

Sri Lanka Institute of Information Technology



Activity 1

ITP _ T141

Electrical and Service Management System

Information Technology Project – IT2080

B.Sc. (Hons) in Information Technology

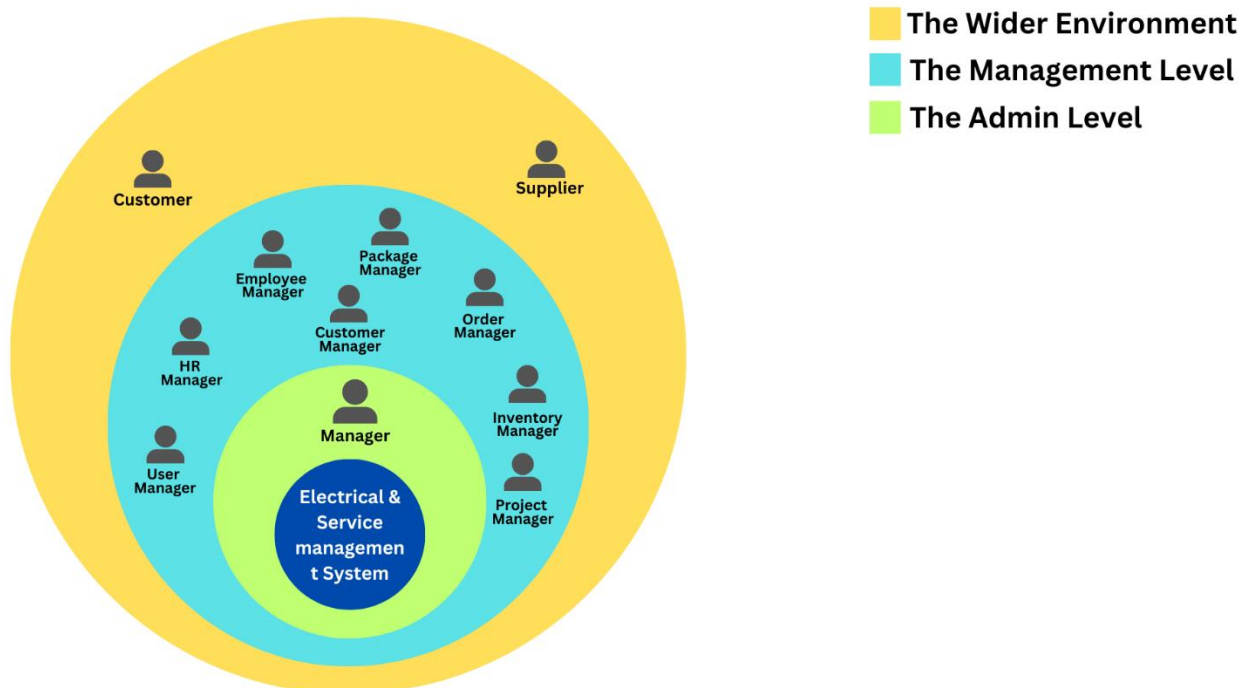
Group Members

1. Jayasinghe J A D T S	IT22028464
2. Wimalarathna B P K	IT22059604
3. Gimsara W T G	IT22898098
4. Galappaththi A G R S	IT22345578
5. Reid P R	IT22575944
6. Dayarathne R D T N	IT22578396
7. Perera M M D	IT22581716
8. Madhubhashana M D H P	IT22322876

Stockholders

- Manger
- Customer
- Employee
- User Manager
- Employee Manager
- Package Manager
- Supplier
- Buyer
- Inventory Manager
- Project Manager

Onion Diagram



User stories

1. User manager's story

- As a user manager,
I want to be able to assign specific roles or permissions to users based on their responsibilities or access needs within the system,
so that I can ensure appropriate access levels and security will be maintained.
- As a user manager,
I want to be able to export user data or generate reports on user activity,
enabling analysis for business data and regulatory compliance,
so that I can make informed decisions and ensure regulatory compliance.
- As a user manager,
I want to provide user support and assistance, addressing any inquiries or concerns users may have regarding their accounts or access rights,
so that I can maintain positive user experiences and satisfaction.
- As a user manager,
I want to be able to track user activity and login history to monitor system usage and identify any suspicious behavior,
so that I can proactively address security threats and maintain the integrity and security of the system.

2. Employee's story

- As the employee,
I want to write a good biography,
So that, customers can get a rough idea about the employee that they are going to select for the booking.
- As the employee,
I want to submit a good CV,
So that, customers can select their best employee choice according to their need.
- As the employee,
I want to be able to see the feedback and ratings given by the customers,
So, that I can adjust myself according to their requirements.
- As the employee,
I want to add the marks to the system once I done completing a project,
So that, I can have the salary increment relative to my marks.

3.HR manager's story

- As the HR manager,
I want to do the registrations of the employee,
So that, the company can have talented and experienced employees.
- As the HR manager,
I want to monitor the employee's marks,
So that, I can generate their salary report and increments according to their marks obtained.

4.User's story

- As a user,
I want to be able to have a comprehensive list of available electrical services offered,
So that, I can easily explore and understand the range of electrical services available, making informed decisions based on my specific needs.
- As a user,
I want to be able to narrow down my options, I use filters such as service type (e.g., inspection, installation, repair) and sort options based on relevance or price.,
So that, I can efficiently find the most suitable and cost-effective services for my specific needs. The ability to narrow down my options by using filters
- As a user,
I want to be able to choose the service that aligns with my needs, whether it's an electrical inspection, wiring installation, or another specific service.
So that, I can ensure that my specific requirements are addressed accurately and efficiently.
- As a user,
I want to be able to have the option to reschedule the appointments, if necessary, with the ability to choose an alternative date and time slots
So that, I can have the option to reschedule appointments provides me with the freedom to accommodate unexpected events, urgent priorities, or any changes in my availability.

5. Electrician's story

- As an electrician,
I want to be able to add the dates that I will be available for work ,
So that, I can efficiently manage my schedule and ensure a balanced work-life routine.
- As an electrician,
I want to be able to check the booking timetable that I will be working on
So that, I can efficiently manage my schedule and ensure a balanced work-life routine.
- As an electrician,
I want to be able to choose the projects that I will be working on
So that, I can align my professional endeavors with my passions and interests

6. Customer Manager's story

- As a customer manager,
I want to provide a platform where customers can easily submit feedback for the services they have received,
so that we can gather valuable insights and continuously improve our offerings to better meet their needs.
- As a customer manager,
I want to enable customers to request quotes for services or products,
so that we can promptly respond with pricing information and facilitate potential transactions.
- As a customer manager,
I want to provide convenient means for customers to contact our business,
so that they can easily reach out with inquiries, concerns, or requests for assistance, to ensure positive interactions and relationships with our customer base.
- As a customer manager,
I want to be able to generate feedback and rating reports,
So that I can make changes to the services according to the user requirements.
- As an Employee,
I want to be able to view assigned tasks and deadlines within ongoing projects,
So, that I can prioritize my work and ensure timely completion of projects deliverables.

