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| Fontys Hogescholen |
| Process Report |
| Media Bazar |

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| Group 4  Tutor: Roopali Gupta  Eindhoven, 6-23-2020 |

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# Introduction

Media Bazaaris a new hardware store founded by the parent company Jupiter**.** They are opening their first store in Eindhoven and want to be as prepared as possible. The biggest challenge that Media Bazar’s management foresees is keeping track of their employees and products.

This is where IBI Student Group comes into play. Our team was assigned the heavy task of creating a system which would enable the client company to successfully manage all of their stocks and employees.

In the next sections, this whole process is explained, as well as our approach towards it.

# Solution Approach

The purpose of the project includes developing a complete system which consists of a database, two C# applications, and a website all of which should work together in order to help the client manage their stocks and employees.

The first application allows the user to login and have a different navigation bar depending on his/her position. As a manager or as an administrator, you can add or remove an employee, promote them, also see all the employees that are working in the company, their position, rank, department and salary. Also it is possible to search for a specific employee. Another functionality when you log in as a manager is adding, viewing and editing announcements. They can be added per department, or for everybody. A manager also has the control on the stock information, it is possible to view all the products available, as well as add or delete an item or create a restock request. Another responsibility is generating a schedule for the month. The administrator also has access to the statistics. They can see the statistics per department, the average salary among all employees as well as item statistics.

The second C# application is a Cashier App, where employees can create orders with the items available in the store, also they can search a product, or check for a product by its department. It is possible to add and remove the items from the order and specify the amount of how many products should be purchased.

The purpose of the website is having quick access to part of the data, which is why personal information of each employee is displayed on the profile page, also they can change their personal information. The stock data is also displayed on Stock page, where we can look for a specific item and check if it is still available or it is out of stock. Every employee can see on the home page when is their next shift going to be and also the announcement relevant to him. If they want to see the full schedule it can also be checked on the Schedule page. In case they want to make some changes in the schedule, they can do it Preference page (ex: in case they don’t want to work on Friday, they can set it as a preference, and when next shifts will be generate, the employee preference will be taken in consideration ). When you log in as a manager then it is also possible to Search for an employee, and view the schedule of all employees.

# Work Division

* Application GUI – promoting employees – Cristina
* Adding/Removing employees – Aleksandar
* Designing the database – Kaloyan & Velimir
* Creating the schedule in the C# app – Velimir
* Stock control – Kaloyan & Aleksandar
* Statistics – Aleksandar
* Announcements – Cristina
* Displaying the schedule on the website – Kaloyan
* Automatic shift assignment – Velimir
* Stock displaying in the website - Velimir

# Process and Results

As the project was done using two different methodologies, the process was quite different in both of them. During the first 6 weeks while we used the Waterfall Methodology, everything felt a bit chaotic, as none of us had any experience with it. However, it has its own advantages, which will be described in the ‘Reflection’ section of this document.

After switching to the Iterative Methodology, our group was able to divide the workload more efficiently and manage the time better. Therefore, our working process was easier, more pleasant and more efficient.

As a result of that, the tasks each of us took were completed successfully. We managed to synchronize the different applications and make them work together through the database.

We are definitely satisfied with the end result of the project, as it represents the work of each member of our group.

# Personal Reflection

Week 6 reflections related to the waterfall methodology:

* Cristina: From start to finish of this project, my knowledge in programing has increased, I have also learned to work in groups and also learnt to work under pressure. I am a type of person that loves to work at university, so that any time I have any question or problem, I would get help from the teachers, but this covid19 pandemic has changed my perspective towards that, where by working remotely from home and trying to solve everything myself. Although the first few days was not easy because I could not understand what the exact problem was, but after all I learned more things. This methodology – *waterfall* also played an extremely important role whereby tasks were shared with each other from the group and as soon as we are done with each of our job, we commit our progress to Git.
* Aleksandar: The *waterfall* methodology proved to be a good strategy when working on a project. Compared to the first two projects we worked on during the first semester, this time round the process of creating the application had a clearer definition and the work separation was better (with a few minor exceptions). We had some troubles with GIT along the way. Some of our progress was lost due to that, but in the end, we managed to figure out the way to operate it properly and we pulled through. Our database went through a lot of restructuring as well. Because of that, we had to change the code many times and it cost us a lot of time. The next time round, I would like to invest more time in designing the DB in order to avoid this. Overall, I am satisfied with the product we managed to deliver. However, there are a lot of improvements that could be made in the next 12 weeks and we will be sure to do as much as we can.
* Velimir: In these past 6 weeks, I learned a lot about working as a part of a team. In the past two projects, everybody did their part without interfering much with other people’s parts of the work. However, because of the *waterfall* methodology, which had everybody involved in every part of the project, I learned a lot about proper communication with my teammates. We had a few hiccups along the way, for example, our lack of experience with our version control system, GIT, causing us to lose parts of our work a few times, and a bad methodology we had when working with the Database, which caused us to rework it many time, thus forcing us to change the code as well. Despite all that, we managed to come up with a final product that we can all be proud of. In the next part of the project, I would like to get a better understanding of the tools we use beforehand, so that issues like losing progress in GIT don’t happen again.
* Kaloyan: The first 6 weeks of this project have been a significant learning experience. While there were parts of it that I enjoyed and parts that I didn’t, I was surely given some valuable lessons. One of them was properly communicating with my team members and working on one task together. However, in my opinion the Waterfall methodology has too many weak points and I’m excited to work using iterations in the following weeks. I believe we managed to create a good product before our first assessment, but we are only going to improve in the future.

General reflection concerning the Waterfall Methodology:

During the first 6 weeks, we applied the “Waterfall” methodology in order to manage the project. Therefore we were required to fully design our application before implementing it. For this reason, we created a Project plan, a URS Document and a Use Case Diagram in the beginning. We also divided the work in small phases for the group and also assigned different tasks for each group member.

The Waterfall Model is a sequential model that divides software development into different phases. Each phase is designed for performing a specific activity during the process of developing. This structure is suited to our project because the deliverables were easy to define from the start and the requirements were clear since the beginning.

This methodology also allowed us to organize our work in a good way – whereby every individual in the group knew what exactly they had to do, every phase had a deadline, which meant that before starting another phase, the deliverables for the previous one were completed.

General reflection concerning the whole work process (week 18):

The learning outcomes of the project for us include:

1. Learning how to properly apply the SOLID principles when it comes to class design
2. Doing a lot of individual research to complete some of the requirements. (Ex. How to send emails through code, went further into REGEX, how to operate a database properly etc.)
3. Putting everything we learned from OOD and WAD into action and combining those skills to come up with a product.
4. Most importantly, taking a more careful approach when it comes to planning out the class and database design.
5. Finally, we learned a lot when it comes to code logic and code writing principles

We really enjoyed the working methodologies we were taught. Having a clear plan and timeline before you start working increases the efficiency of coding and makes the work separation within a group a lot easier and more defined. The only drawback of this methodology that we experienced was that if the client is unsure how the final product wants to work and look like, a lot of changes have to be made in order to fit the changing requirements. This is where the iterative methodology does a better job by solving this very issue.

The difficulties we faced when working on the project stem from the fact that we had to essentially rework most of the code for the application in the second iteration which really slowed down our progress but regardless we pulled through. Thanks to the whole team, we also managed to come up with the automatic schedule algorithm that Velimir implemented. Kaloyan did a great job with the schedule on the website as well as keeping the minutes of the meetings and the documentation in check. Thanks to Cristina’s design our website looks great. Each one of us had different strengths and we managed to take advantage of them while working.

Through a lot of bug fixing, brainstorming, and overall working together we grew closer and we managed to bond as a group. Moreover, we learned from each other and became better programmers altogether. There were many difficulties that we had to overcome along the way and the way we managed to do that was by helping one another.

Our group managed to successfully divide the work equally between all members and complete all assigned tasks in time, which leads us to believe that the learning process in this semester has been a success for us all. We encountered many different problems and difficulties while working at this project, and in the process of solving them, we learned a lot of new things.

In conclusion, we received a lot of new knowledge and are very happy with the end result of our work. We are looking for the next challenge!