



COMSATS University
Islamabad
Abbottabad Campus

Assignment # 02

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Reg# : SP23-BSE-058

Class: BSE-5B

Course: Software design &Architecture

Teacher: Sir Mukhtiar Zamin

Project : Ecommerce Website Documentation

User Management Use Cases – Fully Dressed

UC-UM-001:User registration

Use Case Name	User Registration
Use Case ID	UC-UM-001
Brief Description	Allows a new user to create an account by providing personal information
Primary Actor	Guest
Secondary Actors	Email Service
Stakeholders and Interests	Guest: Wants to create an account quickly and securely System: Wants to maintain data integrity and security
Preconditions	User has internet access User has valid email address
Success Guarantee	New user account is created in database User is automatically logged in Welcome message is displayed
Main Success Scenario	1. Guest navigates to registration page 2. System displays registration form 3. Guest enters name, email, and password 4. Guest submits registration form 5. System validates input data 6. System creates user record in DB 7. System generates JWT and sets HTTP-only cookie 8. System displays welcome message 9. System redirects to dashboard
Extensions	5a. Email already exists: - 5a1. System shows "Email already registered" - 5a2. Return to step 3 5b. Invalid email format: - 5b1. System shows "Invalid email format" - 5b2. Return to step 3 5c. Password too weak: - 5c1. Show requirements - 5c2. Return to step 3

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Use Case Name	User Registration
Special Requirements	Password must be at least 8 characters Email validation required HTTPS encryption
Technology & Data Variations	Web browser interface Mobile responsive design Database: MongoDB/PostgreSQL
Frequency of Occurrence	Multiple times daily
Miscellaneous	Consider CAPTCHA Email verification may be added

UC-UM-002:User Login

Use Case Name	User Login
Use Case ID	UC-UM-002
Brief Description	Authenticates existing users using email and password
Primary Actor	Registered User
Secondary Actors	—
Stakeholders and Interests	User: Wants to access their account securely System: Verifies identity to prevent unauthorized access
Preconditions	User has a registered email and password
Success Guarantee	User is logged in JWT token is issued and stored
Main Success Scenario	1. User opens login page 2. Enters email and password 3. Submits form 4. System checks credentials 5. On success, system generates token and logs in 6. User is redirected

Use Case Name	User Login
Extensions	4a. Wrong credentials: - 4a1. Show "Invalid login" - 4a2. Return to step 2
Special Requirements	Secure password handling Token must be HTTP-only
Technology & Data Variations	Browser login form Mobile version Database query to match credentials
Frequency of Occurrence	Frequently throughout day
Miscellaneous	Implement login attempt limits

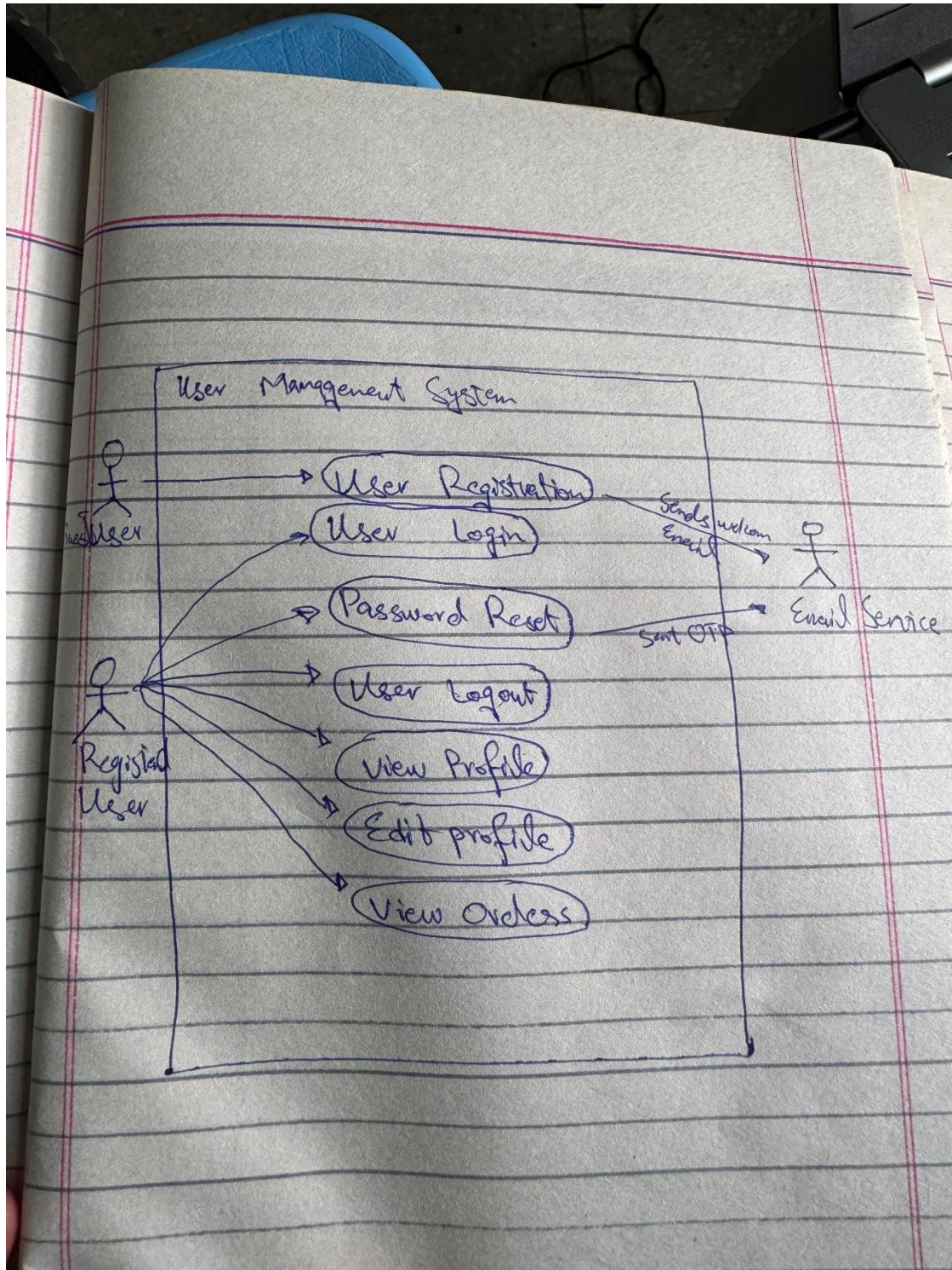
UC-UM-003:Password Reset

Use Case Name	Password Reset
Use Case ID	UC-UM-003
Brief Description	Allows a user to reset their password using OTP sent via email
Primary Actor	Registered User
Secondary Actors	Email Service
Stakeholders and Interests	User: Wants to regain access to their account System: Ensures secure password recovery
Preconditions	User has access to registered email
Success Guarantee	Password is successfully updated User can log in with new password
Main Success Scenario	1. User goes to "Forgot Password" 2. Enters email 3. System sends OTP 4. User enters OTP + new password 5. System verifies OTP

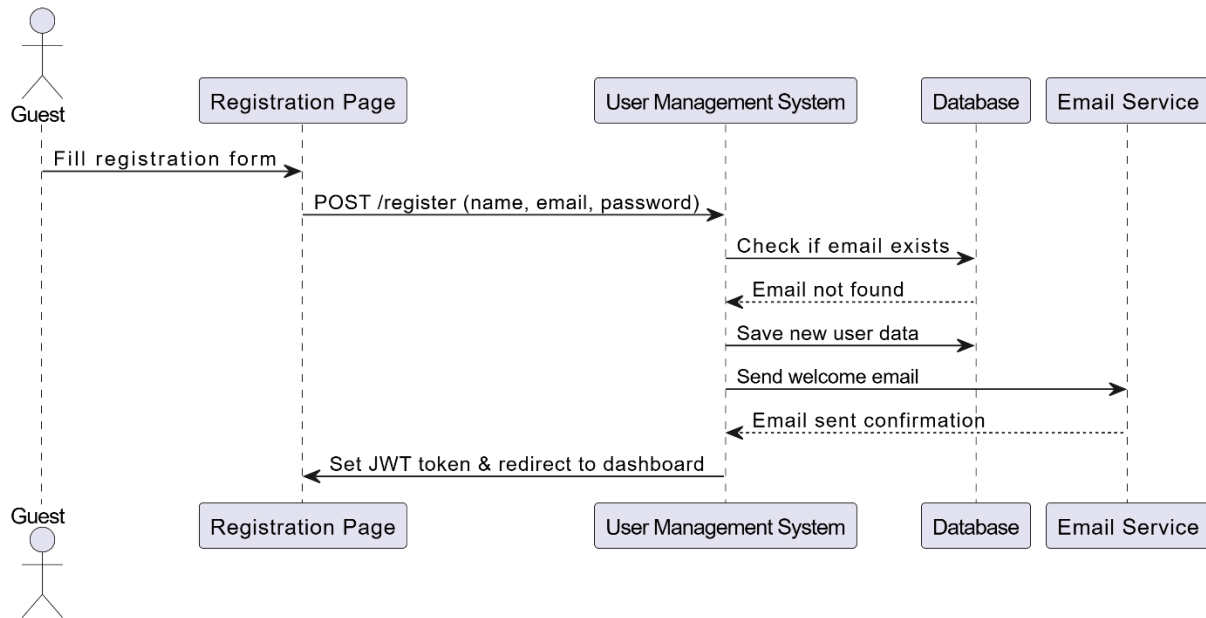
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Use Case Name	Password Reset
	6. Password is hashed and updated 7. Confirmation message shown
Extensions	3a. Invalid email: - Show error- Return to step 2 5a. Wrong or expired OTP: - Show error- Retry or resend
Special Requirements	OTP expires in limited time Password encryption OTP uniqueness
Technology & Data Variations	Email service for OTP OTP DB collection Form validation on client
Frequency of Occurrence	Occasionally
Miscellaneous	Consider rate-limiting May add security questions in future

