CR2980
System Proposal

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System Request (Provided by Client)

- Request made by Taylor Insurance
- Creation of minimalistic, mobile-friendly website/interface to allow new customers to register for policies, and existing customers to manage/view/cancel their current policies, or quote new policies
- Website design should be centered around ease of use

Workplan (Project Timeline)

Phase	**Description**	**Duration**
Requirement Gathering:	Meet with client company to discuss project requirements. Build requirements document and confirm requirements with client.	**1 Weeks (February 3 - February 10)**
System Design:	Using the completed system requirements document, create UML diagrams and an overall plan of the systems architecture. Here we will decide what tech stack will be used to create the solution.	**2 Weeks (February 10 - February 24)**
Development	Following the created plan, split into teams to develop the overarching system. I, Jason Somerton-Earle will manage the individuals, insuring proper communication and that the timeline will be met Our senior frontend developer Patrick, will champion the frontend of the website. Lucas will lead the backend team, and John-Michael will handle the connection of the frontend	**6 Weeks (February 24 - April 7)**

	and backend.	
Testing	Creation of Unit testing, integration testing, and user acceptance testing. Patrick will handle frontend testing, while Lucas will be in charge of backend.	**2 Weeks (April 7 - April 21)**

Website Design Wireframe and Console Quoting Application - End of February

Project Delivered - End of April/May.

Requirements (Non-Functional)

Operational:

- System comprised of a single website and REST API controller.
- Ability for new customers to create a profile and receive a policy quote via website.
- Ability for existing customers to login to website and view, renew and cancel current policies, and purchase new policies.
- Website must be mobile friendly.

Performance:

- Smooth and efficient operation with minimal runtime.
- Ability to store/handle 15,000 customers with 50% scalability.

Security:

- Customer data to be stored on a centralized server.
- Usernames and passwords must meet standard length and complexity requirements.

Cultural:

- System built with ability to transition into French in the future with no upkeep.

Design

- Minimalist design with modern color scheme.

Requirements (Functional)

Platform Requirements:

- Website to be built with Java or JavaScript framework.

- Relational, SQL compliant database.
- Branding, logo and color schemes will be provided by Taylor Insurance.

Core Functionality:

- Customer Functionality:
    - Login/register new user
    - Edit user profile
    - Quote a policy (new or existing customers)
    - Renew/cancel a policy (policy can be renewed or canceled manually during the last month of coverage. Inaction will result in auto-renewal)
    - Contact service rep (web form and clickable phone number)
    - Admin accounts will have the same functionality as customer accounts, with added functionality to update rating factors, or view the following reports on policies or quotes:
        - Reports by policy type (home/auto)
        - Premiums sorted by year
        - Additional reports to be determined by Taylor Insurance
- API Functionality:
    - Create new user
    - Edit existing user profile
    - Quote a policy for new and existing customers
    - Renew existing policy (within 2 months of expiry)
    - Cancel existing policy
    - Handle report data sets - Reports to be determined by Taylor Insurance
- Infrastructure Requirements:
    - Customer website can be built in any JavaScript framework or Java via Spring
    - API must be a Spring REST API
    - Hosting of final project on AWS will result in bonus marks
- Business Requirements:
    - Policy Properties:
        - Single insured person
        - Start/end date (policies last 1 year)
        - Base premium, 15% HST and Total Premium
        - Either a home or auto policy
        - Policies auto renew after 1 year
            - Quote will be generated with 1 month remaining to the policy, and auto purchased if there is no user input
    - Home Policy Properties:
        - Single residence with the following properties (risk factors):
            - Age of home
            - Type of dwelling (standalone, bungalow, attached, etc..)
            - Heating type (oil, electric, heat pump, mini split, etc..)
            - Location (urban/rural)
        - Actual cost value (home value)

