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Master Degree in Computer Engineering
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## Homework 1 – Requirements Analysis
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Group FEDA	Project Sartoria FEDA	
Last Name Cecchinato	First Name Fabio	Student Number 1233602
Last Name Garbelotto	First Name Davide	Student Number 1234371
Last Name Grimaldi	First Name Alberto	Student Number 1136265
Last Name Lanza	First Name Enrico	Student Number 1232225

Objectives of the System

A recently founded *sartoria* aims to be more competitive, by having an automated system to keep track of orders, goods and products and by entering the online market. In this way, this business would open to a broader audience, allowing more people to see and buy its products, and the processes needed to actually make the products would be more efficient.

In order to achieve this, the plan is to build a system that manages all these features, i.e. an e-commerce website with also management functionalities. Since the business is a pretty young activity, the system must be flexible enough to comply with its evolution, at least at the beginning.
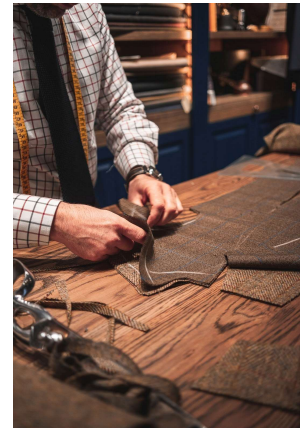
Interviews

In order to define the system requirements, the following people have been interviewed:
- Owner of the *sartoria*, to understand what are the most important features requested by the tailor's shop
- People who work there, to understand what those who are actually making the products really need

Users and Stakeholders of the System

The following categories of users are going to deal with the system:

- **Customers**: they are the clients of the system. They may either order the products to be created from scratch or ask for tailoring.
- **Company employees**: they are in charge of managing the system, from the fabric supply to the final invoice document. They can be either simple employees or managers: in this case, they are allowed to perform more sensible actions like manage the client's confidential information.

Natural Language Sentences

The *sartoria* plans to implement an e-commerce website with also management functionalities, as a way to better manage the orders and the product's workflow, and to have the possibility to open to a wider market online.
An interview phase has been carried on, in order to get a deep understanding of the general working of the tailor's shop and of the relationships with clients and suppliers.

The starting point of the workflow for a *sartoria* shop can be either an idea coming from someone in the company (the owner or also an employee) or a proposal coming from some client. In the first case, there could be a sort of "inspiration", like an artist would have when he decides to draw something new, or the idea can come because it is something that could be useful in everyday life. In the second case, instead, such a client could either already know what he/she wants (maybe because he/she saw something he/she likes and now wants it reproduced), or may ask for advices and suggestions in order to understand better what he/she needs. He/she might also bring to the tailor's shop clothes to be mended, shortened or modified. In both cases there are several things to take into account: the fabric to use, the colour, the size, the season (and/or the special occasion) for which those clothes are meant to be used, and eventually some suggestions on how to match them with other clothes.

The following step is to draw some sort of sketch of the product, followed by the so-called *paper pattern*, a paper-made 3D model with size and proportions of the final item. After this, a prototype is sewed. This process is usually iterative, because there may be some improvements and modifications to apply to the original idea, before reaching the final result. All the modifications during the realization process are to be agreed with the tailor, depending on the product status. All these steps are typical of artigianal *sartorias*, because on the contrary, in industrial clothing factories they exploit specific softwares to skip these manual and time-consuming phases. Moreover, they are often not interested in perfectly fit clothes to people, because they use predefined sizes.

Our *sartoria* wants to give different types of services to the customers: they can ask for a complete and customized realization of a product from scratch, they can ask to tailor, mend, shorten or modify old clothes and they can purchase something that is already made, available on the online shop. The products involved in this process can be both clothing items and classic household goods, such as bedsheets, curtains and towels.