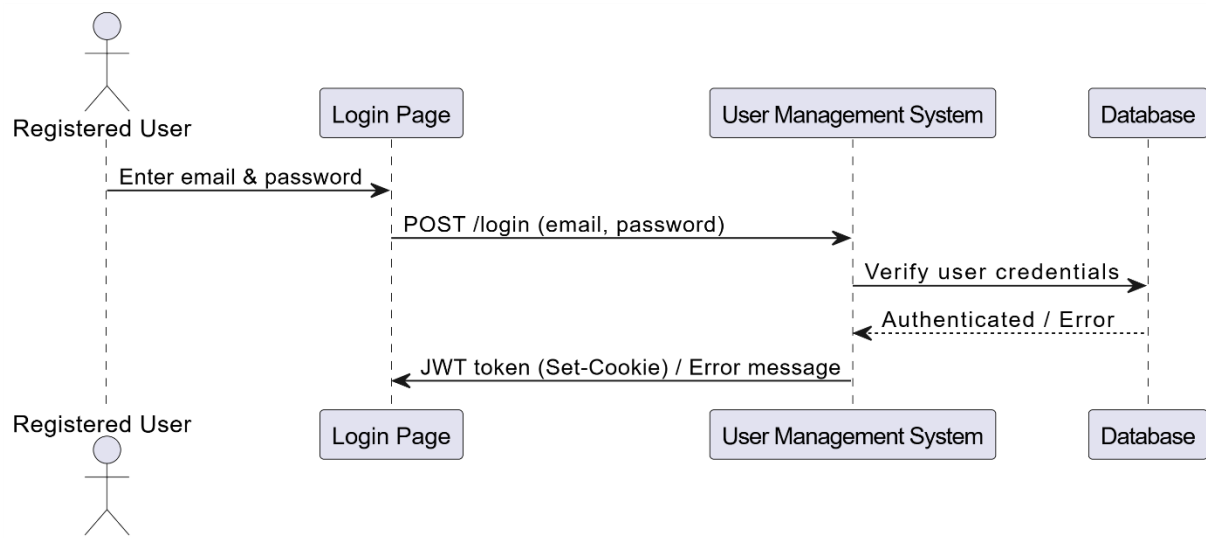
Full-UseCase Diagram



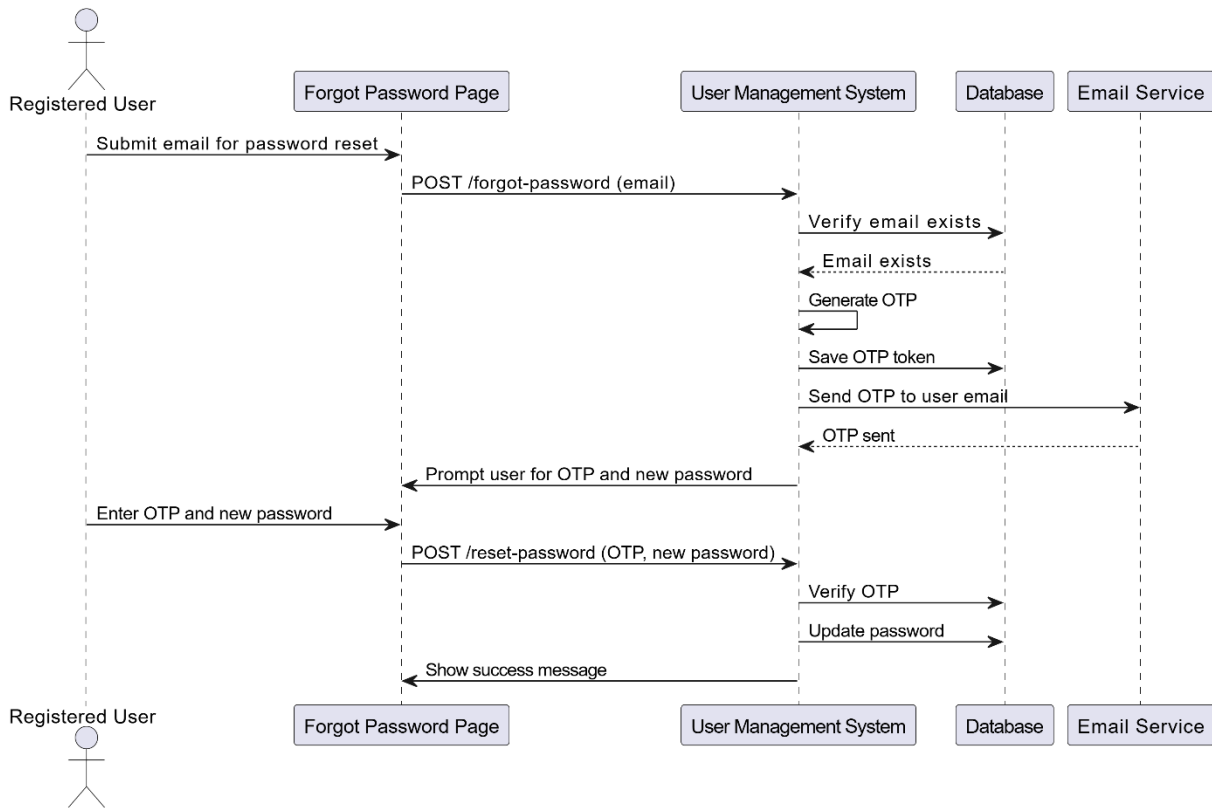
System Sequence Diagram – **User Registration:**



System Sequence Diagram – User Login

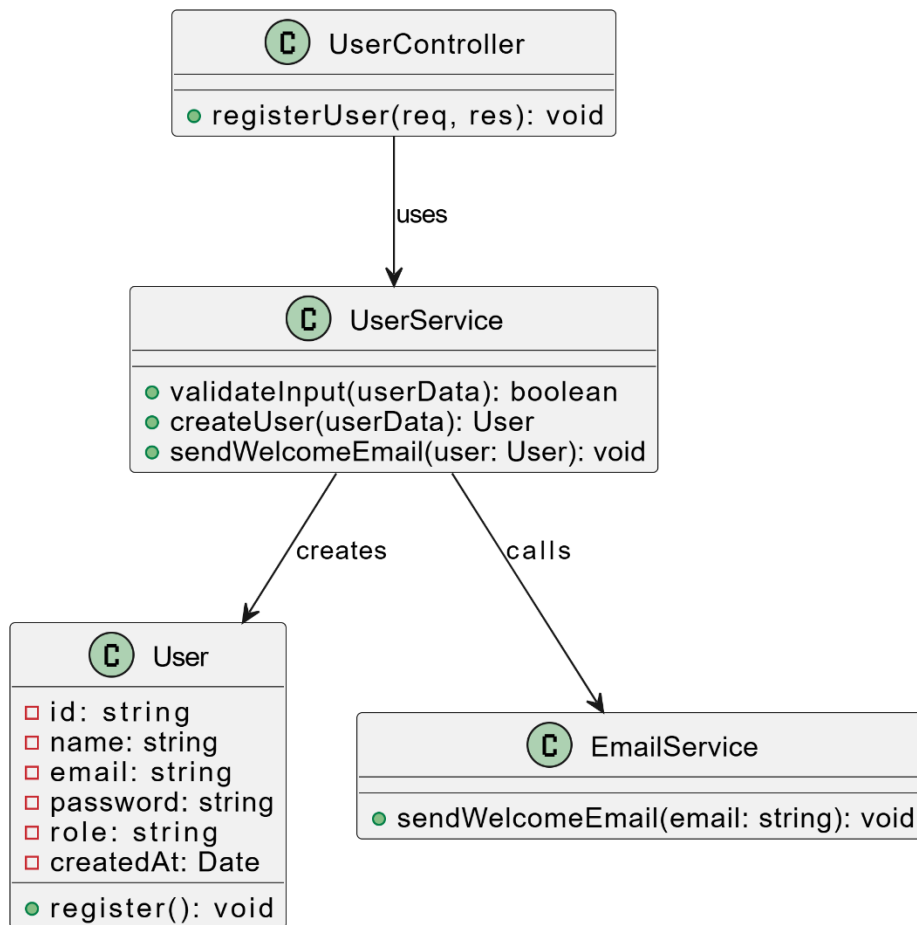


System Sequence Diagram – Password Reset (Forgot Password):