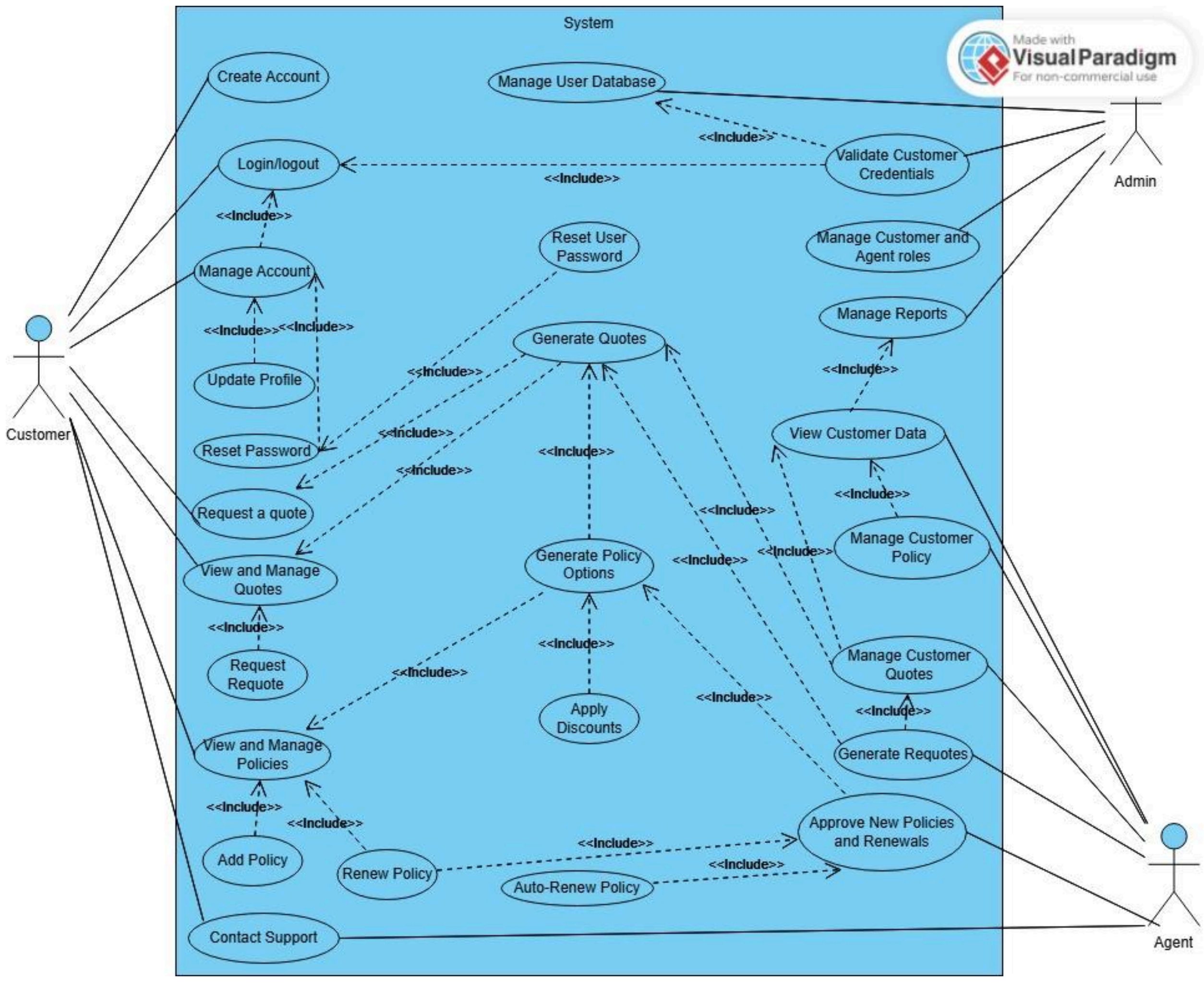
    - Liability limit/deductible for harm caused on property
    - Contents insurance limit & deductible (not used in calculations)
  - Auto Policy Properties:
    - Insured person is main driver
      - Age, number of accidents in last 5 years (risk factors)
      - Address
    - Vehicle make/model/year
  - Customers with bundle home/auto insurance get 10% off both policies
    - Note: premiums are static and fixed for 1 year - if one policy expires, the 10% discount still applies to the active policy until it's expiry/renewal
  - A customer can have up to 3 active policies (1 home and 2 auto)
  - Premium risk rates can be updated via retrieving rates from a web service
  - Accident records must have a date and at fault driver (assume there is only one driver at fault)
    - Assume only the single insured person can get in an accident

Premium Ratings (Susceptible to change)