After the realization of the product is accomplished, the tailor's shop is ready to deliver it to the customer. This delivery phase can take place either in the shop (using a simpler package containing the products and some special gadgets to make the customer love his/her purchase) or by sending the product to the client's home through a postal service. In the latter case, the

package is more sophisticated in order to prevent any possible damage to its content, and it also includes some gadgets and special perfumes as well, for the customer to be ecstatic when he/she opens it.

In order to make a new order, the customers can contact the *sartoria* by going to the physical shop, by email or using the social media platforms. Then, an estimate of the total price is proposed (including the costs of the raw material and the amount of work needed, in Euro per hour). If the customer accepts it, the purchasing process can start, and it can happen both offline and online. In the first case, the 30% of the total price has to be paid immediately, while the rest can be paid after the final delivery. In the second case, instead, everything has to be paid immediately. There is the possibility to cancel the order until the prototype is completed, not paying anything more in the offline case and getting a refund of the 70% of the total price in the online case.
After the purchase, an invoice document is produced and given to the customer.

An additional feature to put in the system is the possibility to have a blog where company employees can post some interesting articles regarding the *fashion* world, for the customers to stay updated with the most recent trends. Also, newsletter and advertisement services have to be present, to spread new shopping occasions and to boost the marketing success.

It is also very important to record detailed information related to the customers themselves and what they are actually purchasing. This information includes the client's name, surname, email address (for the newsletter), sizes, how they found out about the *sartoria*, which kind of habits they have (in order to tune, for example, the colour or the fabric of the products on them). Sometimes, a kind of consulting service is given too, in order to suggest them which specific article to wear on some special occasions. Clients also have the possibility to review what they purchased on the online shop.
For what concerns instead the products, it is necessary to know the size, colour, type of work and time taken to realize them. They also have a description (with fabric characteristics) and a basic price. An order can be composed by multiple products: the customer of that order has to be able to track the status of it, by knowing in which phase each of its product is. Generally, the maximum time taken to make a product is lower than 1 month.

Each product comes with an *authenticity certificate* which states that it is an original product handcrafted in Italy.

The tailor's shop doesn't have any storage for fabric, because, each time a product is purchased, just the necessary amount of fabric is bought from the supplier. The system needs to store also the history of the orders from the tailor's shop to the suppliers.

Filtered Sentences

General workflow:

- **Idea:** the idea of a product can either start from the tailor or from the customer:
  - When the idea comes from the tailor, she gets the inspiration and decides to create a new dress.
  - When the idea comes from the client:
    - The client has already a model of the dress to be realized, sometimes she/he already has the fabric as well.

- The customer goes to the tailor's shop and asks for suggestions on a product. In this case the tailor helps the client to find the kind of clothes he/she likes, i.e. choosing the colour, the fabric, etc.
- The customer brings his/her own product to be tailored (mended, shortened or modified based on his/her necessities).

- **Sketch:** After the idea, the tailor starts with the sketch of the product and the study of the fabric to be used.

- **Paper pattern**: Later the tailor start building the paper pattern, a paper-made 3D model of the product with real proportions.

- **Prototype:** It is the phase of realization of the real product. These last 2 phases can be iterative, if some modifications are needed to the model.

Tailor's shop services:
- Customized realization of clothes from scratch
- Tailoring: the client brings the clothes to be mended, shortened or modified based on his/her necessities
- Sale of already existing clothes on the online shop
- Sale and tailoring of household goods such as sheets, curtains and towels

Final product delivery:
- The customer can pick up the final product directly at the shop.
- The product can be delivered at the customer's home.

Payment:
- The customer contacts the tailor's shop, explains what he/she wants and receives a quote of the work, based on the cost of the raw material and the cost of the manpower.
- If it is an online order, the client pays immediately all the money. If instead the product is purchased at the physical shop, the client has to leave a deposit of 30% of the final price. To cancel the order (possible until the prototype is completed), a refund of the 70% of the total price has to be given back in the online case.
- When the work is done, the client receives an invoice.

Blog and newsletter:
- The tailor's shop can post articles on the website regarding news such as new products, events etc.
- The tailor's shop uses a newsletter in order to send announcements to the clients

Product:
- It can be either a clothing item or a household good
- It can be both created from scratch and brought by the client
- The product info is saved in the database: type of work, size, color, timeline of realization, description, fabric characteristics, price.

Order:
- It can be either from the client to the tailor's shop or from the latter to the supplier.
- The order information to be stored is: ID, client/supplier, raw material, total price.
- There is a maximum number of orders that can be made simultaneously, depending on the work demand.

- A client can modify the order depending on the status of the process, upon agreement with the tailor.

Customer:
- The tailor's shop stores the client's details: name, surname, contacts, sizes, how they found out about the shop, past orders, fabric preferences and lifestyle in order to know his/her preferences and provide personalized suggestions.
- A client can write reviews about the service.
- A client can receive consultation on how to match the product he/she has purchased.

Suppliers and warehouse:
- The tailor's shop records the history of the orders made to the suppliers
- There is no warehouse and the raw material is bought based on the orders coming from the customers.

Term Glossary

Term	Description	Synonyms	Connection
Tailor's shop	Type of the shop for which the system is designed	*Sartoria*	
Customer	Who orders the product	Client	Product, order, newsletter, review
Employee	Company worker		Order, process, manager, review
Manager	Company manager		Order, invoice, client, process, employee, review
Supplier	Vendor of the raw material		Order, manager, employee

Process	Series of steps from the idea to the final product. It includes sketch, paper pattern and prototype		Product, employee, manager
Product	Item ordered by the client. It may be either created from scratch or a tailoring. It may be both a clothing item or a household good.	Item	Client, process, order, quote
Order	Order from the customer to the company or order from the company to the supplier		Client, product, invoice, supplier
Delivery	Delivery of the products to the customer, either in the shop or through postal service.		Order, product, client, employee, manager
Quote	Initial estimation of the amount of work and the cost	Estimate	Order, product, customer, manager, employee
Invoice	Final document with the price and payment details		Order, customer, supplier, manager, employee
Review	Evaluation of the final work by the client		Client, product, employee, manager
Article	Post published on the blog by the company employees	Post	Manager, employee

Newsletter	News sent to the customers regarding products, offers, etc.		Manager, employee, customer

Functional Requirements

Three different types of users can **login** the system:
- Customers
- Employees
- Managers

The **customers** can:
- Monitor the phases of the process (sketch, paper pattern, prototype) to track the progress of their orders
- Shop online
  - View the products proposed by the tailor's shop
  - Order and purchase the existing products
  - Request an estimation
  - Modify and/or cancel the order (modifications upon agreement with the tailor)
  - Review the service
- View posts on the blog
- Request a customized service (tailoring or a brand-new product)

The **employees** can:
- View and publish posts on the blog
- Manage the process status of the orders, either changing the progress of an order or closing it
- Propose a quote of the order
- Save and view orders made to the suppliers
- Add and edit products on the online shop
- Manage the newsletter. The tailor can send announcements and advertisements to the subscribed clients
- Reply to customer's reviews

Beyond all the employee's user rights, the **managers** are also allowed to:
- Access to client's info
- Manage the accounts of the website
- Give refunds

If the customer is not logged in, he/she can still view the product, the blog and the comments.

Non Functional Requirements

Besides the functional requirements, our system has also to be:
- Optimized both for desktop and mobile access
- Connected with social media (Facebook and Instagram), to give the client a deep support
- Equipped with payment facilities: in particular Visa and Mastercard circuits, PayPal, Google Pay and Apple Pay, bank transfer
- Aware of cookies and privacy management policies of the customers
- Robust to system failures (i.e. must have backup functionalities)

Constraints

The system needs to have the following features:

- Client side implemented using the cloud based web development service wix.com, since our customer already has a website built with it
- Server side implemented linking PostgreSQL to the wix environment, through some REST APIs
- Java JDBC