7. Package manager's story

- As a package manager,
I want to be able to add new package details,
So that I can add more packages with the changing economy.
- As a package manager,
I want to be able to edit package details,
So that I can add more facilities to packages to attract more customers.
- As a package manager,
I want to be able to delete packages,
So that I can remove unwanted packages.

8.Inventory manager's story

- As an Inventory Manager,
I want to easily add new items to the inventory, specifying details such as item name, description, quantity, unit of measurement, and supplier information,
So that I can keep track of the available stock.
- As an Inventory Manager,
I want to be able to categorize inventory items based on their type and usage,
So that I can easily locate and manage different types of items.
- As an Inventory Manager,
I want the ability to update the quantity of items in real-time as new stock is received or items are used in service requests or maintenance activities,
So that I can identify any discrepancies or issues in the system.
- As an Inventory Manager,
I want to generate detailed reports on inventory levels, usage trends, and order history to aid in decision-making and strategic planning,
So that I can review the usage patterns and plan for restocking as needed.

9.Supplier's story

- As a seller,
I want to be able to view my order history.
So that I can find genuine buyers and best-selling products.
- As a seller,
I want a user friendly dashboard
so that I can update order status without much hassle.
- As a seller,
I want to be able to respond to buyers' requests

so that I can contribute to a better online marketplace.

10. Buyer's story(customer)

- As a buyer,
I want to be able to view my order history
so that I can refer to it when I need to reorder the same item or from the same seller again.
- As a buyer,
I want to be able to make changes to product variations/options right from the cart
so that I don't have to visit product pages multiple times.
- As a buyer,
I want to be able to track my order and get all notifications
so that I can stay alerted about my package.
- As a buyer,
I want a money back guarantee for all my orders
so that I can shop with confidence.
- As a buyer,
I would like a system that accepts all major payment methods
so that I feel more convenient.

11. Project manager's story

- As a Project Manager,
I want to generate comprehensive reports on project status, resource utilization and budget allocation,
So, that I can assess project performance, identify potential bottlenecks and make informed decisions to optimize project outcomes.
- As a Project Manager,
I want to be able to define project milestones and deadlines within the system,
So, that I can effectively track progress and ensure that project tasks are completed on time.
- As a Project Manager,
I want to expected details of completed and in-progress projects are to be entered into the system,
So, that I can the customers as well as the employees of the company can give an idea about the projects of the company.
- As an Employee,
I want to be able to view assigned tasks and deadlines within ongoing projects,

So, that I can prioritize my work and ensure timely completion of projects deliverables.

- As an Employee,
I want to collaborate with team members by sharing project updates, exchanging information and discussing project-related issues,
So, that I can contribute effectively to project progress and foster teamwork within the organization.
- As a Customer,
I want to be able to submit project requests or inquiries regarding electrical installations or upgrades,
So, that I can communicate my requirements and expectations to the project management team.
- As a Customer,
I want to receive updates and notifications on the progress of my project, including milestones achieved and upcoming tasks,
So, that I can stay informed and track the status of my project without needing to follow up constantly.

Functional Requirements

1. User management

- Allow unregistered users to visit the website and register for an user account.
- Enable registered users to update their profiles, including contact information and preferences for user account.
- Allow managers to manage user permissions and access levels within the system, controlling the availability of sensitive information or service functionalities.
- Provide user-friendly interfaces and clear instructions for both registered users and managers to navigate account management features and service offerings effectively.
- Enable registered users to generate reports summarizing their service history, including past repairs, installations, and purchases from Newton Electrical.

- Provide registered users with the option to deactivate or delete their accounts if needed,

2.Career management

- Allow unregistered users to visit the website and register for an user account.
- Job postings should be manageable by employers, including the ability to modify, close, and remove postings.
- Job seekers should be able to submit their resumes or CVs electronically through the platform. Resumes/CVs should be stored securely and accessible to employers for review.
- It should be possible for job applicants to monitor the progress of their applications. Employers ought to be able to monitor the progress of applications they receive and handle them appropriately.
- Managers and customers ought to be able to rate and comment on one another. The standard of job advertisements and the user experience can both be enhanced with feedback.
- Users should receive notifications and alerts regarding job postings, application status updates, interview invitations, and other relevant activities.
- Employers should be able to monitor recruiting data, such as the number of applicants per position, time-to-fill, and candidate demographics, through the system's analytics and reporting functions.

3.Service Schedule management

- Users should be able to view a calendar or schedule displaying available dates and times for booking appointments.
- Users should be able to input the location where the service is required, including specific address details.
- Users should have the option to reschedule appointments, if necessary, with the ability to choose an alternative date and time slot.

- Users should be able to cancel appointments if needed, with appropriate confirmation prompts to prevent accidental cancellations.
- Users should have access to a "My Appointments" section where they can view details of their upcoming and past appointments.

4. Package management

- Secure login functionality for the package manager with appropriate access permissions
- Allow the package manager to create new packages with detailed specifications for the system.
- Allow the package manager to update current package details.
- Allow the package manager to delete packages.
- Allow the package manager to accept reservation requests from customers.

5. Customer management

- Enable both registered users and unregistered users to search for products based on their ratings.
- Allows the customer service manager to validate user feedback and display feedback on relevant sections
- Enables the users to add their feedback about services received, edit, and delete them according to their preference.
- Enables the users to view the feedback given by the customer manager through their own profiles.
- Enables the customer service manager to generate reports on user feedback and ratings.

6.Inventory management

- Allow users to track the availability of electrical components, tools, and equipment in real-time to prevent stockouts.
- Enable users to categorize electrical items based on type, specifications, and usage to facilitate easier management and retrieval for users.
- Provide customers with access to their purchase history, allowing them to review past transactions.
- Display the availability status of each item on the store page, indicating whether it is in stock or out of stock.
- Allow administrators to add new items to the inventory system, including details such as item name, description, category, and price.

7.Order management

- Users should be able to view a calendar or schedule displaying available dates and times for booking appointments.
- Users should be able to input the location where the service is required, including specific address details.
- Users should have the option to reschedule appointments, if necessary, with the ability to choose an alternative date and time slot.
- Users should be able to cancel appointments if needed, with appropriate confirmation prompts to prevent accidental cancellations.
- Users should have access to a "My Appointments" section where they can view details of their upcoming and past appointments.

8. Project management

- Allow customers to visit the website and check the projects in the system to get ideas for their awareness.
- Allow project manager to add, view, update and delete required project details to the system.
- Allow employees to check the completed projects in the system to being able to solve the problems they have about ongoing projects.