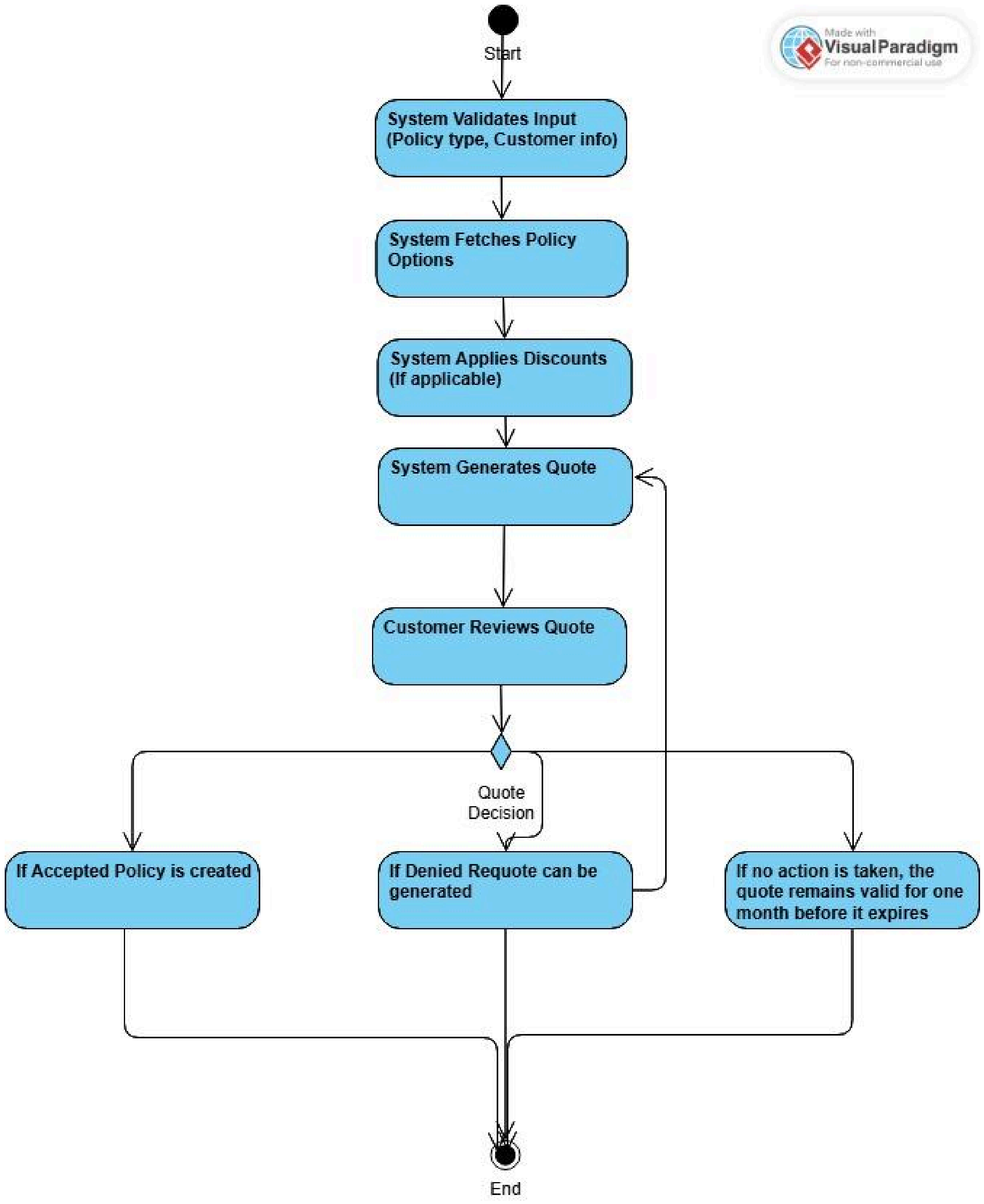
- Home Insurance Premium:
  - Base Premium: $500
  - Home value factor: 0.2% of home value above $250,000
  - Liability Limit Factor: $1M: 1.0, $2M: 1.25
  - Home Age Factor: >25 years old: 1.25; >50 years old: 1.5; all others: 1
  - Heating Factor: oil heat: 2.0; wood heat: 1.25; all other: 1
  - Location Factor: urban: 1.0; rural: 1.15
  - Discount factor: 0.9 if active Auto Policy
  - **Premium calculation: Base * All Factors * Tax Rate**
- Auto Insurance Premium:
  - Base Premium: $750
  - Driver Age Factor: <25 years old: 2; otherwise: 1
  - Accidents: >2 accidents in last 5 yrs: 2.5; 1 accident in last 5 yrs: 1.25; otherwise: 1
  - Vehicle: Car >10 years old: 2; Car >5 years old: 1.5; otherwise: 1
  - Discount factor: 0.9 if active Home Policy
  - **Premium calculation: Base * All Factors * Tax Rate**

