web development. The abbreviation stands for the *HyperText Markup Language.* In fact hypertext is how every user moves around the web by clicking on the hyperlinks , which brings them to the next page.

This language was used in this project as well because none of the websites can be created without using HTML.[7]

Second major tool in terms of web-development is CSS, which is an acronym for *Cascading Style Sheets.* This is style language designed to define the HTML document layout. CSS covers fonts, colors, margins, lines, height, background images, width etc. Every modern browser does support CSS in combination with HTML.
[8]So, CSS is basically a major design language which is used to develop design solutions for web-pages.
In the scope of this work CSS is used as well, in order to create distinctive design and layout of the system.[8]

[9][10]Third most common language which is used in front-end development is JavaScript. JavaScript is a programming language , which was developed by company called «*Netscape».* It is lightweight, object orientated and interpreted language with first-class functions. The main reason for JavaScript usage is that this language is designed to make web-pages dynamic and interactive. The good example are quizzes, animation, pop-ups etc.
In this work JavaScript is used widely not only is designing the beautiful animation on landing page but because of the back-end as well.[9][10]

Those are the main languages used in design and creation of the websites. All of them are widely used in this work as well. How and what particular interesting parts of code were used is described in «Design , Analysis and Requirements» section.

Back-end:

[12]Back-end development is mainly focused on establishing and maintaining a connection and interaction between the database, website/application and server.
There are a lot of different programming languages used to achieve this result such as Ruby, Python,Java,PHP , .NET to build up the back-end side of the website, and tools like MySQL, Oracle, SQL to store, modify and find the data.[12]

In the scope of this project there is one major tool used to create data connection between the website and server - PHP. The reason behind this fact is just my personal preference and skills with this element. Again, this project need to meet specific , strict deadlines and that's why this choice was made.

[11]PHP stands for *Hypertext Preprocessor.* It is multifunctional , open source, general-purpose scripting language. Its is especially suitable for being embedded into the HTML. The main feature , which distinguishes PHP from other back-end suitable languages is that scripts are executed on the actual server. This code generates HTML which is then sent to the client. Users will receive the result of running the script , without actually knowing what the code was.[11]

In this work's web-system there is a need in uploading and viewing files (rota) on the web-server. That is the part of the code which was written of the PHP for this particular system. In the following chapters the actual use of all of those languages , technologies and even specific scripts is described in details. In design section , how did my decisions of choosing these particular languages did influence the overall project id described as well.

Requirements specification

This section is focused on the requirements of the web-based system. Typical requirements are divided into categories. In the scope of this project two major categories of the requirements are going to be described and the overall description of the system as well.

Together with the stakeholder we have created the list of functional and usability requirements for the system on our second meeting.

Together with the stakeholder we agreed on the list of the following functional requirements:

- *Users should be able to make holiday request via system*
- *Users should be able to check their rotas online via system*
- *Only manager should be able to submit the rotas to the storage*
- *After the holiday form was filled , system should send an e-mail with request to the manager's email*
- *System should also send a copy of the holiday request to the employee email address*

These are the functional requirements me and stakeholder agreed on. That means that by the end of the project , system should be able to perform those tasks.

We also agreed on the list of usability requirements:

- *System should be easy and understandable for every user*
- *It should be easy to access the system form any location*
- *System should be web-based*

The main reason for system to be web-based is , as it was written earlier , in that case system would be accessible from any device with internet connection.
There is also need in system to be easy to navigate and use. Although all the people working for the company are computer literate, some of them do not have advanced computer skills.

There is also one hardware requirement:

- *Server*

Managers should be able to upload rota into the system for all other staff members to see. There is a need to store those rota somewhere. For that particular reason the actual server is needed.

Specification

System should represent itself a web-site , which consists of three pages. The first one - landing page is used for brief description of what system can do, it does also include the

greeting on the main screen for all the staff members. This should be mostly used for navigation to other main functional parts of the system.

From the landing page user should be able to access the rota's storage straight away with one click.
Rota viewing page should have a «Select file» button , where manager can choose a file from any device to upload into the system.
Manager should able to perform load only after successfully submitting the manager's password into the specific field.

This page should also have a section called «Previously uploaded files» where all employees can see all the rota's uploaded to the server.

After pressing on the navigation bar on landing page user should also find a link to third page with holiday request form.
This page should consist of simple form-fields , such as:

- Employee's name
- Employee's surname
- Employee 's email
- Request box

Request box is used to submit the actual dates of holidays together with any other requests.
Under the form the button for submitting the request should be located.
Navigation bar should also include the link to the «About» section , which will be located on the same page and will just provide the general description of the service.

Test plan

In order to check the functionality of the service the special test plan was designed.
This test plan focuses on the functional requirements of the service, which were pre-agreed with the stakeholder.