Non-Functional Requirements

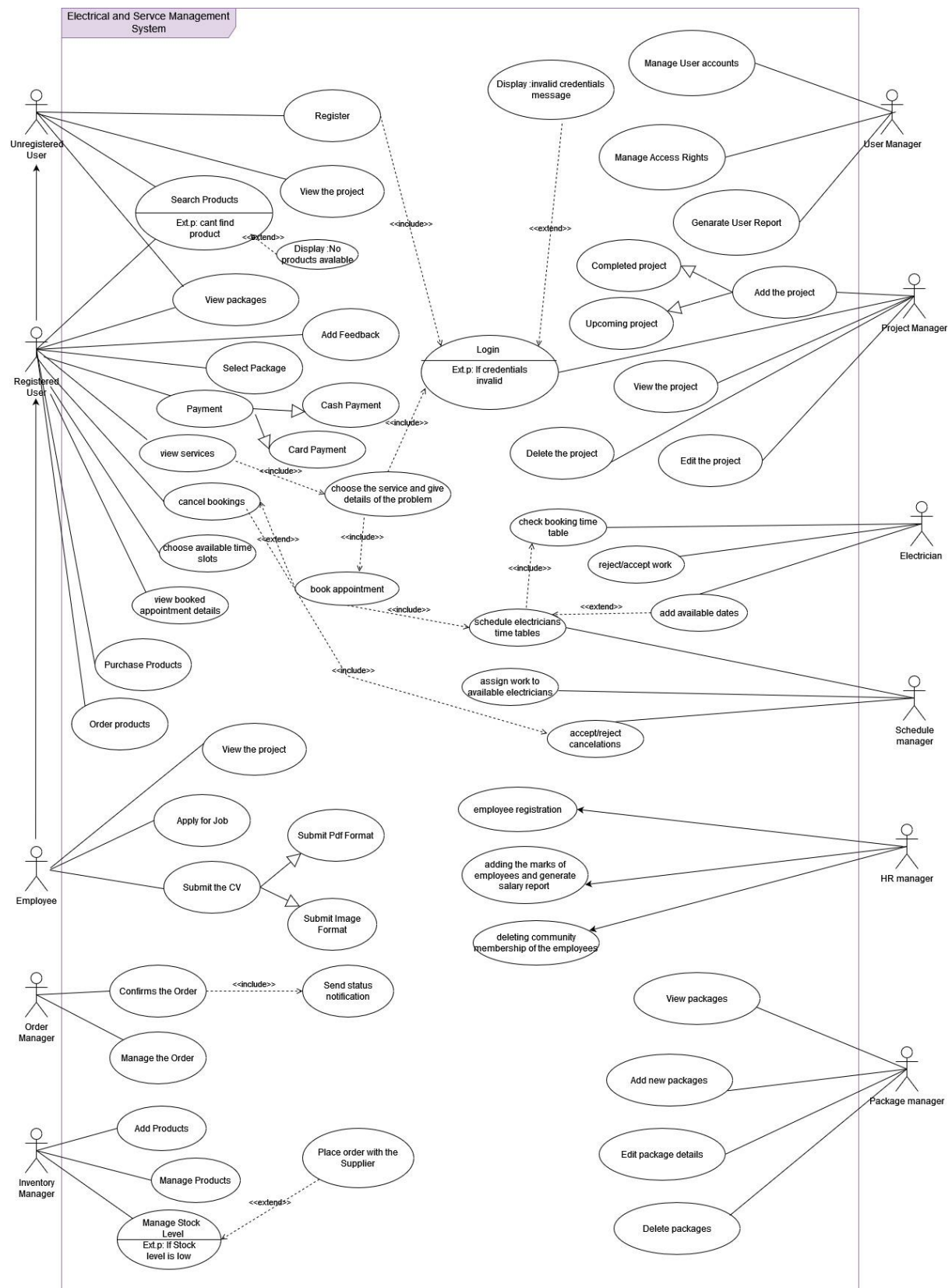
- The application should have a user-friendly interface with proper navigation and clear instructions to enhance usability and user satisfaction.
- The system should ensure the privacy and security of user data.
- The application should be scalable to accommodate future growth and increasing user demands without reducing performance or functionality.
- The application should be compatible with different web browsers to ensure accessibility.
- The system should be available 24/7 with minimal downtime.
- The system should ensure the privacy and security of user data.

Technical Requirements

- The application should be hosted on a secure and reliable web server.
- The application should be compatible with different web browsers to ensure accessibility for users using various browser preferences.
- The application is developed using client server architecture.
- JavaScript for programming language
- MongoDB database
- React framework.
- Expressjs as backend