Functional Models

Use Case Diagram



Quote Activity Diagram



Start
System Validates Input (Policy type, Customer info)
System Fetches Policy Options
System Applies Discounts (If applicable)
System Generates Quote
Customer Reviews Quote
Quote Decision
If Accepted Policy is created
If Denied Requote can be generated
If no action is taken, the quote remains valid for one month before it expires
End
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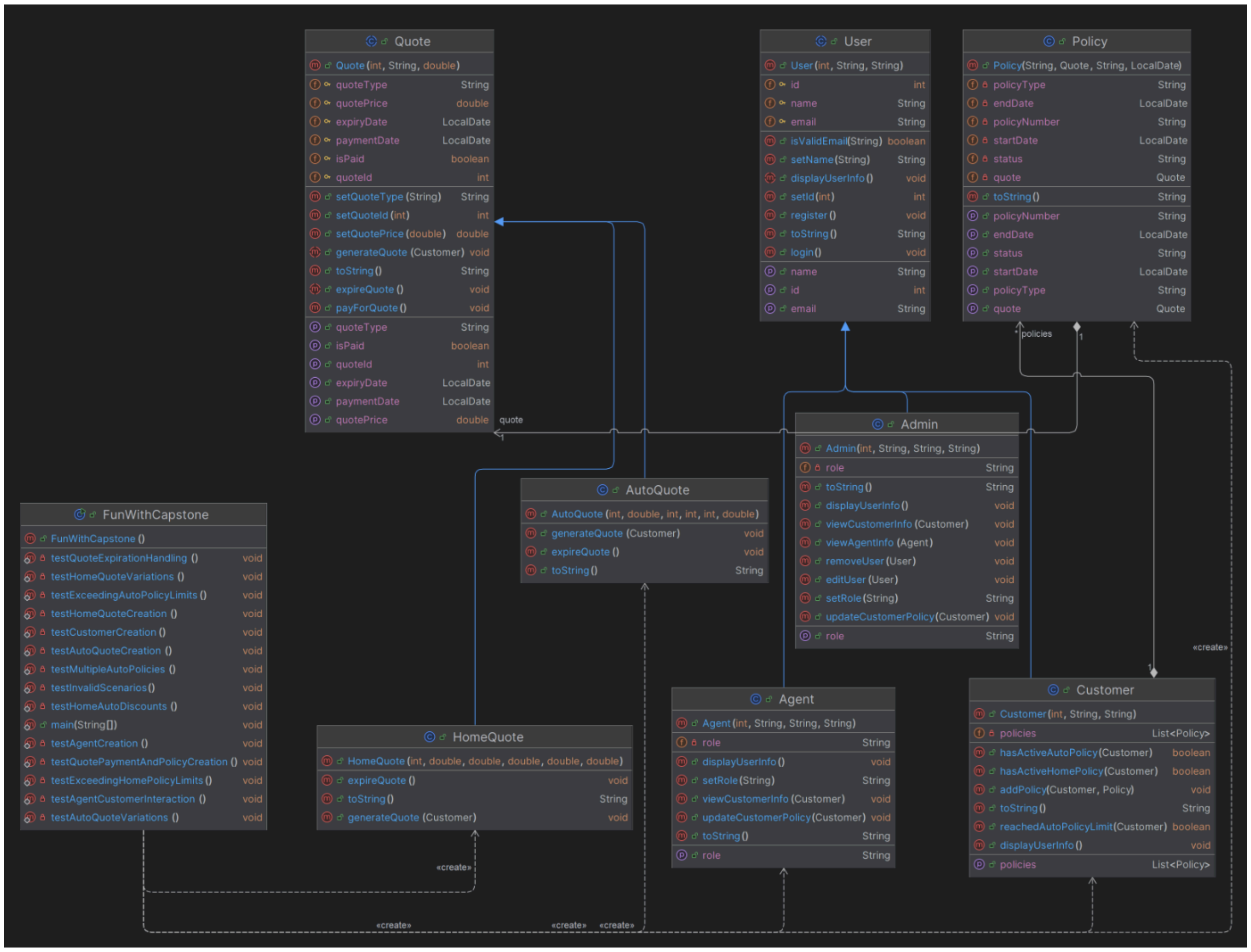
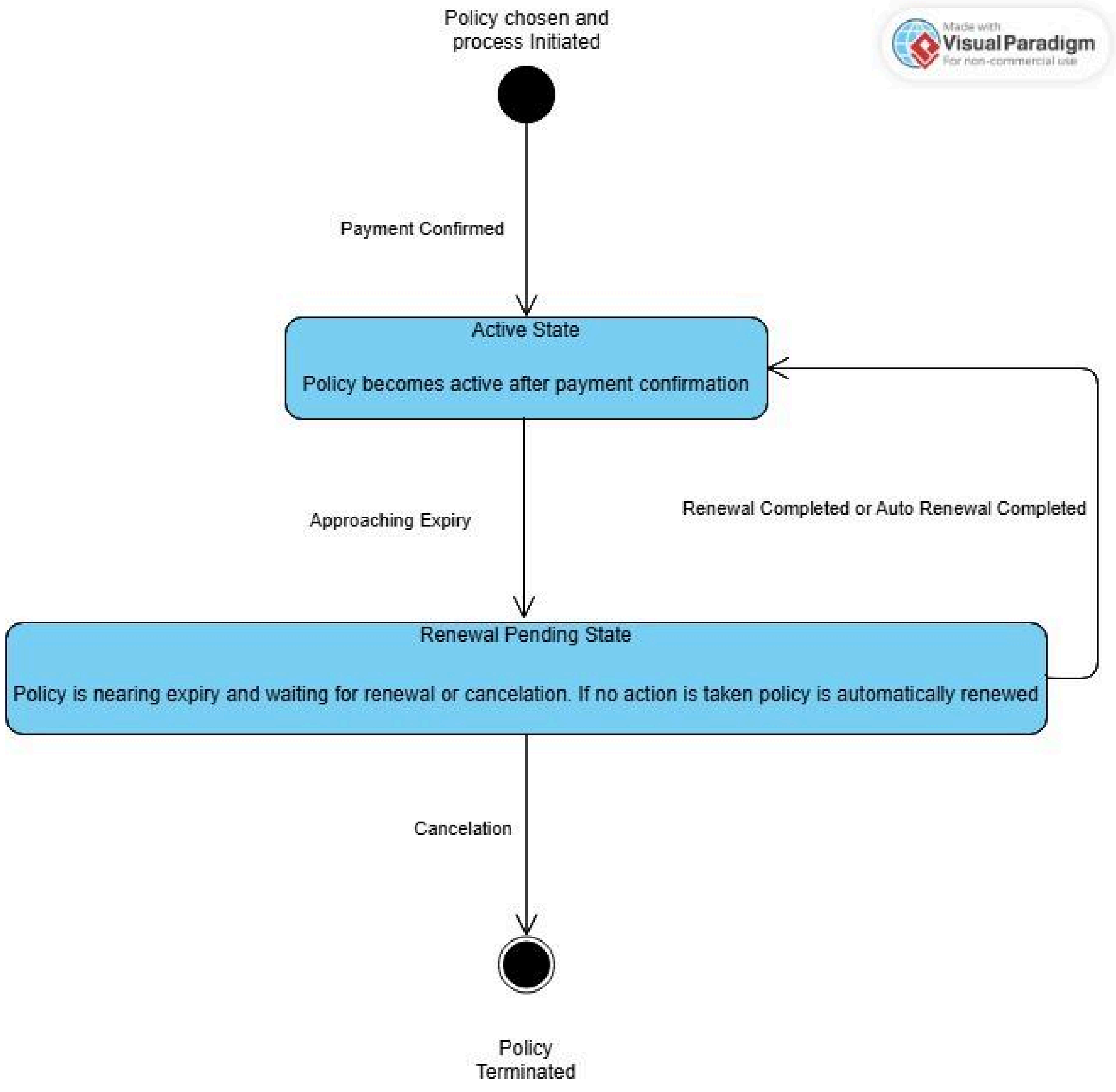
Structural Model (Class diagram)



Behavioral Model (State diagram for core object (policy))


Policy chosen and process Initiated
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Payment Confirmed
Active State
Policy becomes active after payment confirmation
Approaching Expiry
Renewal Completed or Auto Renewal Completed
Renewal Pending State
Policy is nearing expiry and waiting for renewal or cancelation. If no action is taken policy is automatically renewed
Cancelation
Policy Terminated