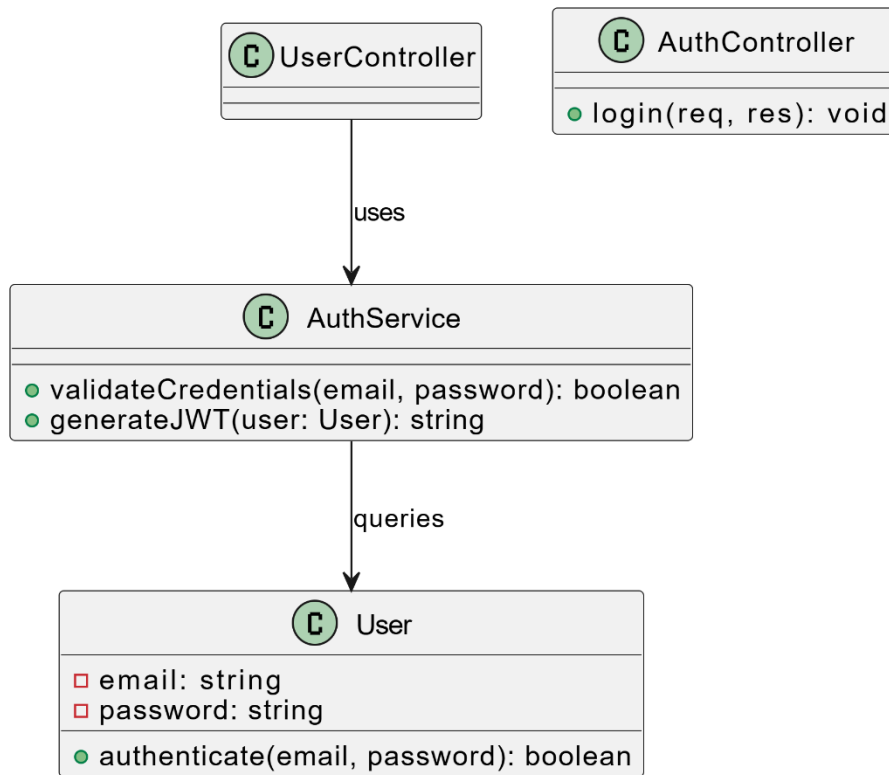


ClassDiagrams

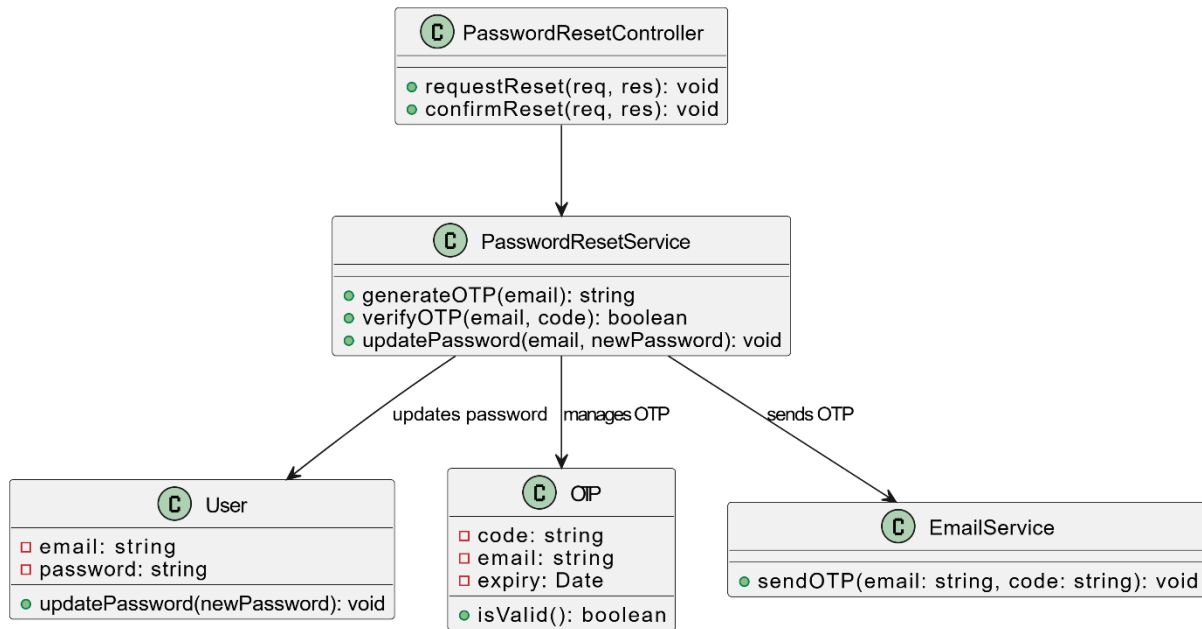
Class Diagram – User Registration



Class Diagram – User Login:

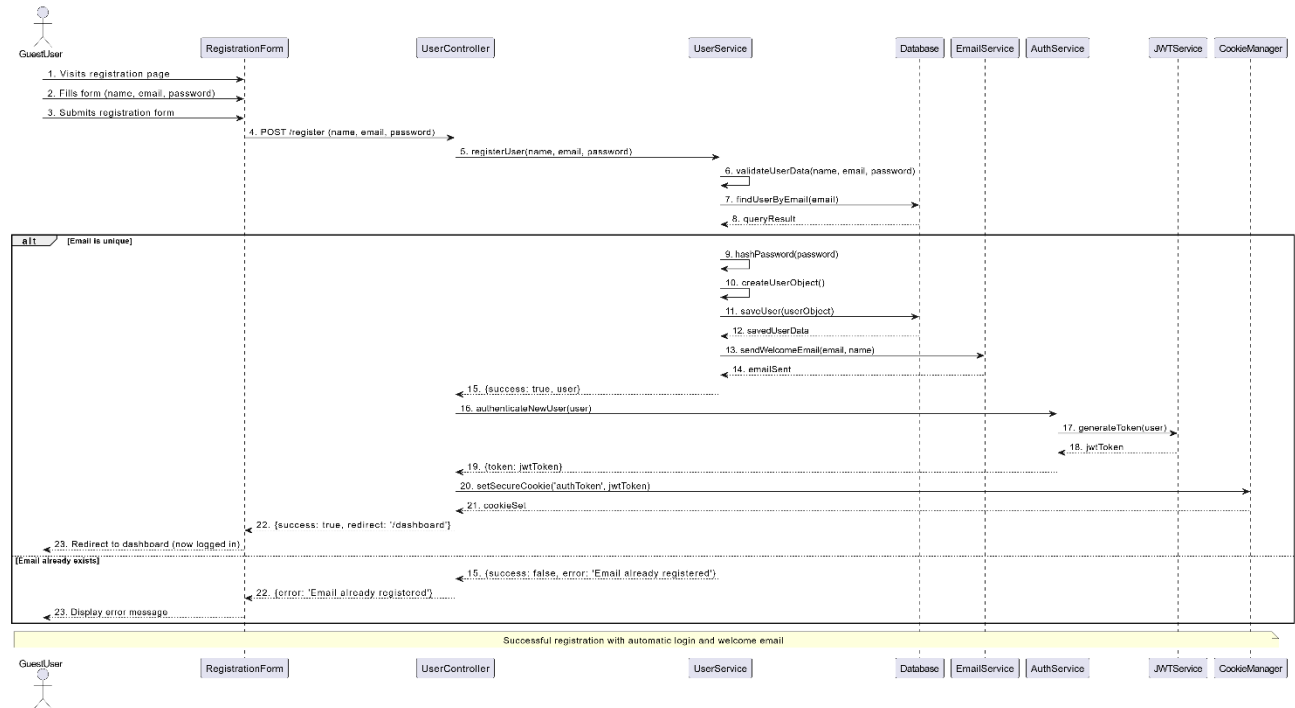


Class Diagram – Password Reset (Forgot Password)