Use case Diagrams

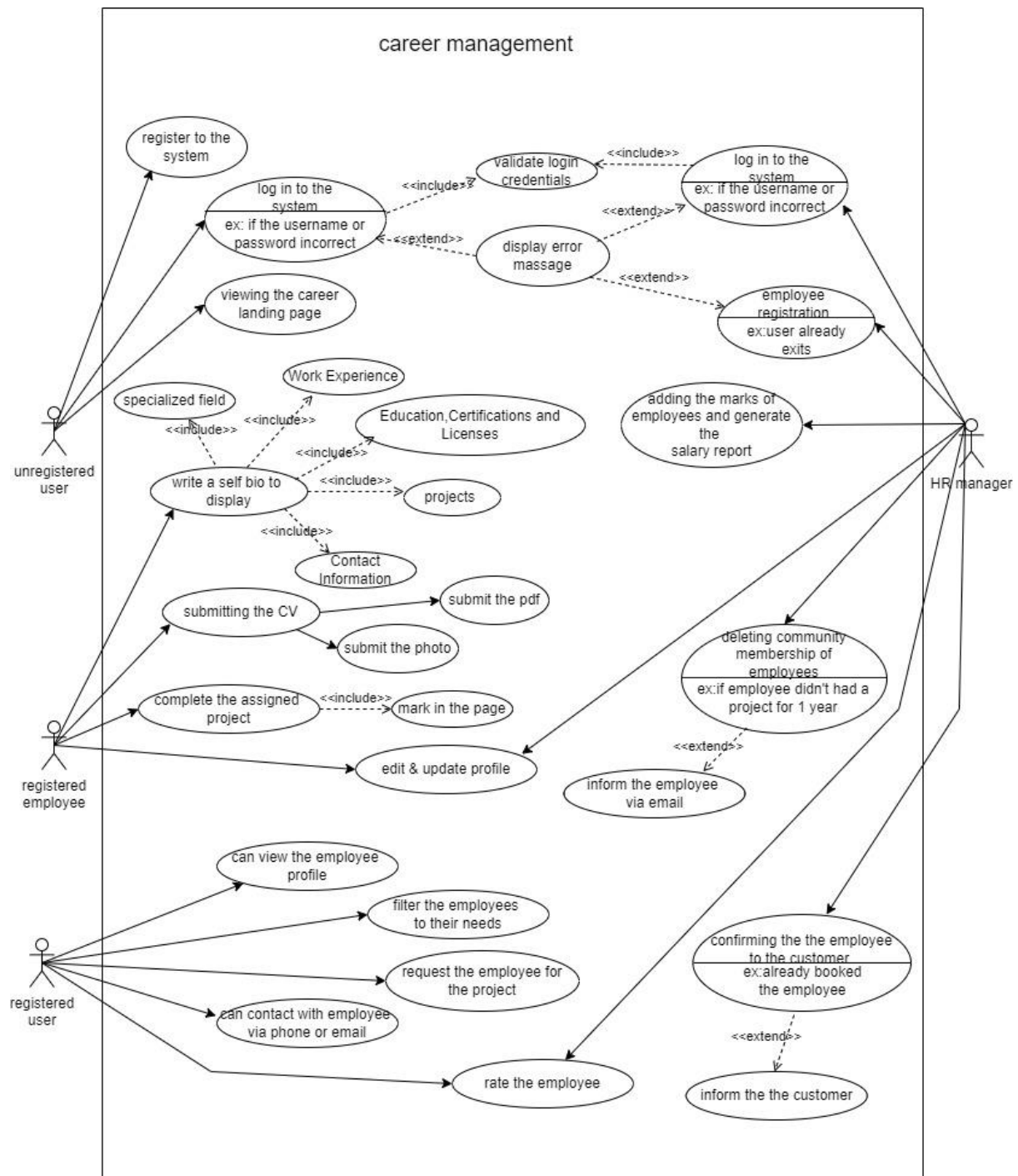
1. Whole system



2. User management



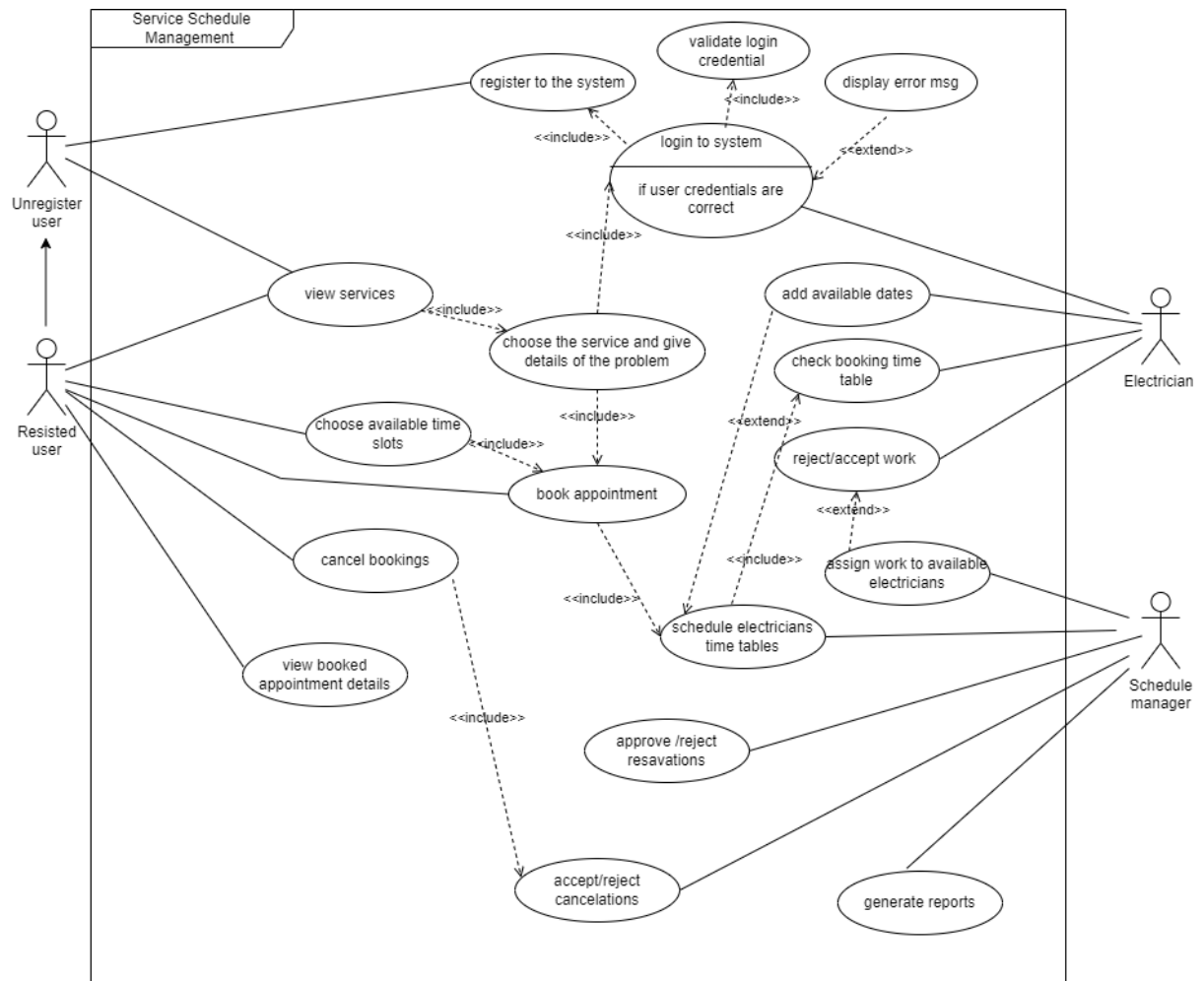
3.Career management



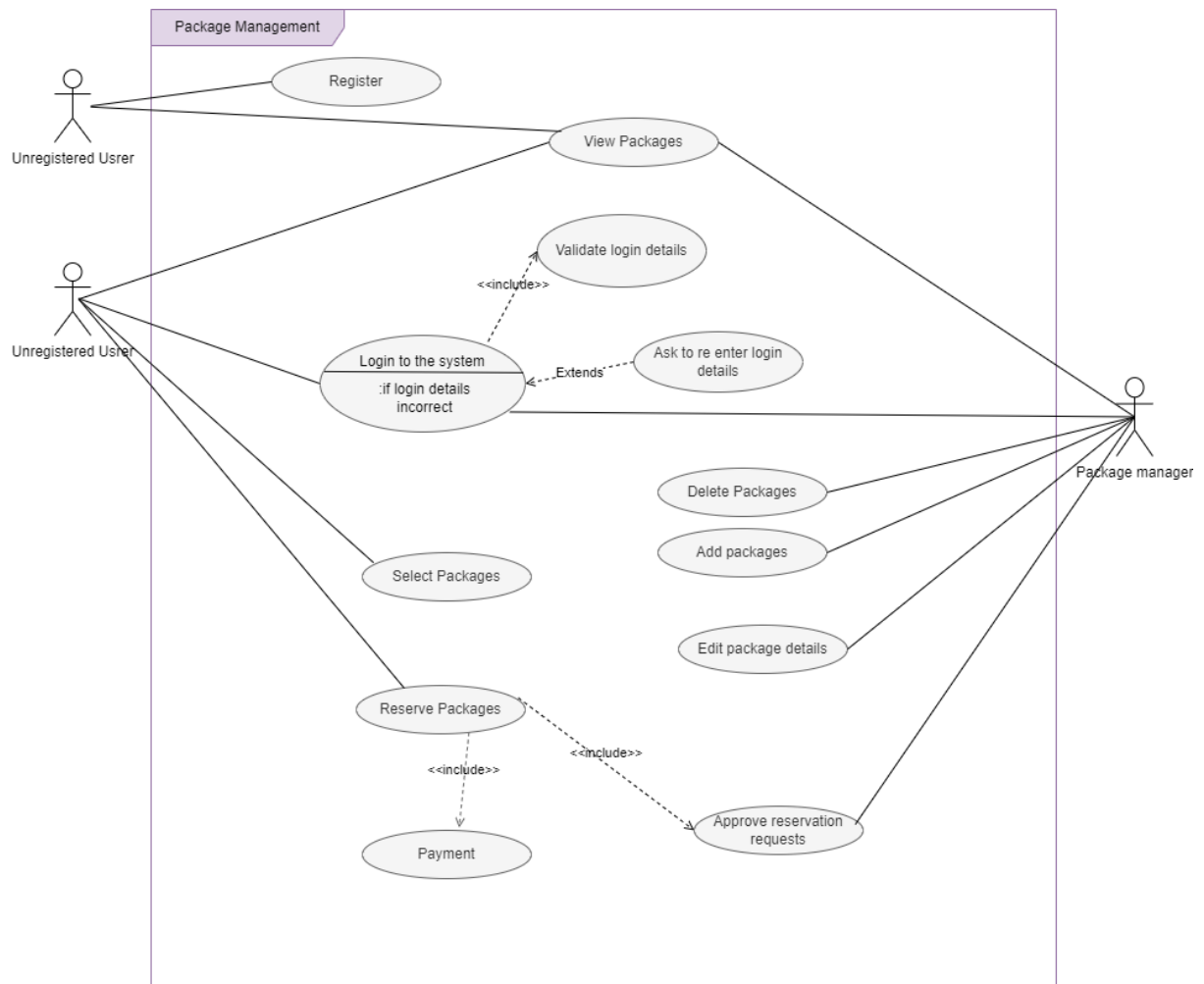
4.Inventory management



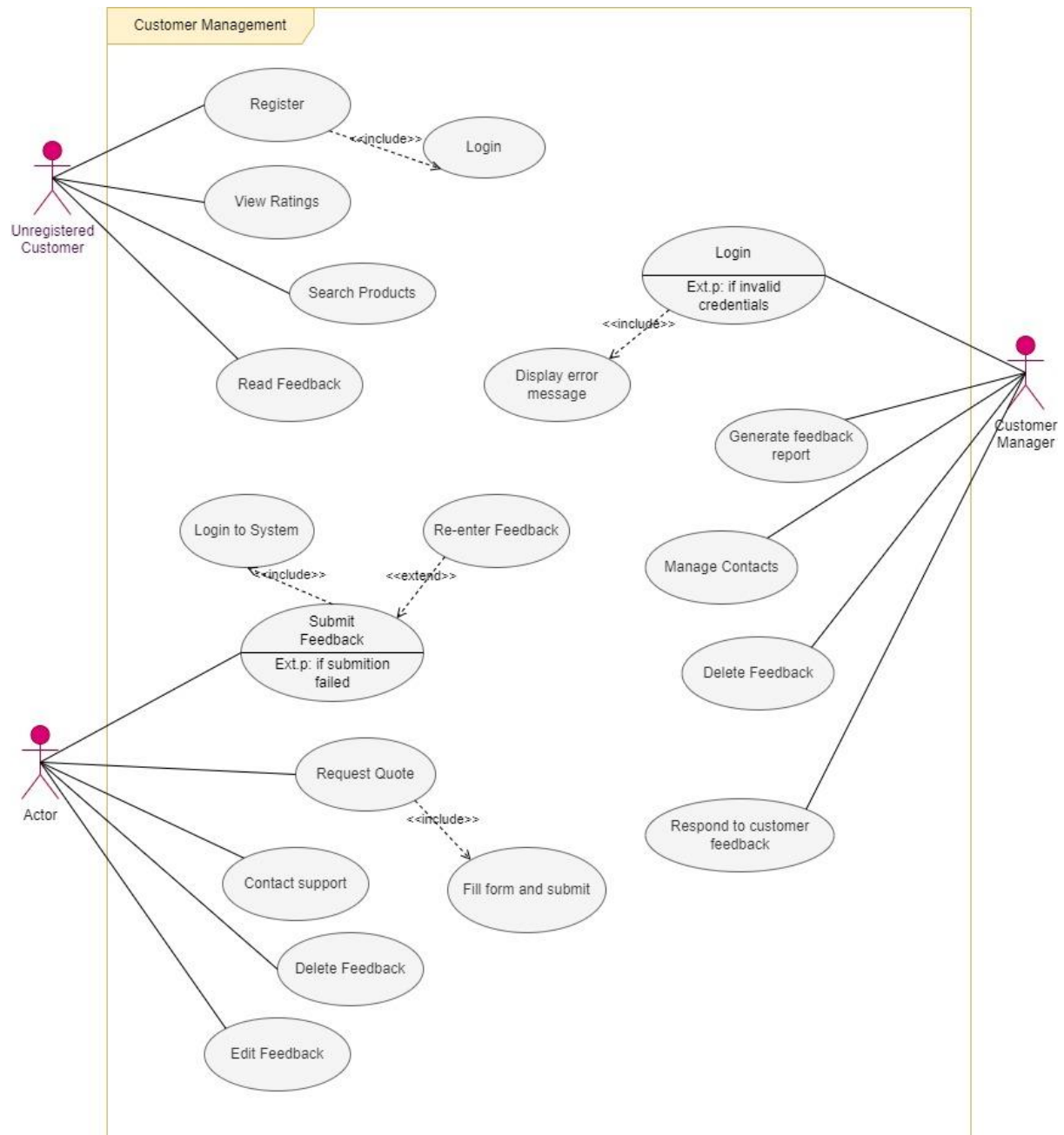
5. Service schedule management



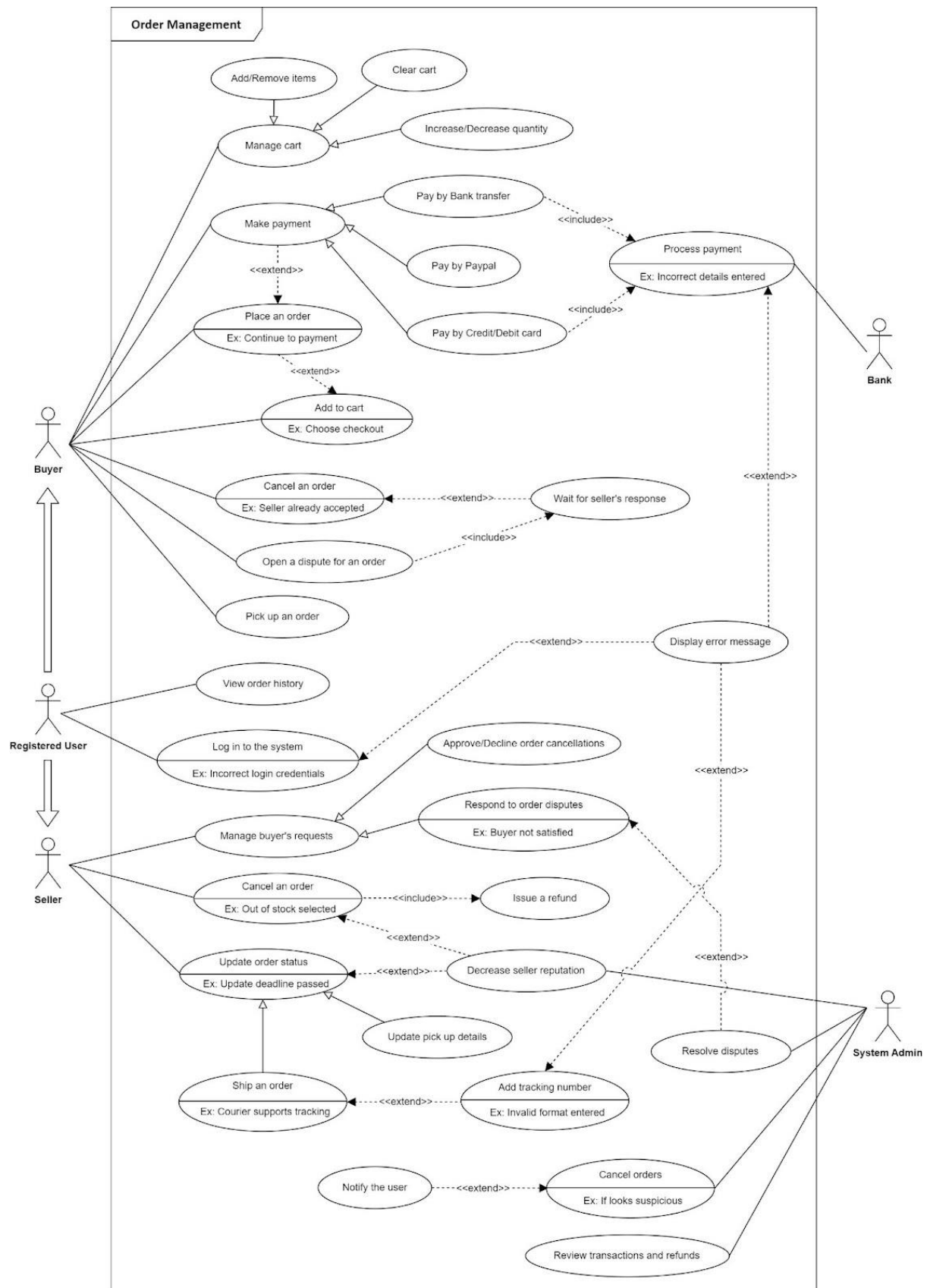
6.Package management



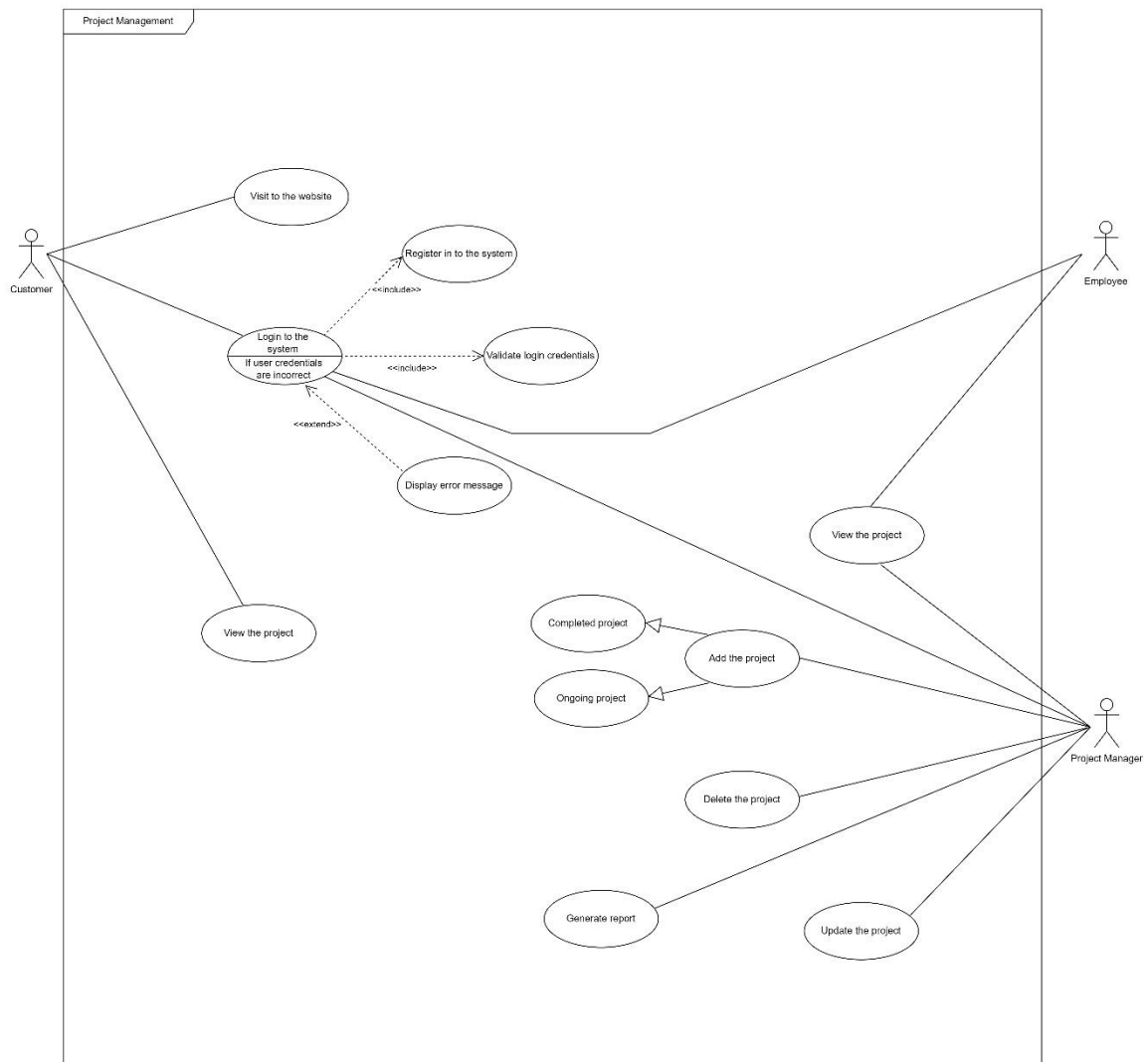
7. Customer management



8. Order management



9. Project management



Use case Descriptions

- **Register**
Unregistered users should create an account by entering their personal information before they access the application. After registration. After that they can login to their account using their registered username and password
- **Logging**
Users who have registered with the system can login to the system using their username and password that they have registered with.
- **Edit Profile**
Users who have registered can edit their profile details at any time.
- **Delete Profile**
Registered users can delete their profile at any time if they required.
- **Remove Users**
User admin can remove any registered user from the system if user is inactive or violates any rules of the system.
- **Generate User Report**
User admin can generate user reports about user activity in the system.
- **Schedule Appointment**
In the booking appointment use case, customers can select a desired electrical service, choose a convenient date and time, input the service location, and confirm the booking.
- **Edit package details.**
The package manager can edit the details like new prices, discounts new offers Of current packages.
- **Create new packages**
The package manager can effortlessly create new packages, specifying service details materials needed, and estimated costs.
- **Delete packages**
The package manager can remove any packages as he/she wants.
- **Payment of package**
After selecting packages customers can pay for the packages hourly, monthly, or annually according to the type of package they selected. They can pay the fee with cash or cards. After the cash payment, they can save their card details if they want. Upon successful payment, the system confirms the transaction.

- **Generate package payment reports**
