Criterion A: Research

1. Defining the problem

Nowadays due to the coronavirus which makes offline shopping in many sites impossible and which pushes people to worry more about their safety and hygiene, a big part of small businesses have closed because of lack of customers, thus, absence of profit. Therefore, to earn money many entrepreneurs started to open online shops on different platforms (Instagram, VK, Facebook and many others) which gives a possibility for customers to search and choose preferable vendors. High demand gives a big quantity of the customers which personal information should be stored. To trace company’s customers, products and orders, owners create tables in the notebook or Excel, for example, but it is not useful nor comfortable to fill. My mother’s relative (Mr. Dzayasinghe) has opened his shop with natural tea made in Sri Lanka. There is not such a huge demand but it is the local company with three offices (in Russia, in Spain and in the USA), with loyal customers and stable profit. But he has already failed several times mixing clients and orders. He stores all information in the Excel which is not convenient for serious business, because of this database he cannot break down the glass ceiling and start earning more money (this system is a limitation for it). Because of globalization it is much harder to control, bad systems of data storing even worsen the situation.

I saw this problem when he complained to me about it and he didn’t even understand what the problem was. So I offered my help, I would solve this problem by creating a web-application with all necessary information about clients and tools (creating, editing, deleting) to work.

1. Rationale for solution

So, the idea behind the solution is to minimize the time and money needed for filling information about each customer, order and product. To reach this goal, I need to create an application (in form of an order management) where my client (owner of the tea company) will be able to trace changes made my representatives of the offices in their native languages (English, Russian, Spanish); create a customer, product, line item and order; edit and delete information about irrelevant orders, old products, non-existing customers and many more; monitor daily orders; use given by client personal data for connecting to the customer and for sending orders. Basically, ETL (extract, transform, load) process.

1. Criteria for success
2. Enter customer data
3. Add multiple addresses to customers
4. Create orders with order lines
5. Create order ID
6. Customer validation
7. Client can add, edit and delete information about customers, products, line items and orders
8. Administrators cannot delete information about order
9. Customer can add, edit and delete information about themselves and orders
10. See order history
11. Show all orders in the customer context
12. 3 languages (english, russian, spanish)
13. All information is derived and shown of the screen in comfortable tables
14. There is a search data via full text search

Criterion B: Planning

Record of tasks

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| --- | --- | --- | --- | --- | --- |
| Task number | Planned action | Planned outcome | Time estimated | Target completion date | Criterion |
| 1 | Approach entrepreneur (client) | See the current system and understand the problem briefly | 1 day | 13th July 2020 | A |
| 2 | Discussion with computer advisor Mr, Kazakov | Decide basic solution (creation of the platform using Java and Cuba framework) | 1 day | 14th July 2020 | A |
| 3 | Discussion with computer science teacher | Discuss plan of the internal assessment, outline steps and recommended tools | 1 day | 14th July 2020 | A |
| 4 | Interview with client | Understand the problem globally, define criteria of success and think of the design | 1 day | 16th July 2020 | A, B |
| 5 | Consultation with client | Get technology stack and data ecosystem approved | 1 day | 20th July 2020 | A, B, E |
| 6 | Research on Cuba | Learn required tools and components of Cuba to reach the goal | 14 day | 5th August 2020 | C |
| 7 | Interactions with advisor | Understanding RDBMS | 10 days | 24th August 2020 | C |
| 8 | Product Development first stage | Create simple application with only one page and, connect all parts of app (build tools, DBMS, framework, server part) | 5 days | 1st September 2020 | C |
| 9 | Testing first stage and consultation with teacher and advisor | Check if all the parts are working good together | 2 days | 4th September 2020 | D |
| 10 | Product Development second stage | Create entities such as customers, line items and etc with all the criterias | 21 days | 5 th October 2020 | C |
| 11 | Discussion with client, intermediate presentation | Show all the functionality of the product, check if the client is satisfied with the way of product working | 1 day | 6th October 2020 | C, D, E |
| 12 | Product Development third stage | Create the features of project such as languages and etc | 21 days | 6 th November | C |
| 13 | Beta testing of product |  |  |  |  |