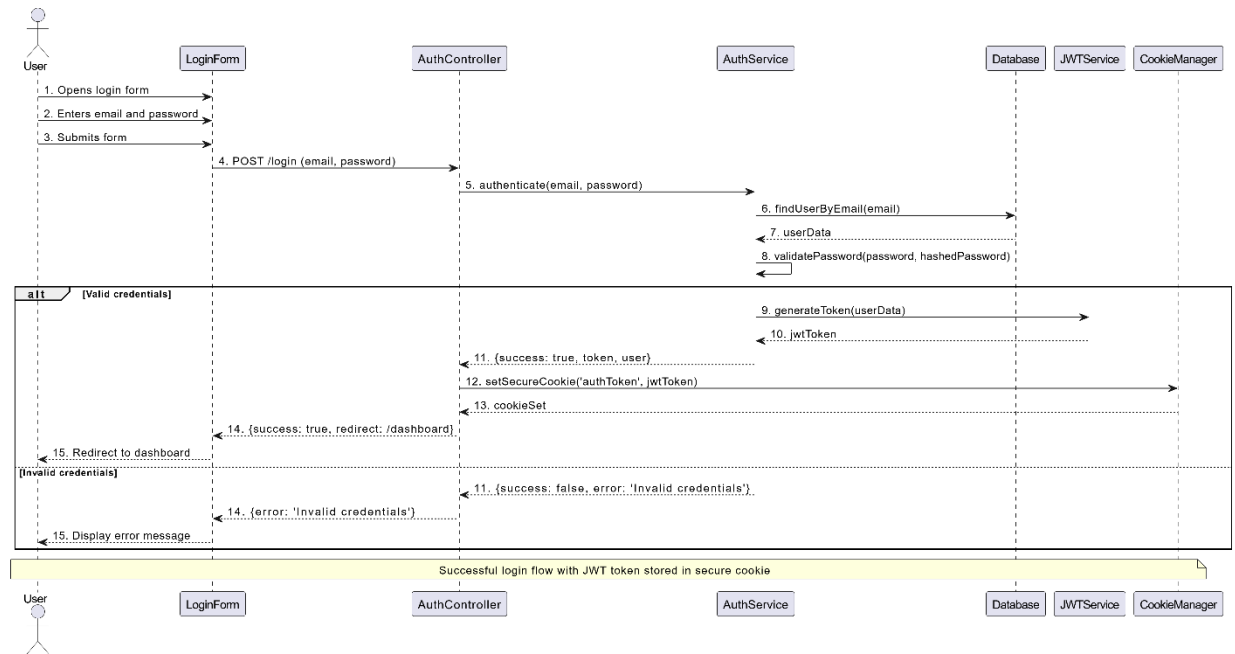


Communication diagrams

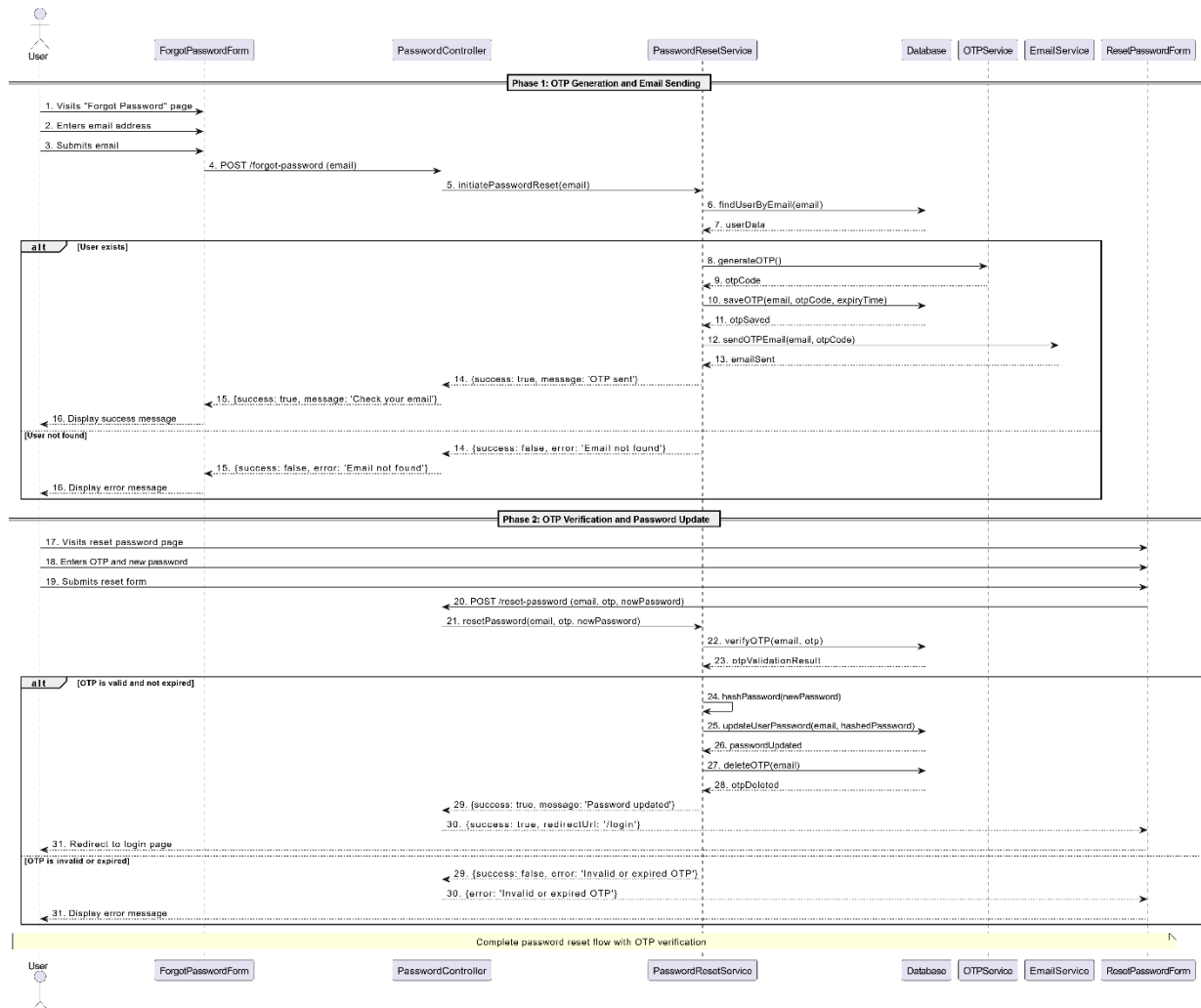
Communication-Diagram – User Registration:



Communication Diagram – user login



Communication Diagram – Password Reset:



Product Management Use Cases – Fully Dressed

UC-PM-001: Add New Product

Use Case Name	Add New Product
Use Case ID	UC-PM-001
Brief Description	Allows an admin to add a new product to the catalog
Primary Actor	Admin
Secondary Actors	—
Stakeholders and Interests	Admin: Wants to add products efficiently System: Ensures product info is correct and complete
Preconditions	Admin is authenticated and authorized
Success Guarantee	Product is stored in the database and becomes available for users
Main Success Scenario	1. Admin opens "Add Product" form 2. Enters product details (name, price, stock, etc.) 3. Uploads images 4. Submits the form 5. System validates inputs 6. System saves product to DB 7. Product is shown in listings
Extensions	5a. Missing/invalid fields:

Use Case Name	Add New Product
	- Show error messages- Return to step 2
Special Requirements	Image upload support Unique product name validation
Technology & Data Variations	Web form Database: Product table/collection Image storage service
Frequency of Occurrence	Occasionally (by admin)
Miscellaneous	Support multiple categories and brands

UC-PM-002:Edit Product

Use Case Name	Edit Product
Use Case ID	UC-PM-002
Brief Description	Allows an admin to update product details
Primary Actor	Admin
Secondary Actors	—
Stakeholders and Interests	Admin: Wants to fix/update product data System: Ensures data is consistently updated
Preconditions	Admin is logged inProduct exists
Success Guarantee	Product is updated in the database
Main Success Scenario	1. Admin selects product 2. Enters new values 3. Submits update 4. System validates inputs 5. System saves changes 6. Confirmation shown
Extensions	4a. Invalid update: - Show error - Return to step 2

Use Case Name	Edit Product
Special Requirements	Restrict editing of some fields (e.g., ID)
Technology & Data Variations	Inline edit form Rich-text support for description
Frequency of Occurrence	Occasionally
Miscellaneous	Include edit history (optional)