The financial manager generates the reports of payment. After referring to the payment details of the day the financial manager generates the financial reports daily, monthly, and annually.
- **Appointment Reschedule**
Users can choose the reschedule option and then pick a new date and time from the available slots, providing flexibility and convenience for adapting to changing circumstances. The system updates the appointment details.
- **Cancel Appointment**
Users can cancel appointments on the website by selecting the booked appointment in "My Appointments" and confirming the cancellation.
- **Submit Feedback**
users can submit their feedback to the services they have received. Further, they can edit or delete their provided feedback if necessary.
- **Read feedback.**
Any user can view feedback provided by other users. This helps the users to get an idea about the quality of services that they received from the business.
- **View ratings**
Customers can view ratings provided by other users regarding the quality of goods and services.
- **Generate feedback report**
The customer service manager can generate reports on the feedback and ratings provided by customers and helps to improve the quality of the services provided by the business.
- **Generate salary report**
The HR manager can generate reports on the marks of the employees that they submitted in their profile once the completed a project. By that calculations are done by the HR manager and do the relevant salary increments.
- **Add the Projects**
Project manager can add the projects anytime.
- **View the Projects**
Project manager can view the completed projects or ongoing projects anytime if he wants.

- **Delete the Projects**

Project manager can delete the projects, only necessary if they are not important and if done a long time ago.

- **Update the Projects**

Project manager can edit the projects as appropriately.

Use case Scenarios

1. User register to the system

Name	User register to the System	
Summary	Unregistered users visit the Newton Electricals website and navigate to the Registration option. They fill out the form and log in.	
Priority	02	
Pre-conditions	User has internet access and device capable of accessing the electrical service portal	
Post-conditions	User successfully registered for the portal and can now access its features and services	
Primary Actors(s)	Unregistered user, Admin	