Justification of the choices:

* I chose to write an order management application on Java because it provides comfortable frameworks (like Spring, Cuba, Micronaut) for working with web-applications. Also Java is good for backending development. This language is faster than Python (which matches the requirements and on which I could possibly write the code) because it is a compiled language. I am not going to code on C++ because it is not authentic (it is a middle level language which makes it harder to learn and understand). It is not suitable for achieving my goal. There are not as many versions and documentation as in Java. Java’s frameworks are also better than Javascript’s.
* In Cuba there are many functions and features from Spring but it is easier, more comfortable because it is limited in typical and standard corporate tasks. There are many tutorials for this framework. There is a big and friendly community. Cuba connects everything I need in a simple way.
* JDK 8 u 261 is the newest version of the most popular Java Development Kits (till now many people use it). And it is compatible with the chosen framework.
* HSQLDB offers a small, fast multi-threaded and transactional database engine with in-memory and disk-based tables and supports embedded and server modes. It includes a powerful command line SQL tool and simple GUI query tools. HyperSQL is 100% written in Java while MySQL and PostgreSQL are written in C and C++. HyperSQL is the newest among these 3. HyperSQL is supporting all languages.
* Gradle provides very scalable and high-performance builds. It is faster than Maven for most scenarios because of its incremental builds. Lots of open-source projects such as Spring are using Gradle now. It’s very easy to use the gradle tool and implement custom logic in our project. Gradle’s build scripts are more readable, expressive and declarative
* Tomcat is a very lightweight and highly flexible application compared with other open software source implementations. Tomcat is an extremely stable platform to build on. Tomcat has a variety of good documentation available, including a wide range of online tutorials that can be viewed or downloaded. And it’s the most widely used Java application server.
* Using GitHub is free if your project is open-source, and GitHub includes a wiki and issue tracker that makes it easy to include more in-depth documentation and get feedback about your project.

1. INTERVIEW WITH MR. UNKNWN
2. USE IN DESCRIPTION SUCH TERMS AS ORDERMANAGEMENT APPLICATION OR CRM (CUSTOMER RELATIONSHIP MANAGEMENT)

Interview with Mr. Dz

Location: Zoom conference

16th July 2020

Y: Good morning, Mr. Dz.

Dz: Good morning.

Y: Tell me about your business and describe business processes of the company

Dz: My company produces and transports craft tea from Sri Lanka. Now we have three offices in three different countries: Russia, Spain, USA. Business process of the company can be described as following: after harvesting tea leaves on the private plantations, processing them in the factories and checking the quality of the product, tea is transported to the local storages in Sri Lanka; then tea is packed in order to be sent to the filials of the company (in bulk); when tea is delivered to the offices, it goes through second stage of the packing and it is packed in the small portions adding different flavours (for retailing). Structuring data about the expenditure of the product and information about orders and sales is happening in Excel. At the end of each day every office must send me reports.

Y: Where do you have bottlenecks in your business system?

Dz: We face several problems which lead to misconduct in the company and problems with the accounting and expenses: due to different time zones, emails with reports come at different time and lead to misunderstanding of the situation among the filials; often these reports are filled in incorrectly giving wrong information about accounting; control over orders and data in real time is impossible because of the absence of the unite database. In total we can see that the main problem is in inflexible organization of the information.

Y: Do you think that this problem can be solved by creation of the new system?

Dz: Yes, of course. It would be much better if we had a new system with online control over data without using table structure because it is inefficient and leads to misconduct and errors among employees.

Y: Have you taken a look at the CRM system?  
Dz: Yes, but now developing a new CRM system is too long-term and expensive for micro-business.

Y: Okay, we have defined the problema and way to solve it. And would like to offer you my services and provide you with the CRM system which will suit your business needs. Due to your requirenments, it should be a web-application with friendly-user GUI interface for your team members. Would you like such a solution?

Dz: I think it will change everything and give me possibiblity to earn more money because many problems will be solves. No miscommunication. Online control over all offices. It would be a great step.

Y: Then what other features would you like to see in this web-application?

Dz: Because of different languages it would be great if there was an opportunity to switch among languages (Russian, Spanish and English).