PPE Watchdog Web App.

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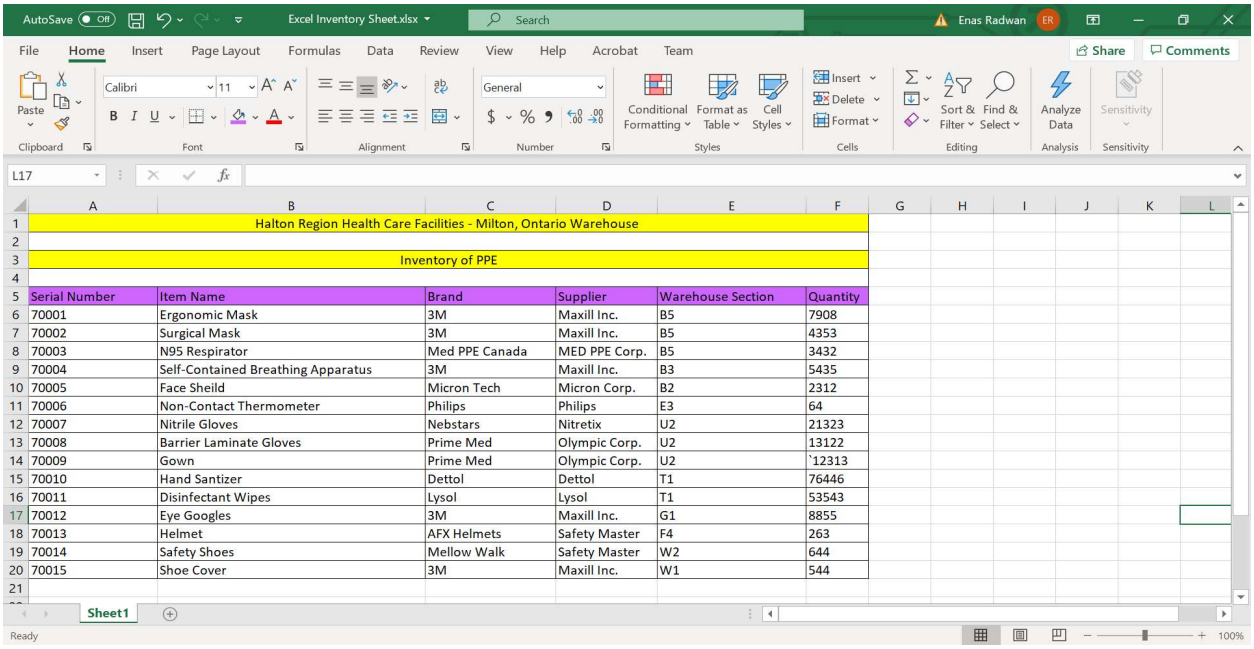
Context Overview Document

With the COVID-19 pandemic hitting the world hard on many levels, the healthcare management sector was on the focus. The capability of the health sector to cope with the pandemic consequences had to be continually enhanced. One of the earliest issues aroused from the beginning of the pandemic is lack of PPE (Personal Protective Equipment). Canada like many other countries was in shortage of masks, gloves, disinfecting and sterilization materials. Our web app aims at creating an inventory system watchdog that checks on the PPE contents of the warehouse of any health care facility like hospitals or outpatient clinics. Assuming that such an inventory was handled by excel sheets that are saved on the computer of one or many officers. The file may be handled asynchronously which results in inconsistency of data. So, our system will allow the facility to have one database that have the PPE data stored, and users will be able to access log-in web page, being authenticated and then being permitted an access to a form handling the data the data to Create, Read, Update, or delete records, each user upon the privilege assigned.

This web application will have a log-in page by which user logs into the system to access a form through which he/she can create, read, update, or delete records of PPE Items saved on the database.

This is how the data used to be stored prior to creating the web app.