Main Scenario	Step	Action
	1	User visiting the newton electrical web portal
	2	System displays the home page with options to login or register
	3	User select the signup button
	4	Unregistered user redirect into the registration form
	5	User fill in the registration form with their personal details.
	6	After, user click on the register button
	7	System displays message asking user to verify their email
	8	User enter email and click on verify
	9	User will receive an email to their registered email address
	10	User click verify button
	11	System navigates to login page of the web portal
	12	User enter email and password that have registered with
	13	User click on the login button
	14	System navigates to home screen
Extensions	Step	Action
	4a	If user already registered redirect to login page
	4b	Enter login details and login to the system

	6a	If entered details are incorrect or not in format display invalid message
	7a	If email is already used, the System shows email is already existed.
	12a	If the username or password incorrect
	12a.1	Display “Invalid username or password” message
	12a.2	Allow three attempts
	12a.3	After three attempts also username or password is Incorrect display message create a new password

2.User book an appointment

Name	Service Schedule Management	
Summary	Schedule a time slot for an electrician	
Priority	01	
Pre-conditions	The user must be registered to the system	
Post-conditions	The customer has a confirmed appointment with the electrical service company. The service company receives the details of the appointment.	
Primary Actors(s)	Registered User	
Trigger	Manager accept the reservation	
Main Scenario	Step	Action
	1	Login to the system using the user credentials
	2	The customer opens the app and navigates to the "Book Appointment" section.
	3	The customer selects the type of electrical service they need from available options
	4	The customer selects the type of problem they are having from the given options

	5	The customer types the problem they are facing in detail
	6	The customer can upload pictures or videos of the problem to the site for better understanding of the problem
	7	The system displays a form for the customer to fill out
	8	The customer fills in their details and the address of the location where the service is required and submits the form