Action taken	Expected output
Enter the website address into the browser bar	Redirects on the landing page of the system
Press the button «Check your rota now!»	Redirects to the page with the storage of the rotas
Click on the button «Select file»	The dialogue window with file choosing opens
Press «Submit» without entering manager's password	Unable to upload without the manager's password
Enter manager's password and try to upload	File upload was successful
Click on one of the uploaded earlier files	Image should open in the same browser tab
On the landing page click on the button in left upper corner	Drop-down menu should appear
Click on the link «About»	Shows the brief description of the system
Click on «Make a holiday request»	Shows the section with the button «Make a request»
Click on «Make a request»	Redirects to the page with holiday request form
Submit the form and click on button «Submit»	«Mail Sent. Thank you , we will contact you shortly» should appear.
Check your email	Email form the holiday request should be seen
Check manager's email	Email from holiday request should be seen

Analysis and Design

This section is going to be mainly focused on detailed description of any design decisions which were made on the whole process of development and also provide a description of why this particular technology was used in the scope of the project in order to achieve the maximum result.

To start with it is necessary to say that one of the needs of the stakeholder was that the system should be easy to navigate and easy to use.

In terms of the overall system design I have decided to use of the most popular CSS, HTML5 and JavaScript frameworks , called «Bootstrap».

[13]«Bootstrap» represents itself a a powerful front-end framework , designed for fats and efficient web development. It does include CSS and HTML based design templates for different user interfaces components , such as: Dropdowns, Navigations, Forms, Buttons , Tabs etc. It does also provide with the opportunity to use optional JavaScript extensions. The main benefit of using «Bootstrap» is that it enables to create responsive and beautiful designs with much less effort. All those tools are free to use.

So here are the main bullet point of why «Bootstrap» was chosen to create a web-based system for this particular project:

- *Bootstrap allows to use predefined design templates and classes in order not to waste much time on design itself but mainly focus on development itself.*
- *Bootstrap allows to create responsive design and makes the webpages to be displayed correctly on different devices (smartphones, tablets, pc) without loosing any markup and with appropriate scaling.*
- *All the «Bootstrap» elements are sharing the same design templates and styles , which makes the whole website look consistent.*
- *«Bootstrap» is absolutely compatible with all the modern browsers*
- *It is open source which means it is absolutely free to download and use.[13]*

Those are the main reasons why «Bootstrap» was chosen as one of the main programming tools in order to achieve project success.

For this project I have decided to use of the pre-developed , free to use «Bootstrap» templates , which is called «Magister». It is full background , landing «Bootstrap» theme for the websites. It does also benefit form the beautiful , interactive navigation bar and animation.

Rota uploading page represent itself an online storage. I have decided to design in that way that files are typically moved from one folder to another. Uploading folder is located on the external server. The hosting provider is UK Hostinger (http://www.hostinger.co.uk/).
It is a free hosting provider with built in PHP and MySQL.
As a large part of the project's code is based on PHP scripts it was necessary to find a server which can run PHP scripts.

One of other design features which was used on this page is Manager's Password field.

The reason behind this decision is access control. Only managers should be able to upload the rotas to the server for all employees to see it afterwards. Files that were uploaded are shown in the separate section which is below the password field.

One of the other design decisions which was made while developing this page is classification of the uploaded files. So each file according to it's extensions (e.g JPG,DOC,PNG etc) after uploading is moved to a specific subsection (Images, Documents, Applications or All files - which will show all the files uploaded).

The third element, page is designed for making a holiday requests/contacting the management team. The whole page designed as an HTML section with addition of PHP script.

Form consists of several fields where employees can enter information about them and a special request box, which is basically a box , where employee specifies the dates of the holidays or any particular requests.

One of the design decision for this algorithm was to enable system to send emails not only to the managers' email address but also sends a copy of the request to the sender's email. This is released through the PHP script which is going to be described in details in «Implementation» section.
One of the main reasons for this duplicate emails is that, if manager's suddenly deletes an email or cannot find it , employee always can prove that he/she is actually eligible for holidays.

Mainly all the design solutions and design implementations were based on fulfilling the functional requirements.

One of the other key factors in design solutions was the stakeholder's satisfaction. As it was written before the actual project plan was scheduled in a way that there were iterative meeting with the stakeholder.

Stakeholder was mainly focused on the overall design of the system and he was more than satisfied with the «Bootstrap» design solution which was offered by me.

All the other design decisions which were described earlier were focused on achieving the main goal of the whole project which was achieving the implementation of the functional requirements.