UC-PM-003:Delete Product

Use Case Name	Delete Product
Use Case ID	UC-PM-003
Brief Description	Allows an admin to remove a product from the catalog
Primary Actor	Admin
Secondary Actors	—
Stakeholders and Interests	Admin: Wants to clean or manage inventory System: Ensures data integrity
Preconditions	Admin is authenticated
Success Guarantee	Product is removed from listings and database
Main Success Scenario	1. Admin views product list 2. Clicks delete on a product3. System confirms action4. Admin confirms5. System deletes product6. Product is no longer listed
Extensions	3a. Admin cancels deletion: - Return to list
Special Requirements	Confirm dialog Soft delete option (optional)

Use Case Name	Delete Product
Technology & Data Variations	Database record deletion Archiving instead of delete
Frequency of Occurrence	Rare
Miscellaneous	Log deleted products for audit

UC-PM-004:View Product List

Use Case Name	View Product List
Use Case ID	UC-PM-004
Brief Description	Displays all available products to admin and users
Primary Actor	Admin, User
Secondary Actors	—
Stakeholders and Interests	User: Wants to browse options Admin: Monitors product availability
Preconditions	Products exist in DB
Success Guarantee	Product list is fetched and shown properly
Main Success Scenario	1. Actor visits product page 2. System fetches product list 3. System displays list with info (price, stock, name)
Extensions	2a. No products available: - Show "No products found"
Special Requirements	Pagination Sorting and filter options

Use Case Name	View Product List
Technology & Data Variations	REST API fetch Frontend grid/list views
Frequency of Occurrence	Constant
Miscellaneous	Optimize for performance with lazy loading

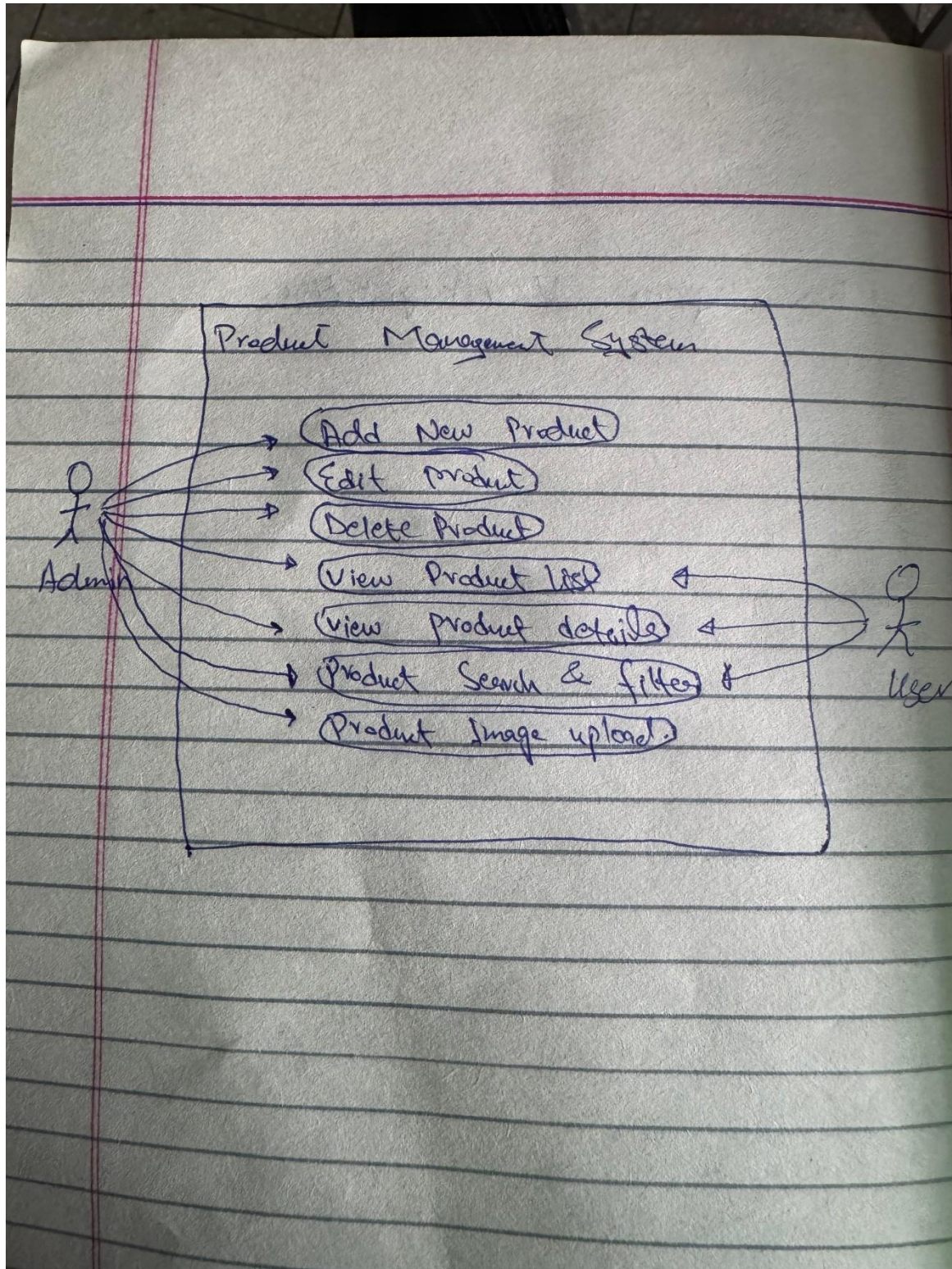
UC-PM-005:Product Search and Filter

Use Case Name	Product Search and Filter
Use Case ID	UC-PM-007
Brief Description	Allows users/admin to search and filter products based on keywords, category, price, brand, etc.
Primary Actor	User, Admin
Secondary Actors	—
Stakeholders and Interests	User/Admin: Wants to quickly find relevant products System: Provides fast and accurate filtering
Preconditions	Product catalog is available
Success Guarantee	Filtered or searched products are returned based on user input
Main Success Scenario	1. User/admin enters search term or selects filter options (e.g. category, brand) 2. System parses input 3. System queries database with filters 4. Matching products are displayed
Extensions	4a. No results found: - Show "No matching products found" message
Special Requirements	Support for fuzzy search

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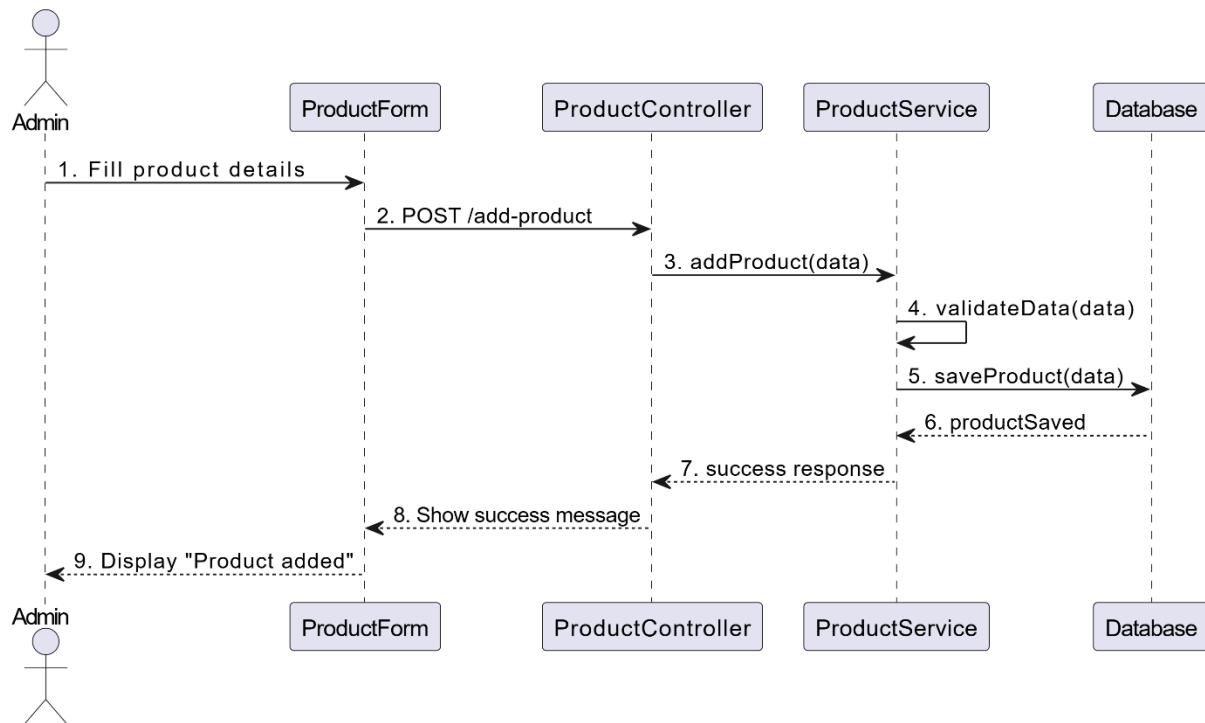
Use Case Name	Product Search and Filter
	Multi-filter combinations Client-side and/or server-side filtering
Technology & Data Variations	Search via text input Filter via dropdowns or checkboxes Backend query with search params
Frequency of Occurrence	Constant
Miscellaneous	Add autocomplete for search bar Filter tags can be dynamically removable