	9	The system displays available dates and time slots for the customer to choose from
	10	The customer selects a preferred date and time for the appointment from the available slots.
	11	The customer reviews the selected service, date, time, and location.
	12	They confirm the booking by tapping the "Confirm Appointment" button.
	13	The customer receives a confirmation notification with the details of the appointment.
	14	If the customer needs to reschedule, they can navigate to the "My Appointments" section.
	15	They select the booked appointment and choose the option to reschedule.
	16	When the user sends a cancel booking, the manager should confirm.
	17	The customer can choose another date and a time slot
Extensions	Step	Action
	1a	If the user credentials are incorrect the system displays an error message
	8a	If the customer location is not in the service area the system will reject the appointment
	15a	If the customer is not available in the time slots the system will show other dates that are available
Open Issues	1	The manager should confirm the reservation

3.Managing Customers

Name	Customer Management	
Summary	Customer can provide feedback for the services received and can request quote and contact the business	
Priority	02	
Pre-conditions	User has internet access to the system	
Post-conditions	The customer's feedback is recorded and available for review and user gets the successful message for the feedback form submission	
Primary Actors(s)	Customer	
Main Scenario	Step	Action
	1	Customer visit the website
	2	System displays the home page
	3	The customer navigates to the feedback section
	4	Customer click the feedback button
	5	After system display the feedback options
	6	Optionally customer can click on contact now button to inquire information from the business
	7	Customer select the feedback option required
	8	The customer submits their feedback.
	9	The system displays a success message to the user
	10	Records the feedback and associates it with the customers transaction history
	11	System sends a confirmation email to the customer acknowledging receipt of their feedback.
	12	System updates its website based on the feedback received.
Extensions	Step	Action
	3a	If user require to contact business
	3b	User click on get quote button
	8a	If entered details are incorrect or not in format ask to enter correctly