Implementation and Testing

This section is going to be mainly focused on the the actual implementation of the design. This will include the detailed description of how the actual developments process was happening, with indication of key/ essential parts.
It will also cover some crucial aspects of the code , scripts and provide with a detailed description of how everything operates.
After that, in this section are going to be shown testing results of the final working prototype of the system.

The very starting point begins with the «Bootstrap» which was described earlier. Firstly I have researched for the most appropriate style to use this particular system. Eventually, the template called Magister was found.
After paper prototyping, when the coding part of the project has started , we had a meeting with the stakeholder where I presented this template and asked his opinion about this. Stakeholder was absolutely happy with the crisp design and simplicity of the Magister template and asked to develop the system based on it.

This template consisted of only one folder with the main «index.html» file which is the main HTML markup for the page. What is more important it does also include css file - which is a combination of created styles and design.
The work on this started. What is one of the strongest benefits of using bootstrap is its simplicity, it is very easy to change it. The only thing which i basically did was changed the background image , which was very easy to do in the core css magister.css file (**background:#505D6E url(../images/body5.JPG) no-repeat center center fixed;**) in that line.

After that I have added all the description and buttons names into the system. That was easy to do in the core HTML document(e.g **
All files
**) thought the tags.

That is pretty much the whole landing page which did not need much of a programming skills.

The problem with this theme , which I faced was that it only consists of one page. So according to pre-set functional requirements it was needed to create two more pages. One for the rota uploading and one for holiday request.

Development started from the rota uploading page, according to the guide which , I have found in the internet. The whole file storage mechanism consists of three files. Two PHP file which are index.php , settings.php and one JavaScript file , which is filestorage.js.

The file with the name settings.php just holds the general **static** values which are - password and uploading folder name. The reason for creating them in a separate document is simple OOP principle. Because of this values being static they can be accessed in every document without initiating the class itself.

After that this class was just connected to the main index.php by using command «require_once(«settings.php»);».

There is not going to be a description of every single line of the code in this review. However, the key things are going to be explained.

In the actual uploading simple HTML from , there is a preset amount of maxim file size which can be uploaded into the system - it is set to 10mb (<input type="hidden" name="MAX_FILE_SIZE" value="10000000" />. However, this line of code does not override the maximum amount of files can be uploaded into the server file php.ini. Hosting provider used for this particular project offers a 20mb file size.

In the process of developments there was a problem occurred in terms of the maximum file size. Files larger then 1mb size were not uploading to the server. After analyzing and researching the right solution was found. I have created .htaccess file with the following php script : php_value upload_max_filesize 100M.
This script does affect the actual server php.ini file and sets the max.files size up to 100mb.

Another interesting part of the development was a creation of auxiliary function which is trying to guess what type of file is uploaded to the server.
In the index.php this function is called «getFileType». What it effectively does is trying to guess the type of the file by reading last 3 characters of it's name. In terms of the code, there are 3 arrays created : apps, docs and images. Every array stores an information of common file extensions used for each of type.

The third page of the system represents itself just a holiday request from and that was the easiest one to do. The whole page represents itself just a simple PHP $_POST script with from to enter information in and also, a destination of the from which is mail.

The Bootstrap magister.css file is connected through each file of the system in order to keep each page consistent and keep it in one style.

The next thing which is necessary to write about is the actual testing process in terms of the project success. The evidence of project success for me is not only achieving the functional requirements but also the satisfaction of the actual stakeholder.
After the final version of the prototype was created and uploaded to the server, me and the stakeholder had a meeting , where we discussed the testing of the system.
Testing was performed according to the preassigned test plan.
The actual testing was performed two time : firstly by me, developer and then by the stakeholder.
Here are the results of the the testing (stakeholder):

Action taken	Expected output	Actual stakeholder's result
Enter the website address into the browser bar	Redirects on the landing page of the system	Page is opening correctly
Press the button «Check your rota now!»	Redirects to the page with the storage of the rotas	Directs to the page with the rota upload
Click on the button «Select file»	The dialogue window with file choosing opens	Dialogue window opens correctly
Press «Submit» without entering manager's password	Unable to upload without the manager's password	Does not allow to upload without the password
Enter manager's password and try to upload	File upload was successful	File uploads sucesfully
Click on one of the uploaded earlier files	Image should open in the same browser tab	File/Image does open for viewing in the same tab
On the landing page click on the button in left upper corner	Drop-down menu should appear	Appears the navigation menu
Click on the link «About»	Shows the brief description of the system	Does show the brief description of the system
Click on «Make a holiday request»	Shows the section with the button «Make a request»	Shows the section with the button «Make a request»
Click on «Make a request»	Redirects to the page with holiday request form	Correctly redirects to the page with holiday request form
Submit the form and click on button «Submit»	«Mail Sent. Thank you , we will contact you shortly» should appear.	«Mail Sent. Thank you , we will contact you shortly» should appear.
Check your email	Email form the holiday request should be seen	Copy of the request coming to the employee's email
Check manager's email	Email from holiday request should be seen	Email is coming to the manager's email

Testing plan clearly shows that the main functional requirements were completely met by the stage of the final prototype of the system. However, during the testing process several issues were found :
The holiday request form does show the message of email sending success without checking that there is actually some data inside the fields. So it does send empty email to the manager's email by just pressing the button «Submit». This issue is going to be fixed in the future versions of the system.
Another issue which was found that sorting of the files according to it's file extension does not work properly all the time. There is still a process of investigation taking place , why it is not, so this issue is going to be fixed in the future versions of the website.

Evaluation

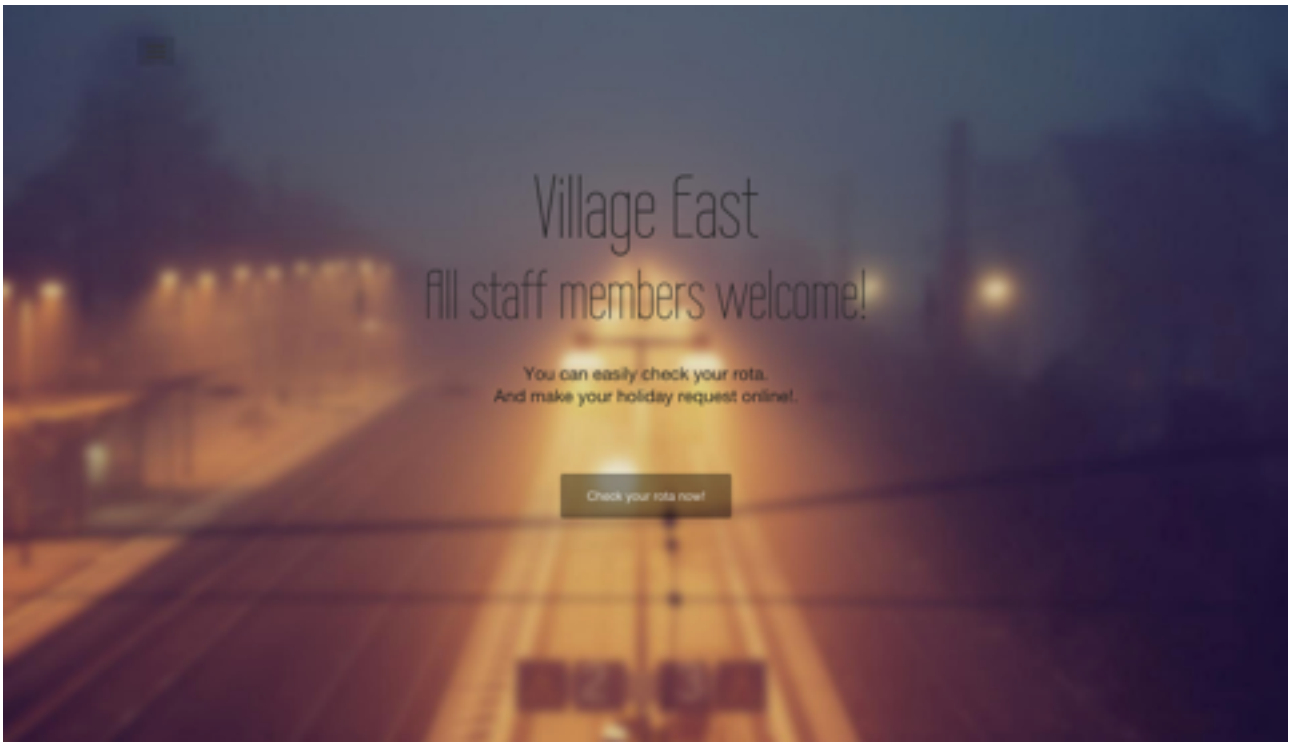
This section is going to be focused on the actual use of the system together with the screenshots , of how everything works. This will also provide an information about how was the overall project lifecycle going in relation to the preassigned Gantt Chart in IPP.

In order to access the system user should go the following website: http://villagestaff.16mb.com/ve/

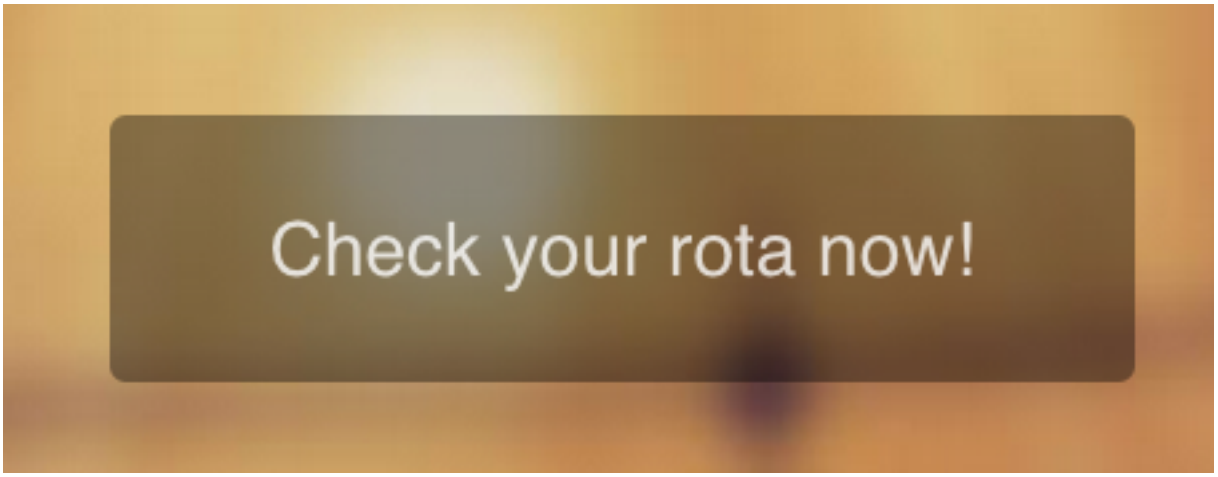
In terms of the project to actually test uploading function of the files, manager's password is set to:

mypassword

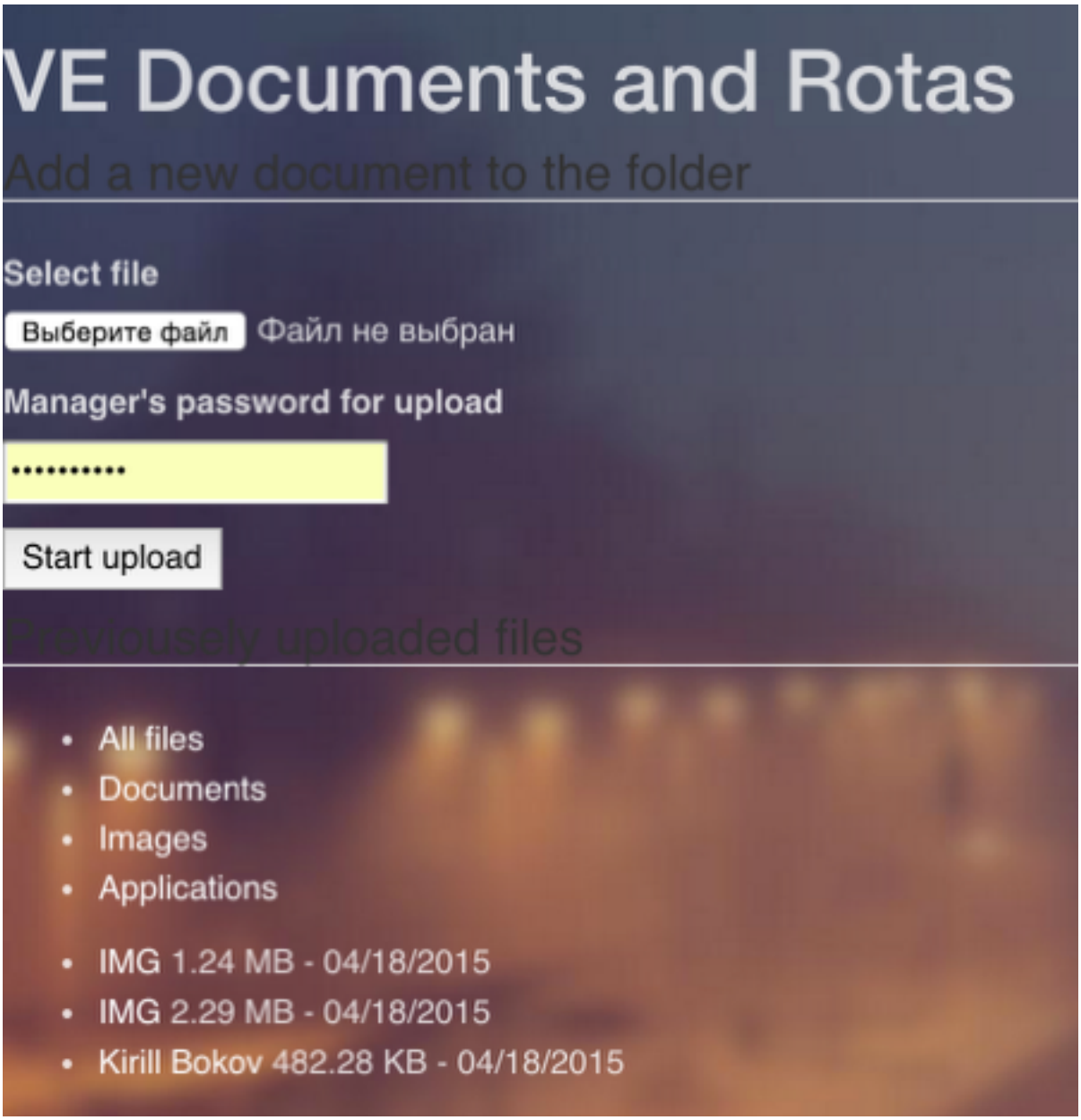
To start with it would be necessary to show the main landing page of the system :