Halton Region Health Care Facilities - Milton, Ontario Warehouse

Inventory of PPE

Serial Number	Item Name	Brand	Supplier	Warehouse Section	Quantity
70001	Ergonomic Mask	3M	Maxill Inc.	B5	7908
70002	Surgical Mask	3M	Maxill Inc.	B5	4353
70003	N95 Respirator	Med PPE Canada	MED PPE Corp.	B5	3432
70004	Self-Contained Breathing Apparatus	3M	Maxill Inc.	B3	5435
70005	Face Sheild	Micron Tech	Micron Corp.	B2	2312
70006	Non-Contact Thermometer	Philips	Philips	E3	64
70007	Nitrile Gloves	Nebstars	Nitretix	U2	21323
70008	Barrier Laminate Gloves	Prime Med	Olympic Corp.	U2	13122
70009	Gown	Prime Med	Olympic Corp.	U2	`12313
70010	Hand Santizer	Dettol	Dettol	T1	76446
70011	Disinfectant Wipes	Lysol	Lysol	T1	53543
70012	Eye Googles	3M	Maxill Inc.	G1	8855
70013	Helmet	AFX Helmets	Safety Master	F4	263
70014	Safety Shoes	Mellow Walk	Safety Master	W2	644
70015	Shoe Cover	3M	Maxill Inc.	W1	544

User Authentication - A log-in page will be provided for verifying the user can access the inventory or not.

User Authorization - The system will be providing levels of permission or privilege to each category of users upon their occupation as per the hereunder.

Different CRUD permission levels upon type of user

- Procurement Officer: Read
- Warehouse Manager Create, Read, Update, Delete
- HSE (Health, safety & Environment Officer): Read

Product requirements document

1. Objective

Vision	I want every single healthcare facility (specially the small ones) like outpatient clinics to be using my product to be able to continuously cover any shortage of PPE supplies and be ready for coping with any surprising conditions such as epidemics ad pandemics like COVID19.
Goals	▪ To get the MVP (Minimum Viable Product) sound and running – Single user with all privileges (CRUD)– End of February 2021. ▪ To get the product running with different privileges for each user, using access control methods and user authorization – End of March 2021 ▪ To get the product running for multiple requests from multiple users simultaneously – End of April, 2021
Initiatives	I would like my app to be integrated into the information system of the ministry of health to provide continual information about the quantity of supplies, for the government to be aware of any local, municipal, provincial, or federal shortage of supplies of PPE, to co-ordinate with industry and importing bodies to cover that shortage of supplies.
Persona(s)	The product is for healthcare management facilities, especially its warehouse managers, procurement managers and HSE (Health, safety and environment) managers.

2. Release

Release	PPE Watchdog 1.01
Date	February 15th, 2021
Initiative	Creating MVP with single user that will be able to perform all functions on the system, Create, read, update and delete records of PPE supplies.
Milestones	▪ *Creating UML Class Diagram* ▪ Making sure all software needed is available (MySQL *workbench, Eclipse,* ApacheTomcat *web container)* ▪ *Creating Database* ▪ *Creating Java Classes* ▪ *Creating JS*
Features	▪ *User authentication* ▪ CRUD for single user

Dependencies	Two steps could be run in parallel by different team members, the overlap would start right after creating the UML class diagram and making sure software is available, while a team member is creating user authentication codes, the other could be working on user authorization with setting variables names first.

Release	PPE Watchdog 1.02
Date	March 30, 2021
Initiative	Assigning roles to each user and award privileges for each user on the data
Milestones	▪ *Creating Role java class* ▪ *Experiment the program running for different authorization level.*
Features	▪ *User Authorization*
Dependencies	This activity must end before starting with the multi-user tasks performed by multithreading.