	8b	If email structure is invalid ask user to enter valid email address
	9a	If the submission failed display failed message
	12a	If it violate guidelines send for review

4. package manager creates, deletes, and edits packages

Use Case Name	Package Management	
Use Case Summary	Package manager will add, delete packages and edit package details	
Priority	03	
Primary Actor	Package manager	
Pre-Conditions	The package manager should be logged into the system.	
Post Conditions	Package manager can add, delete packages and edit package details	
Main Success Scenario	Step	Action
	1	Package manager login to the system using username and password
	2	The system validates login credentials
	3	The system shows a successful message to the user
	4	The package manager clicks on the “Packages”
	5	The system navigates the package manager to the package page
	6	Package manager clicks on the “add new package” button and the system displays a form to fill in new package details
	7	Package manager fill in the required information for the new package and select the “Submit” option

	8	The package manager adds a new package to the system and displays it
	9	The package manager views a package and selects the “delete” option to remove a package from the system
	10	The system displays a confirmation message and the package manager selects “yes” to confirm the deletion
	11	After the confirmation, the system permanently removes the selected package from the system
	12	Package manager view a package and select the “Edit” option to edit the details of the viewed package
	13	The system displays the form within the details of the package.
	14	After deleting, adding, edit information of the package admin select the “ save and submit option”
	15	The system displays a confirmation message, and the package manager selects “yes” to confirm the updated details
Extensions	Step	Action
	2a	If login credentials are incorrect, the system asks to re-enter login credentials
	7a/14a	If the package manager didn’t fill in some required information about the package, the system doesn’t allow to submit the form.
	7b	Package manager can cancel the package by clicking on the “cancel” option
	10a/15a	If the package manager selects “No” the system navigates to the form again
	14b	Package manager can cancel editing package by clicking on the “cancel” option

5. Managing the employees

Name	Career Management	
Summary	Managing the employees	
Priority	01	
Pre-conditions	HR manager should be logged in to the system.	
Post-conditions	Employee should receive an email confirming the registration.	
Primary Actors(s)	HR manager, customer, employee	
Main Scenario	Step	Action
	1	Registered user land to career page.
	2	The user who wants to be a employee should registered to the community first.
	3	Employee should log in to the community first.
	4	Employee should create a brief biography about him/ herself.
	5	Employee should submit the CV in desired format.
	6	Customer can filter the employees according to their needed service.
	7	Customer can book a appointment to the selected employee.
	8	HR manager logs in to the system
	9	HR manager admits the registrations of the employees
	10	HR manager admits the request of the customer.
	11	Once the assigned project done, employee should update his mark to the system.
	12	HR manager calculates the sum of the marks and do check the salary increments.
	13	HR manager generates the salary report.
Extensions	Step	Action
	3. a	System check whether entered username and password are valid or invalid.
	3. b	If invalid, the system will show an error message and ask to re-enter login credentials.
	8. a	System checks the employee already exists.
	6. b	If exists, the system will show an error message.
	10.a	Checks the employees schedule and make sure there's a vacant to the

		Employee.
	10.b	If not, Manager will inform the customer via system.

6.Managing Inventory

Name	Inventory Management	
Summary	The inventory manager ensures management of stock, ensuring optimal levels, preventing shortages, ensuring reliability.	
Priority		
Pre-conditions	Customers and Managers must register to the system.	
Post-conditions	Customers can get their inventory report and Managers can check all inventory reports.	
Primary actor(s)	Customer ,Inventory Manager	
Secondary Actor(s)	Inventory Manager	
Main Scenario	Step	Action
	1	The Inventory Manager is logged into the inventory management system.
	2	Navigates to the "Add Product" functionality in the system.
	3	Inputs necessary details for the new product, including name, description, quantity, unit of measurement, and supplier information.
	4	Assigns a category or type to the new product for organizational purposes.
	5	Inventory manager has the option to set a minimum stock level for the new product to facilitate automated reorder notifications.
	6	Saves the entered information, and the new product is now part of the inventory.
	7	The system updates the inventory database to include the new product and its associated details.
	8	Inventory manager reviews inventory reports and identifies products that are below the minimum stock threshold.
	9	Selects the option to initiate a purchase order for the identified products.
	10	Specifies the quantity needed for each product and any additional information required.
	11	The system sends the purchase order to the designated supplier.
	12	Receives a confirmation from the supplier indicating the acceptance of the order.
	13	Supplier delivers the ordered stock to the organization's warehouse.
	14	Updates the inventory system to reflect the newly received stock.

Extension	15	Stock levels and relevant information are automatically adjusted in the system.
	16	Optionally, the system generates a notification to notify relevant personnel of the successful order fulfillment.
	17	If the supplier rejects the purchase order, the system notifies the inventory manager, and the process may involve negotiating with the supplier or seeking alternative sources.
	18	Logged out from the system
	Step	Action
	1a	If user email or password is incorrect display invalid user message
	1b	Allow the user to enter new password
	3a	If entered details do not match the fields display error message

7. Project manager handling projects

Use Case Name	Project Management	
Use Case Summary	Project Manager will add, view, update and delete projects details	
Priority	03	
Primary Actor	Project Manager	
Pre Conditions	The Project Manager should be logged into the system	
Post Conditions	Project Manager can add, view, update and delete projects details	
Main Success Scenario	Step	Action
	1	Project Manager login to the system using username and password
	2	The system validates login credentials
	3	The system shows a successful message to the user

	4	The Project Manager clicks on the “Projects”
	5	The system navigates the Project Manager to the project page
	6	Project Manager clicks on the “Add New Project” button and the system displays a form to fill in new project details
	7	Project Manager fill in the required information for the new project and select the “Submit” option
	8	The Project Manager adds a new project to the system and displays it
	9	Project Manager clicks on the “View” button to view a project for get some details and select the “Delete” option for remove a project from the system being able necessary
	10	The system displays a confirmation message and the Project Manager selects “Yes” to confirm the deletion
	11	After the confirmation, the system permanently removes the selected project from the system
	12	Project Manager view a project and select the “Update” option to edit the details of the viewed project
	13	The system displays the from within the details of the project
	14	After adding, viewing, deleting and update information of the project, Project Manager select the “Save And Submit” option
	15	The system displays a confirmation message and the Project Manager selects “Yes” to confirm the updated details
Extensions	Step	Action
	2a	If login credentials are incorrect, the system asks to re-enter login credentials

	7a / 14a	If the Project Manager didn't fill in some required information about the project, the system doesn't allow to submit the form.
	10a / 15a	If the Project Manager selects "No" the system navigates to the form again
	14b	Project Manager can cancel editing package by clicking on the "cancel" option