This is the main page of the system. It shows the name of the company and the button to access the rota storage straight away. («Check your rota now!»)



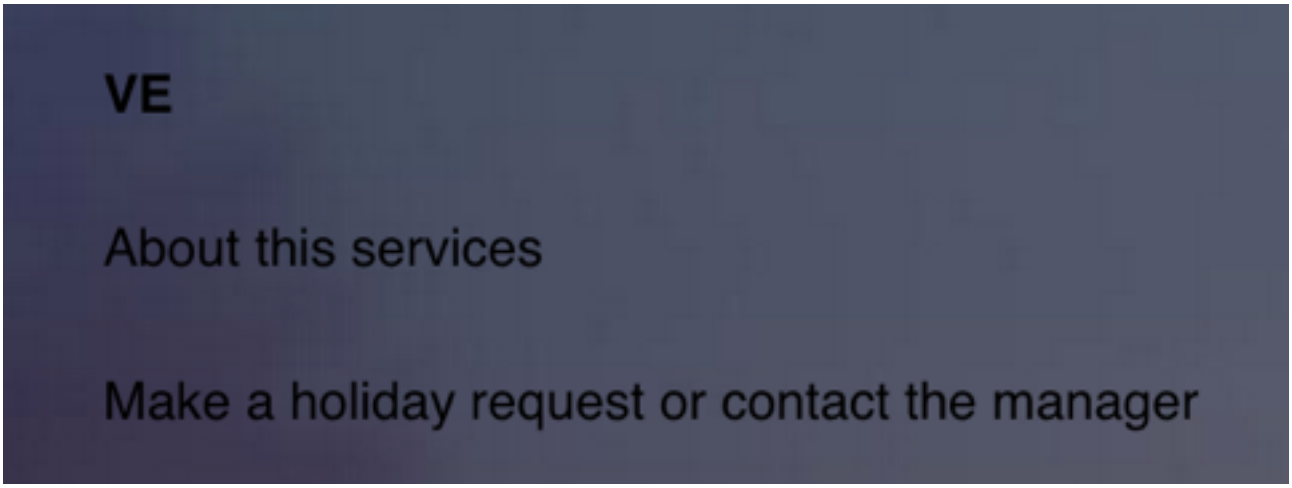
This button will redirect the user to another page with the the actual rota storage:



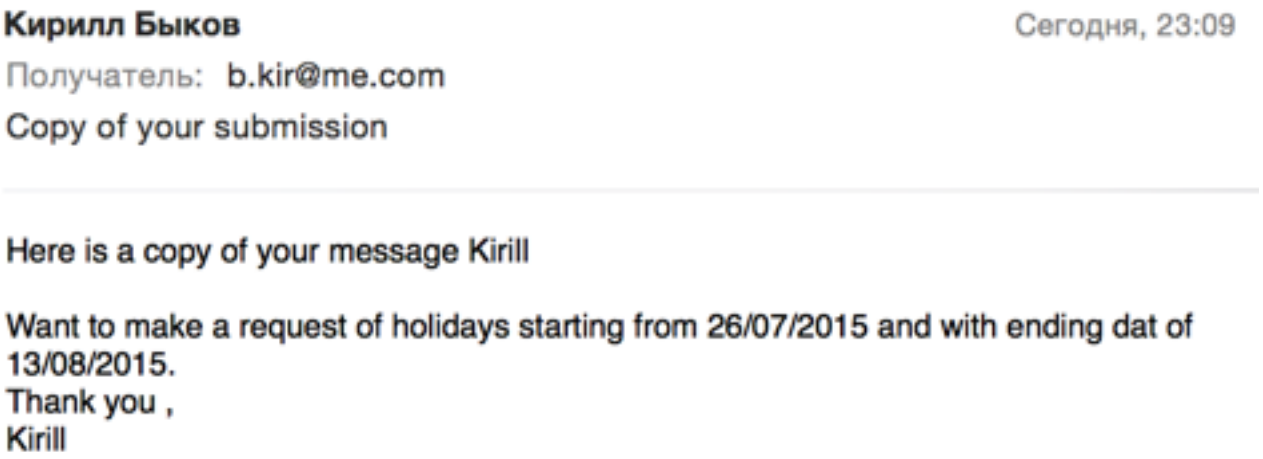
On this page , there are several options to choose. First button - is used to choose the file from device. The field underneath is used to enter the managers password to upload the file to the system. The button «Start upload» is starting the uploading of the file to the server.