Full usecase diagram:

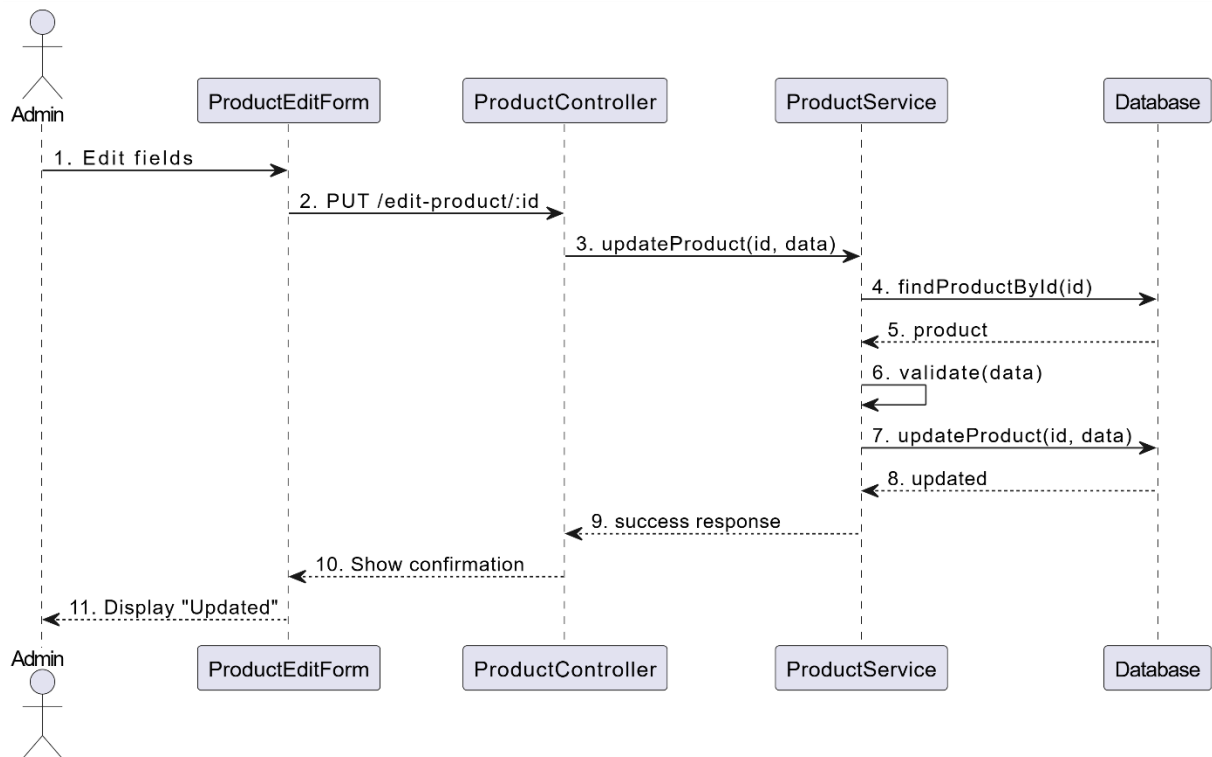


System Sequence diagrams

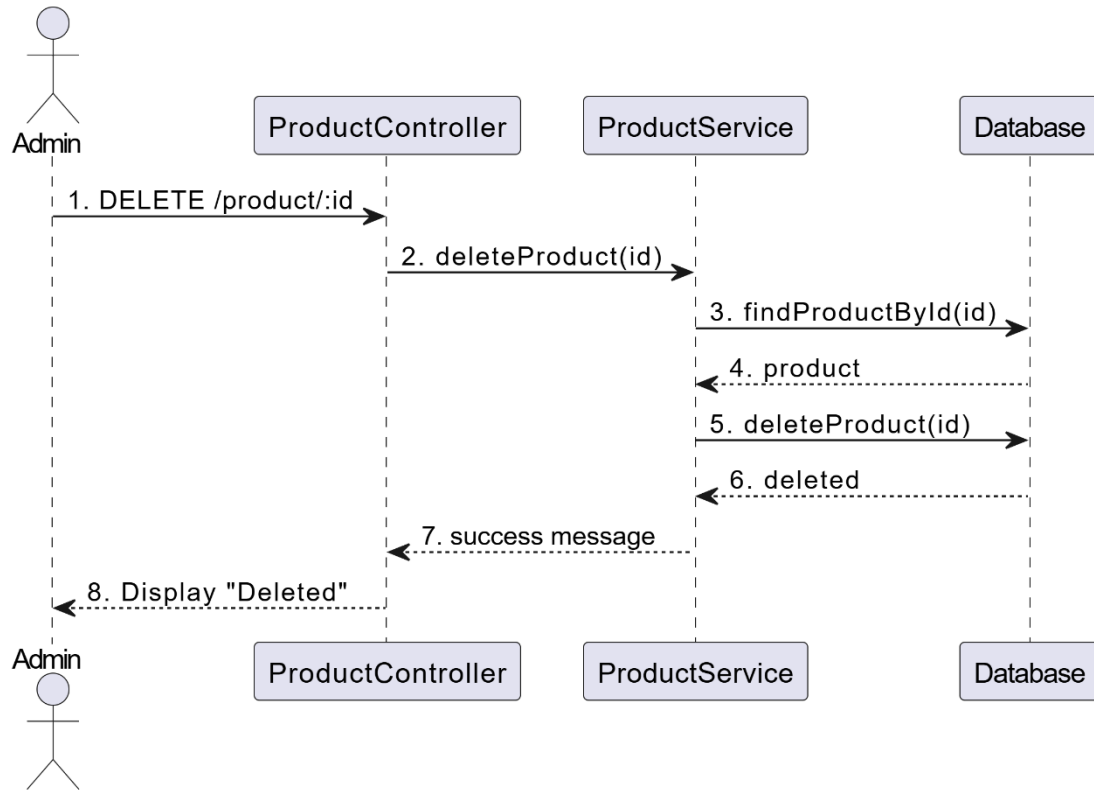
SSD: Add Product



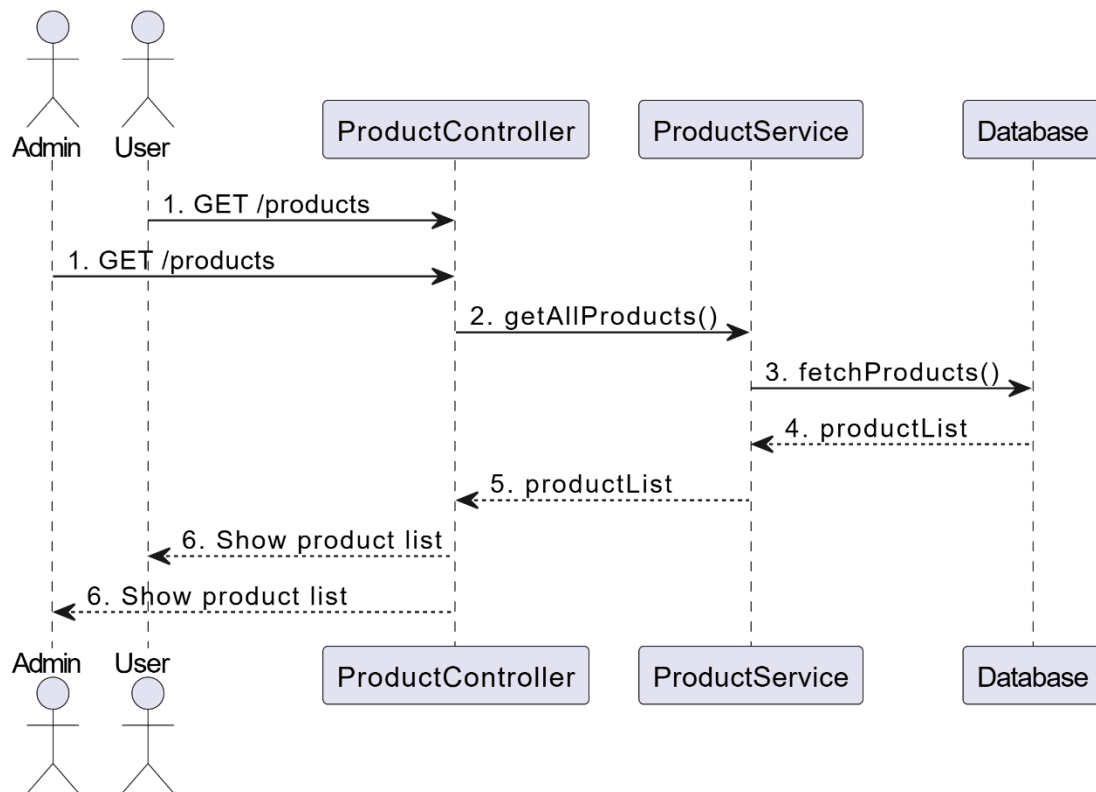
SSD:EditProduct:



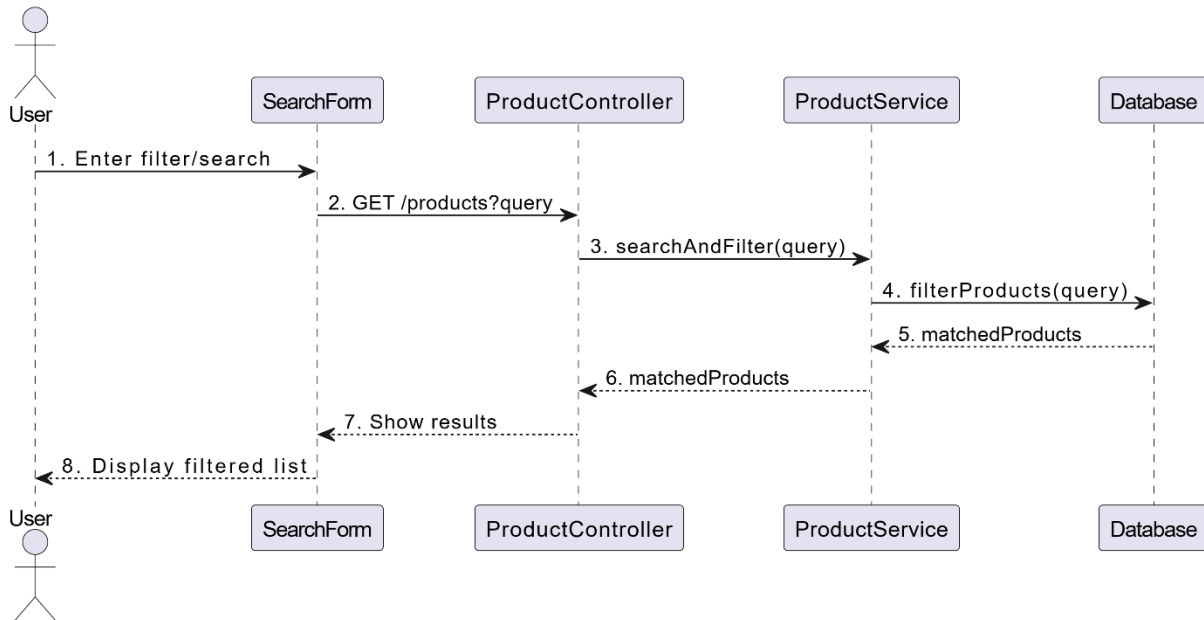
SSD:DeleteProduct:



SSD:ViewProduct List:

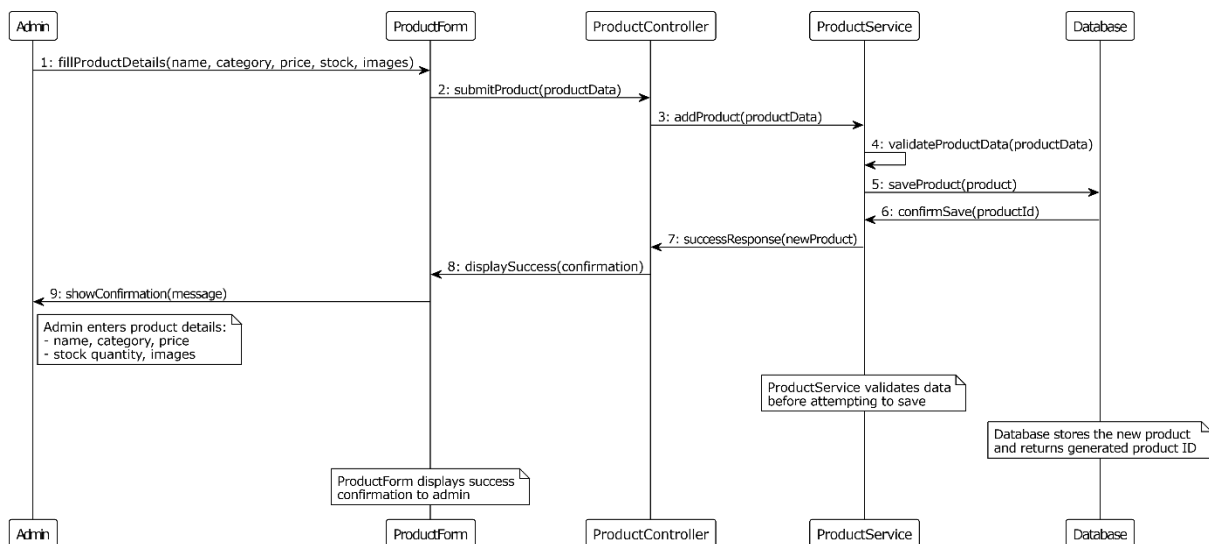


SSD:Product Search and Filter:

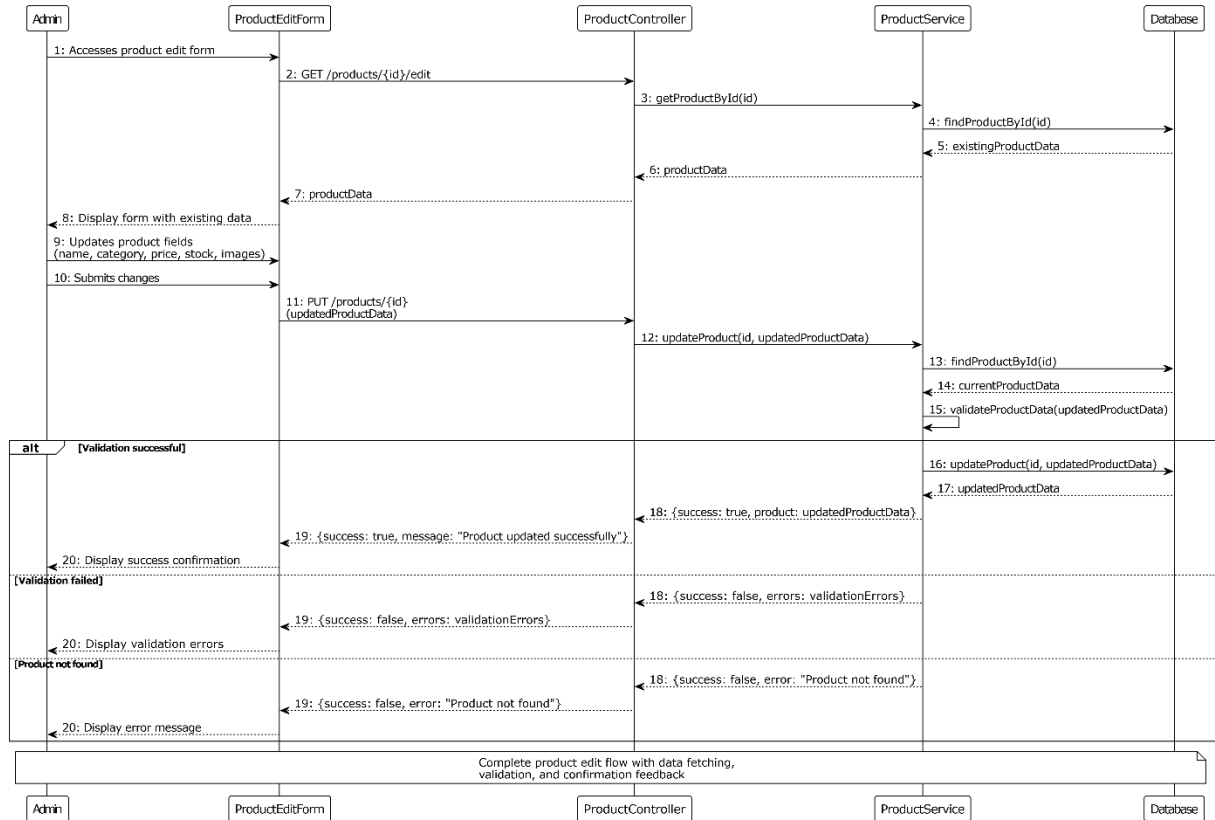


CommunicationDiagram:

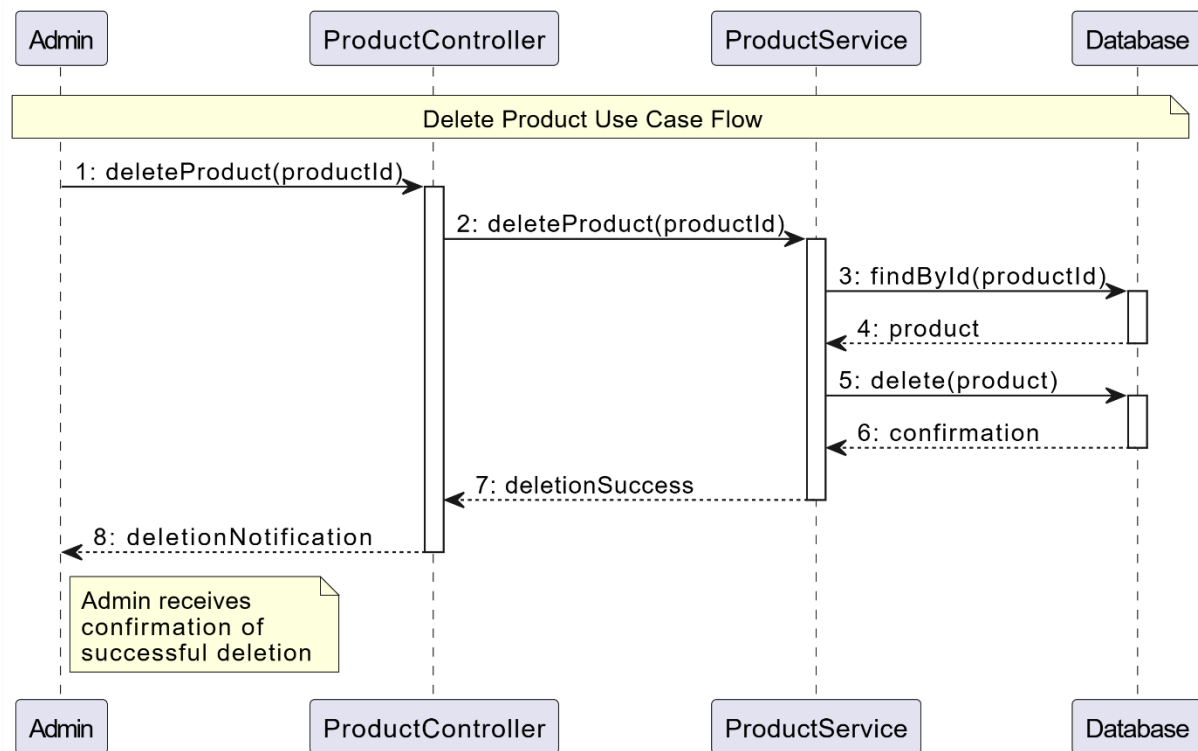
Add Product- communication Diagram



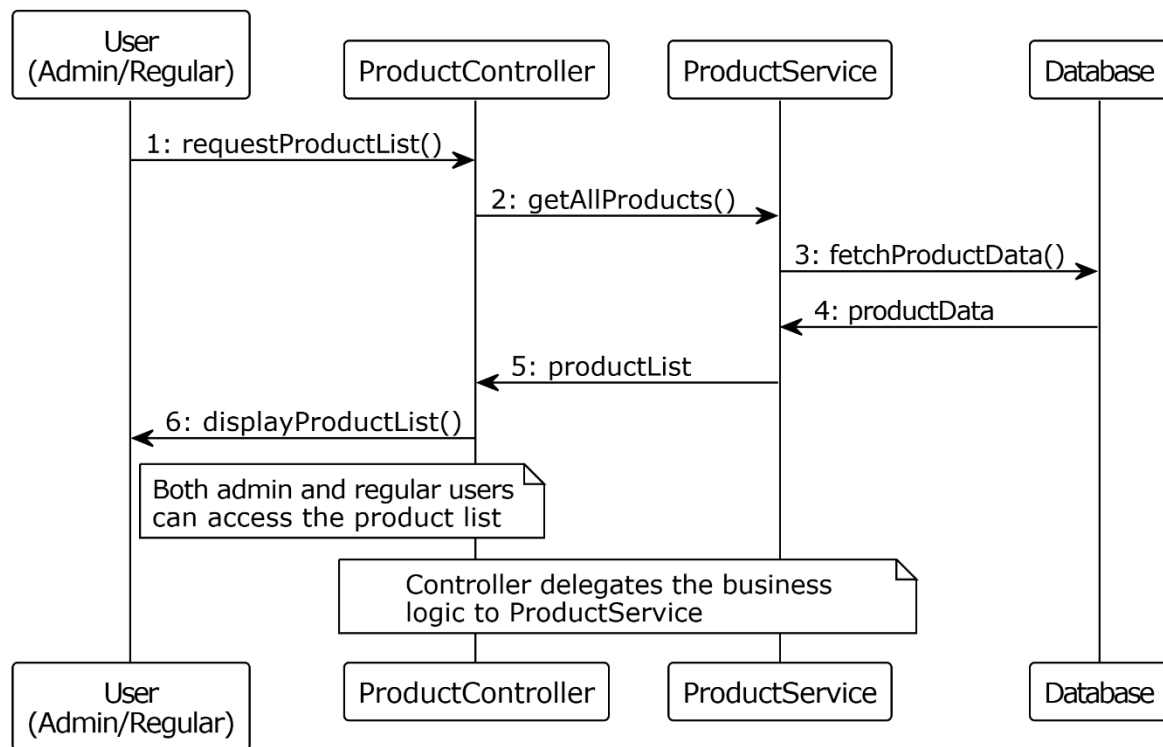
Edit Product- Communication Diagram:



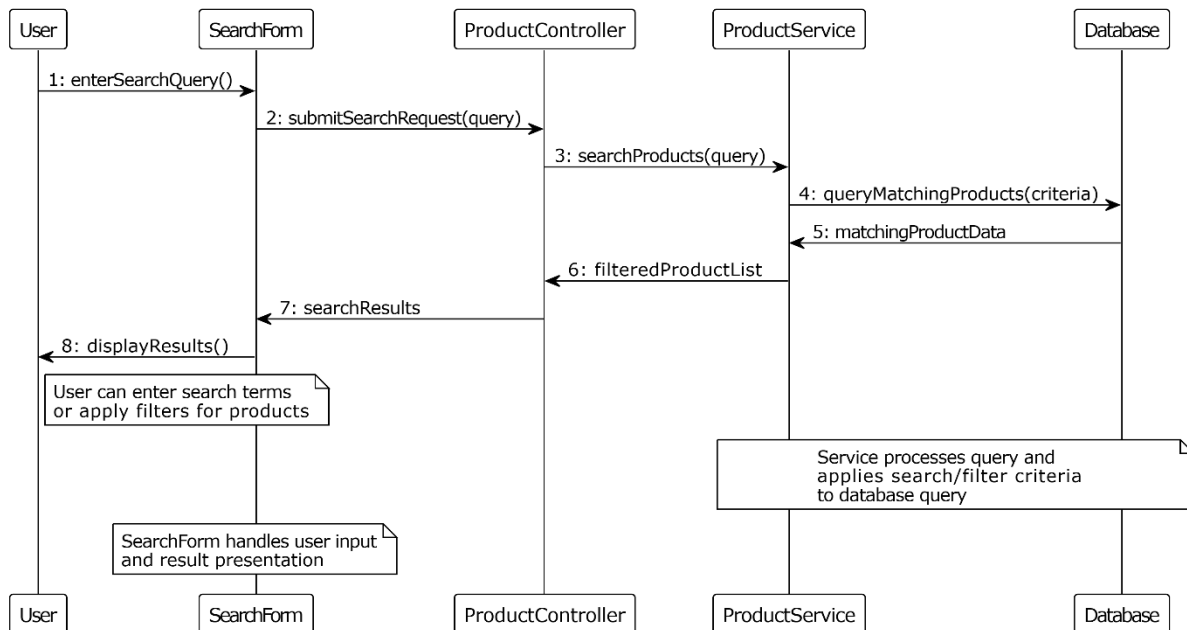
DeleteProduct- CommunicationDiagram:



View Product_List Communication Diagram:



ProductSearch and Filter - Communication Diagram



ClassDiagram : productManagement System:

