**User Flow:**

1. **User Registration and Login:**
   1. **User Registration:** - Users can access the registration page by clicking on the "Register" link. - They fill in the required information, such as username, password, and role (admin or user). - Upon successful registration, users are redirected to the login page.
   2. **User Login:** - Registered users can access the login page by clicking on the "Login" link. - They enter their username and password. - Upon successful login, admin users are redirected to the admin dashboard, while regular users are redirected to their respective user dashboard.
2. **Admin User Flow:**
3. **Admin Dashboard:** - After logging in, admin users are taken to the admin dashboard. - The admin dashboard provides navigation links to various management sections, such as clients, issuers, fees, products, mappings, and interchange fees.
4. **Manage Clients:** - Admin users can click on the "Manage Clients" link to access the client management page. - They can view the list of existing clients. - They can add a new client by clicking on the "Add Client" button and filling in the required information in the add client form. - They can edit an existing client by clicking on the "Edit" button next to the client and updating the information in the edit client form. - They can delete a client by clicking on the "Delete" button next to the client.
5. **Manage Issuers:** - Admin users can click on the "Manage Issuers" link to access the issuer management page. - They can view the list of existing issuers. - They can add a new issuer by clicking on the "Add Issuer" button and filling in the required information in the add issuer form. - They can edit an existing issuer by clicking on the "Edit" button next to the issuer and updating the information in the edit issuer form. - They can delete an issuer by clicking on the "Delete" button next to the issuer.
6. **Manage Fees:** - Admin users can click on the "Manage Fees" link to access the fee management page. - They can view the list of existing fees. - They can add a new fee by clicking on the "Add Fee" button and filling in the required information in the add fee form. - They can edit an existing fee by clicking on the "Edit" button next to the fee and updating the information in the edit fee form. - They can delete a fee by clicking on the "Delete" button next to the fee.
7. **Manage Products:** - Admin users can click on the "Manage Products" link to access the product management page. - They can view the list of existing products. - They can add a new product by clicking on the "Add Product" button and filling in the required information in the add product form. - They can edit an existing product by clicking on the "Edit" button next to the product and updating the information in the edit product form. - They can delete a product by clicking on the "Delete" button next to the product.
8. **Map Client-Product-Fees:** - Admin users can click on the "Map Client-Product-Fees" link to access the mapping page. - They can create a new mapping by selecting a client, product, fee, unit price, start date, and end date from the respective dropdown menus and filling in the required information in the mapping form. - They can submit the form to save the mapping.
9. **Manage Interchange Fees:** - Admin users can click on the "Manage Interchange Fees" link to access the interchange fee management page. - They can view the list of existing interchange fees. - They can add a new interchange fee by selecting a client, entering the start date, end date, interchange amount, and minimum interchange amount in the interchange fee form. - They can submit the form to save the interchange fee.
10. **Invoice Generation Flow:**
11. **Access Invoice Generation Page:** - Admin users can click on the "Generate Invoice" link to access the invoice generation page.
12. **Select Client and Date Range:** - Admin users select a client from the dropdown menu. - They specify the start and end dates for the invoice using the date input fields.
13. **Enter Units for Dynamic Fees (if applicable):** - If the selected client has dynamic fees, admin users are prompted to enter the units for each dynamic fee. - They fill in the units for each dynamic fee in the respective input fields.
14. **Generate Invoice:** - Admin users click on the "Generate Invoice" button to submit the form. - The system retrieves the applicable fees for the selected client and date range. - It calculates the fee amounts based on the fee type and frequency. - If applicable, it calculates the interchange fee based on the provided interchange amount, minimum interchange amount, and interchange share percentage. - The system generates the invoice with line items, tax calculations, and total amounts.
15. **View and Download Invoice:** - The generated invoice is displayed in the browser. - Admin users can view the invoice details, including line items, tax calculations, and total amounts. - They have the option to download the invoice as a PDF file by clicking on the "Download Invoice" button.
16. **User Invoice History:**
17. **Access Invoice History Page:** - Regular users can click on the "Invoice History" link to access their invoice history page.
18. **View Invoice History:** - The invoice history page displays a list of generated invoices specific to the logged-in user's associated client. - Users can view the basic details of each invoice, such as the invoice number, date, and total amount.
19. **View and Download Invoice:** - Users can click on an invoice from the history to view its detailed information. - They can see the invoice details, including line items, tax calculations, and total amounts. - They have the option to download the invoice as a PDF file by clicking on the "Download Invoice" button.