After that there are sections of the files which are available. And the very last section is used to show all the files on the server. If user clicks on the image, picture is opening in the browser. If user clicks on the document it downloads to his/her device.

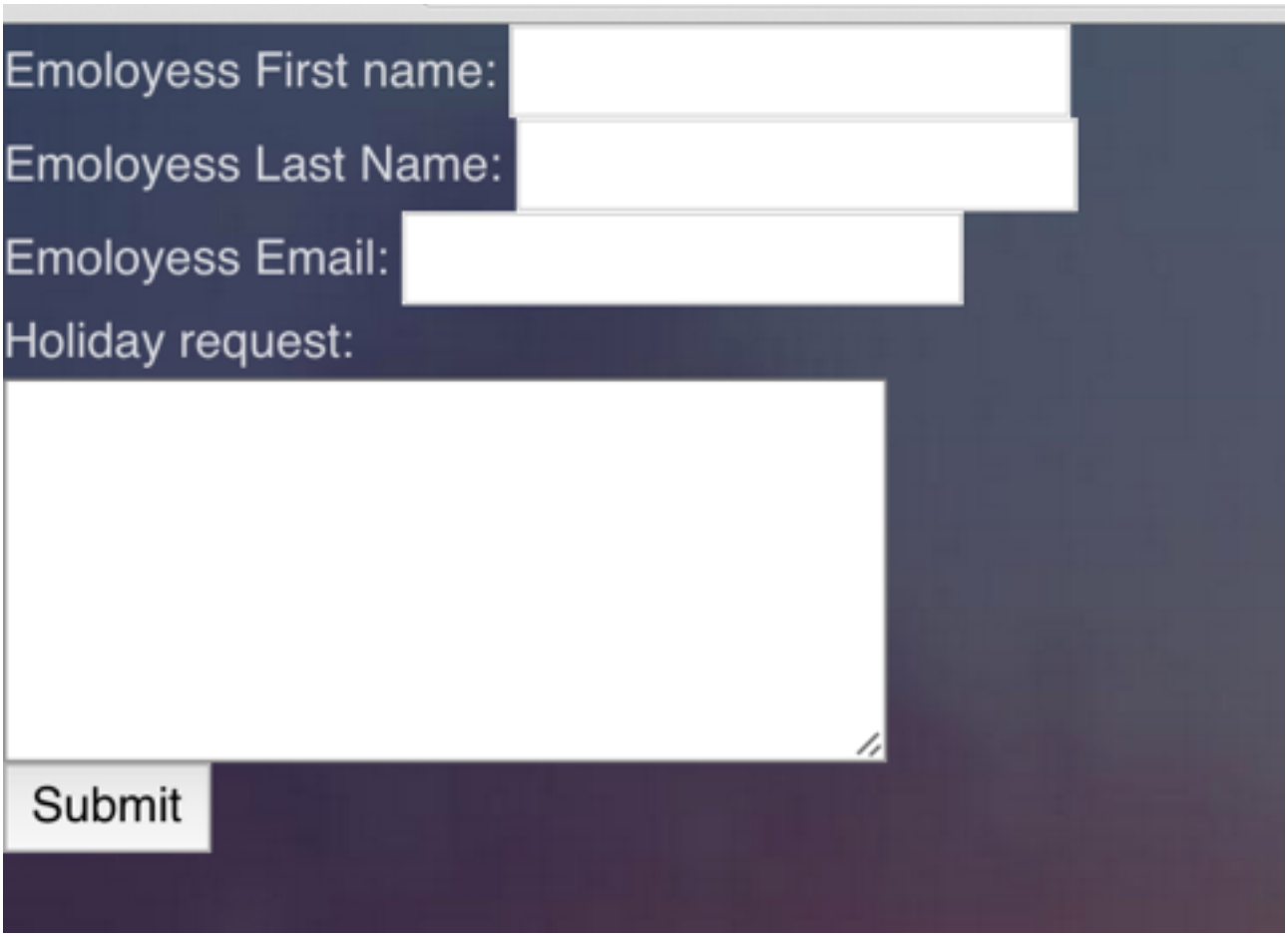
On the left upper corner on the landing page there is also a small button available. This button will show the navigation bar of the whole system.



From this navigation bar user can reach 3 destinations:
VE - brings him to the landing page
About the services - brings user to the about the services section, with the brief description of he system:



Make a holiday request or contact the manager - brings user to the separate page with the form which will enable him to send a holiday request form:



Here user sees several input fields. Holiday request field is resizable as well. After user enters all the necessary information and presses «Submit» button.

After user presses the submit button there 2 copies sent to the recipients' addresses:

System does also indicate that email was actually sent:

Mail Sent. Thank you Kirill, we will contact you shortly.

This quick guide does show how does the system actually work and which inputs in takes and which outputs it produces in return.

It is necessary to write about the overall project progression according to the Gantt Chart which was produced much earlier this year in project proposal.

According to the Gantt chart the actual working of the project has actually started on November 16th , 2014. That was the stage of functional requirements analysis and quick sketches about how the system can work and operate.
Those functional requirements analysis , choosing of the platform and suitable technologies was scheduled to be done by the 4th of January. In fact that stage was finished much earlier.

Reason for this is because I am actually working for this company on full time basis , so actual meetings with the stakeholder were happening almost every single day. So my every working day we had a quick chat about how it is all going overall and how it can look like.
The next stage was actual working development of the system which, pretty much took the whole time of the development.
The whole project and work pretty much finished by the 15th of March.

What is necessary to mention that the testing process , again, according to the Gantt Chart was completed much faster then it was scheduled. Reason behind this is that the testing plan was simple as well as the actual system. Long testing process was just not needed to see if the system fulfills the functional requirements and the main goal.

On the whole way of development of the system the actual review was in content process of writing for 4 months time.

It is necessary to mention the management of the project. In the scope of this project there was not necessary to use any particular management tools (e.g Trello) because as I have mentioned before the actual meetings with the stakeholder were on day-to—day basis and there was no need to organizing them specifically.

In terms of self-organization I was using the simple Google calendar with reminders of what have to be done so far, what is the next stage and when it has to be completed.

Conclusion

In order to conclude the whole project it is absolutely compulsory to say that the overall experience was invaluable. It was a big luck that I had a chance to transform my final university personal project into a real-life project.

During the whole project process a lot of different useful experience was gained. One of the main beneficial parts was the presence of the actual stakeholder because I have learned how to build the working relationship and communication path. It will be very useful outside the university , while I am going to be focused on my future career.

Technical aspect of the project very productive as well. A lot of new skills were gained and experienced in terms of the web development. This area of computer science is one of the most demanding nowadays , and this experience will help me to find myself in this industry if I will decide to choose it.

The main technical aspect of the system was focused on development of the we-based system , which can be accessed from any possible location. Final prototype of the system does enable company employees to do two major things which were discussed with the stakeholder on the very first meeting : check rotas online and send the holiday request forms.
Because of this fact it is possible to conclude that the project was successful. Final goal was achieved. Stakeholder committed that the system did exceed his expectations and company management team is more than happy with the result of the development.

However, there are some points which need to be underlined. First of all it is necessary to say that it is just the final prototype but not the release version of the system. That means that system might have some bugs and not working features. One of those was described earlier, which is not sorting of the files on roots page.

In the long term, system should be released with some additional functionality.
First of all me and the stakeholder we thinking about adding the user distinguishing feature and registration mechanism. This theoretically means that every user will be able to register in the system , create his personal profile and the system will recognize the user as an employee or a manager. This will be much more confident and protected way instead of using just the password for uploads. Unfortunately this feature was not released yet, but stakeholder is already claimed that they interested in further system development, so those features might become available soon.

On of the other features which can be soon added to the system is web chat. Stakeholder also expressed, that it would be nice to have a tool which can enable all staff members communicate directly.

All in all , I reckon that this project was a great experience for my fitter career. On the way of development my technical skills there was also a good chance for personal development in terms of communication skills and project management skills.

Appendices

1.1 To run and test the system it is necessary to go to this website: http://villagestaff.16mb.com/ve/
Manager's password is set to : **my password**

Source code for the system is provided on the CD in the folder «final_project».
It is possible to install and test the system on your one machine or any other different web-hosting. The only thing that is needed is running server with ability to execute PHP scripts. In that case the source folder is just dropped on the server and its ready to use.

1.2 **Resources**

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[14] http://code.tutsplus.com/tutorials/online-file-storage-with-php--net-5818 - This tutorial was used in order to create the file storage and some of the code was taken from this webpage. This code is released on free license and suitable for commercial and non-commercial use of free of charge basis.
[15] http://www.bootstrapstage.com/magister/ - reference for the page where the Magister free Bootstrap theme is located.