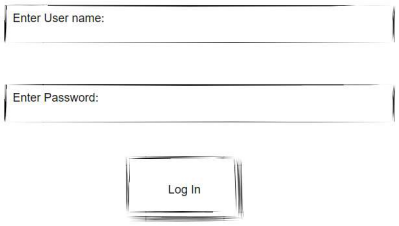
3. Features

Feature (1)	*User Authentication*
Description	*It will verify if the user has entered the correct credentials or not (username and password)*
Purpose	*To make sure only authenticated personnel access the system for security and privacy of data.*
User problem	If forgetting password, system has to provide means for resetting it.
User value	*It helps the system filters unwanted personnel out, not to access the database*
Assumptions	Reference Credentials are already saved in the User java class, tose reference credentials are the ones compared to the credentials enterd by the user to conduct the authentication process. This is because the registration procedure is being excluded from the scope of this release.

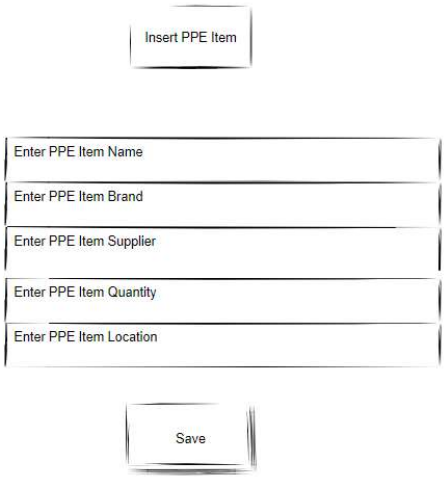
Not doing	Registration feature
Acceptance criteria	For the user to be granted an access if entered credentials match with refence credentials.

Feature (2)	*CRUD capabilities for one user (starting with full control or highest permission level for warehouse manager)*
Description	*For the warehouse manager to be able to perform all activities on PPE items, like creating, reading, updating, and deleting records.*
Purpose	To be granted full control over the records of the database.
User problem	To handle feedback from database in case one of the sql statements fails.
User value	*It grants that the warehouse manager can perform all functions on records*
Assumptions	I assume that at this level, some records could be redundant and data is not fully normalized, like in the case when the warehouse managers enters two separate entries for the same PPE item instead of updating the quantity of only one record
Not doing	*Not getting new entries of PPE items to be checked for non-redundancy or normalization*
Acceptance criteria	To update a record and then listing all records to make sure the update was successful.

4. User flow and design



Login Page



User Form for Inserting PPE Record

5. Analytics

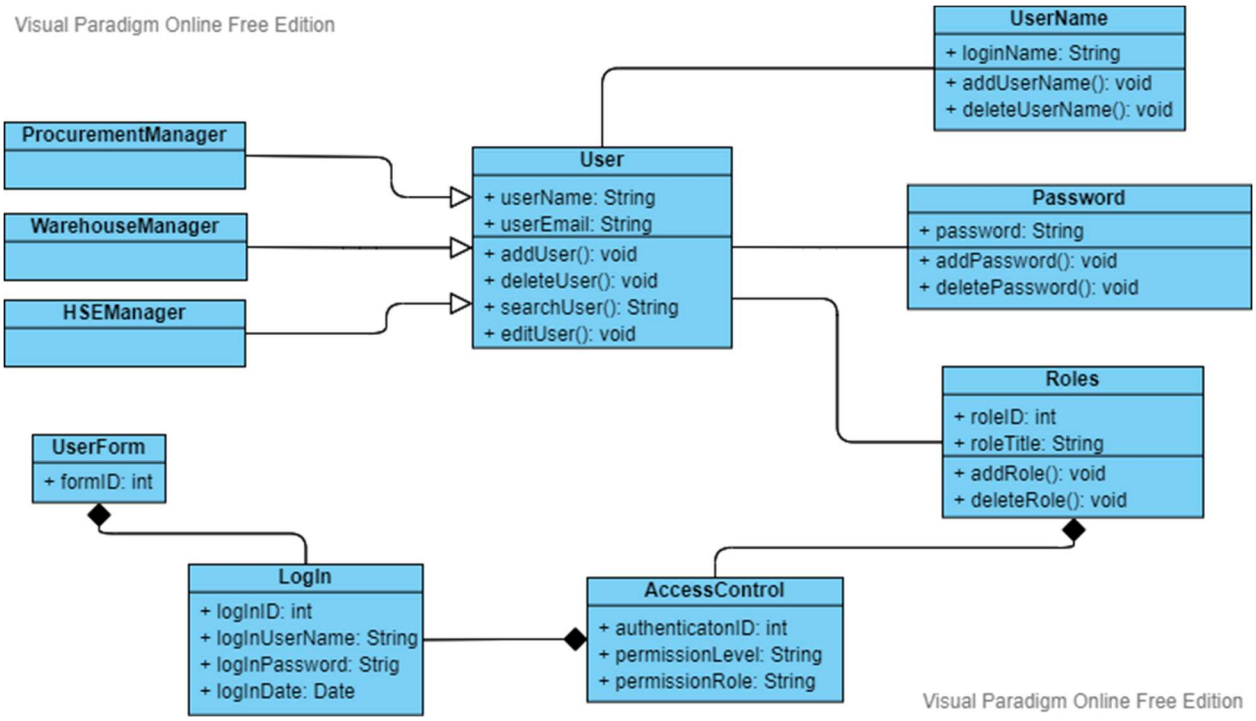
Key performance indicator	Baseline	Target	Timeframe
User Authentication	creating user and log-in classes	verifying entered credentials upon reference credentials	1 week for reaching the target
User Authorization	creating role and access control classes	assigning permission levels to each user	1 week for reaching the target
Performing CRUD functions	Conduct first successful connection with database	Update records and reading data after successful update	2 week for reaching the target

6. Future work

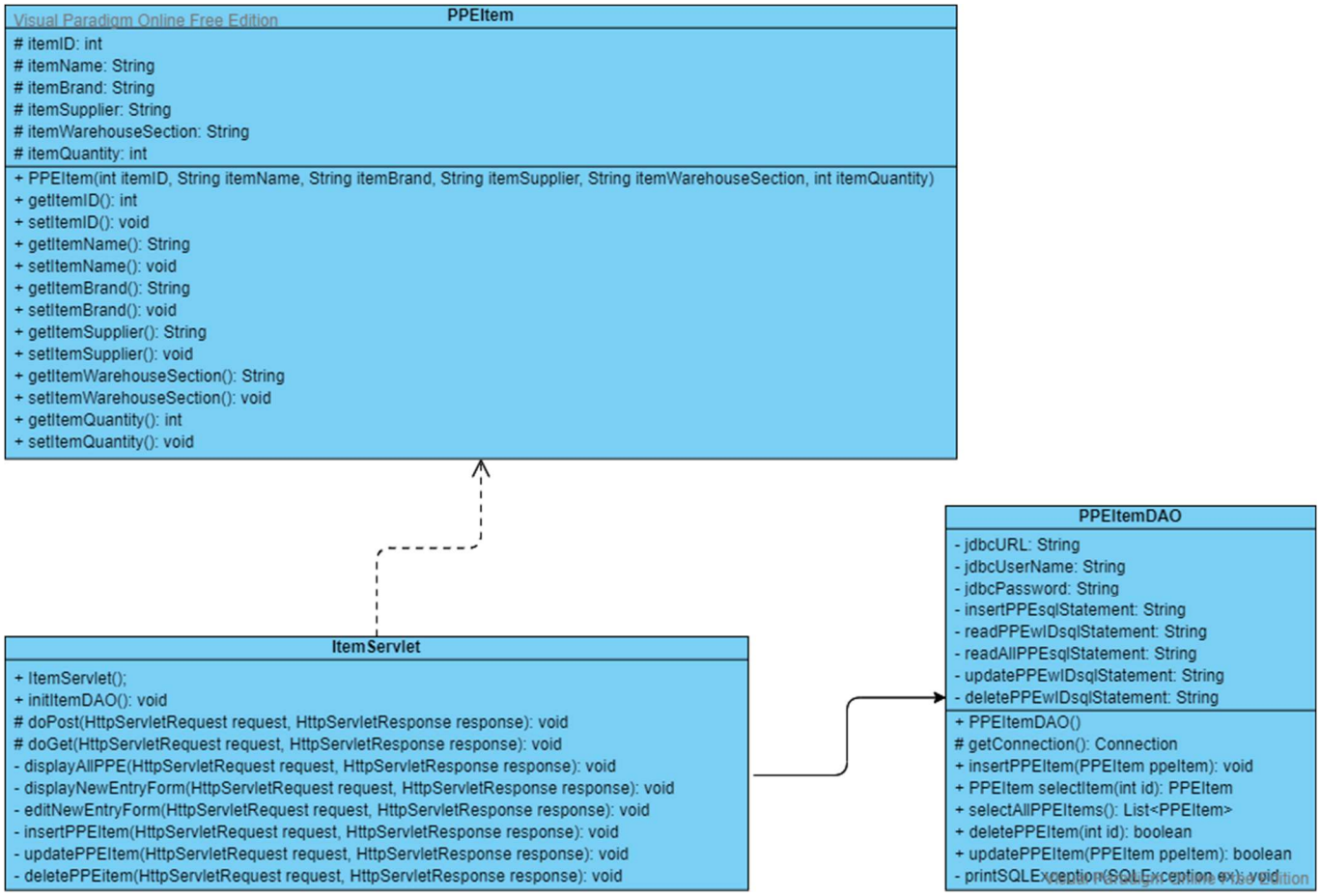
Future features	Purpose	Priority	Timeframe
User Authorization Feature	To assign different privilege of how to handle the data by different users. Some users can only read the data like HSE or Procurement managers, while the warehouse manager would be assigned full control by the capability to create, read, update ad delete records.	1st after finishing the current milestone	March 1st to March 30st
Multi-users Features	Allow different users to access the system from different points simultaneously to perform different tasks. A warehouse manager may update a quantity f a PPE item, while a safety manager can read the records of the same another item.	2nd Priority	April 1st to April 30st

MVP initial design document

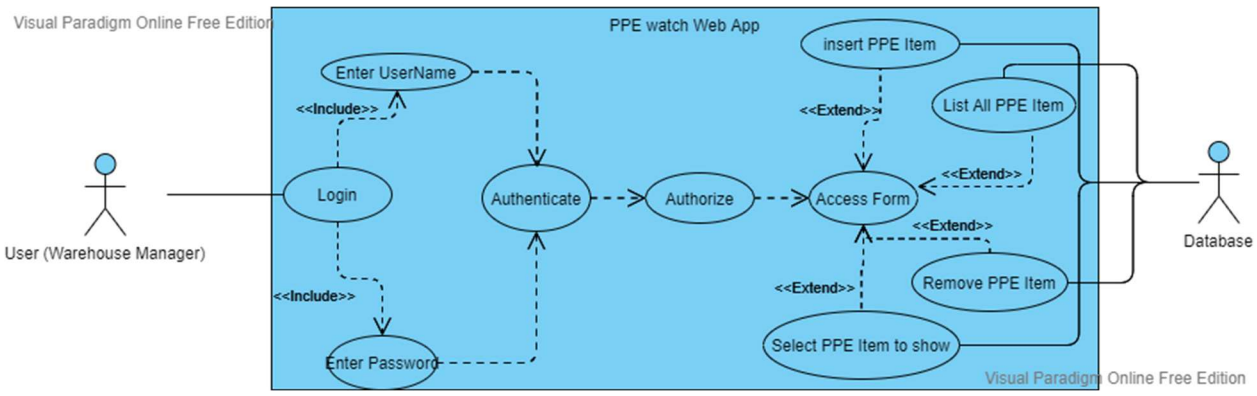
UML Class Diagram for Log-in (Authentication and Authorization Processes)



UML Class Diagram for CRUD functions performed by a user with the highest permission level (Warehouse Manager)



Use Case Diagram



Sequence Diagram