

# Database Systems Project Part IV.

Name: Chenyi Lyu      NID: N15220231  
Name: Zoe Tan      NID: N15948322

## Use Case Design

Here are some examples of business use cases that could support the creation of a data-driven workflow-based database application for insurance quotes and policies:

**Customer registration and login:** Customers should be able to register for an account and log in to the database application to access their insurance quotes and policies. This use case would involve storing customer information in the database and implementing authentication and authorization processes to ensure the security of the data.

**Insurance quote and policy request:** Customers should be able to request insurance quotes and policies through the database application. This use case would involve retrieving insurance product and policy rate information from the database and presenting it to the customer in an easy-to-understand format.

**Insurance quote and policy purchase:** Once customers have received insurance quotes and are ready to purchase a policy, they should be able to do so through the database application. This use case would involve updating the database to reflect the purchase of the policy, as well as processing any payments that are required.

**Policy management:** Customers should be able to view and manage their insurance policies through the database application. This use case would involve retrieving policy information from the database and presenting it to the customer in an easy-to-understand format, as well as allowing the customer to make updates or changes to their policy if necessary.

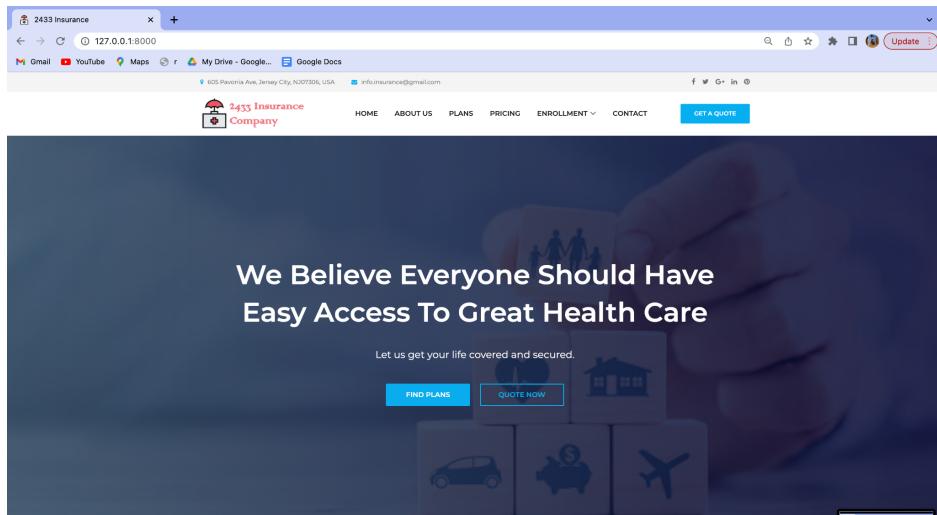
**Claims management:** Customers should be able to submit and track insurance claims through the database application. This use case would involve storing claims information in the database and implementing a workflow process to ensure that claims are processed efficiently and accurately.

**Product and rate updates:** The database application should be able to receive updates to insurance product and policy rate information on an ongoing basis. This use case would involve implementing processes to retrieve and store updates to the database in a timely manner.

## Implementation

We used the Django framework to develop the insurance company web app in Python and HTML. The code can be found on [Github](#).

## Homepage



## Browse products and price

A screenshot of a web browser window displaying a pricing page for an insurance company. The page has a light blue header with the company logo and navigation links: HOME, ABOUT US, PLANS, PRICING, ENROLLMENT, and CONTACT. A blue "GET A QUOTE" button is on the right. Below the header is a section titled "Pricing" with a horizontal line underneath. A table titled "Plan Names" lists various insurance plans with their coverage and monthly price. At the bottom of the table is a blue "READ MORE >" button.

Plan Names	Coverage	Monthly Price
Basic Plan A	Health	\$15.00
Basic Plan B	Health, Dental	\$20.00
Basic Plan C	Health, Dental, and Vision	\$30.00
Premium Plan A	Health	\$25.00
Premium Plan B	Health, Dental	\$30.00
Premium Plan C	Health, Dental, and Vision	\$40.00
Elite Plan A	Health	\$30.00
Elite Plan B	Health, Dental	\$35.00
Elite Plan C	Health, Dental, and Vision	\$40.00
Elite Plan D	Health, Dental, Vision and Other benefits	\$45.00

A screenshot of a web browser window displaying service statistics for the insurance company. The page has a light blue header with the company logo and navigation links: HOME, ABOUT US, PLANS, PRICING, ENROLLMENT, and CONTACT. A blue "GET A QUOTE" button is on the right. Below the header, four key statistics are displayed: "50 Years Of Experience", "7,000,000+ Happy Customers", "220 Plans and Products", and "10,000+ Dentist". The background features a dark image of a person's hands holding a smartphone.

## Quote

The screenshot displays two pages of a web application for '2433 Insurance Company'.  
The top page is a landing page titled 'Schedule A Call'. It features a large background image of a person's hands over a family silhouette and a car. The form includes fields for 'Your Name', 'Your Phone', 'Your Email', 'Your Address', 'Choose Your Slot 1', 'Choose Your Slot 2', and a message area. A blue 'QUOTE NOW' button is at the bottom.  
The bottom page is a contact page titled 'contact.html'. It shows a map of Jersey City with a red marker pointing to the company's location at '605 Pavonia Ave, Jersey City, NJ 07306'. The map also highlights various landmarks like Journal Square, Hilltop, and the White Eagle Inn. Below the map is a 'Get A Quote' section with fields for 'Your Name', 'Your Email', and a 'Your Message' area, followed by a 'SEND MESSAGE' button.

## Data

Currently we only used the product price data, but we may design the database as follows:

- Customer data: This could include data on individual customers, such as their contact information, policy history, and claims history.
- Policy data: This could include data on the insurance policies that the company offers, including details such as coverage limits, deductibles, and premium rates.
- Claim data: This could include data on claims that have been filed with the insurance company, including details such as the type of claim, the date of the incident, and the amount of the claim.

- Underwriting data: This could include data on the underwriting process, including details such as the risk assessment of individual policyholders and the factors that are considered when determining premiums.
- Financial data: This could include data on the financial performance of the insurance company, including details such as revenue, expenses, and profitability.

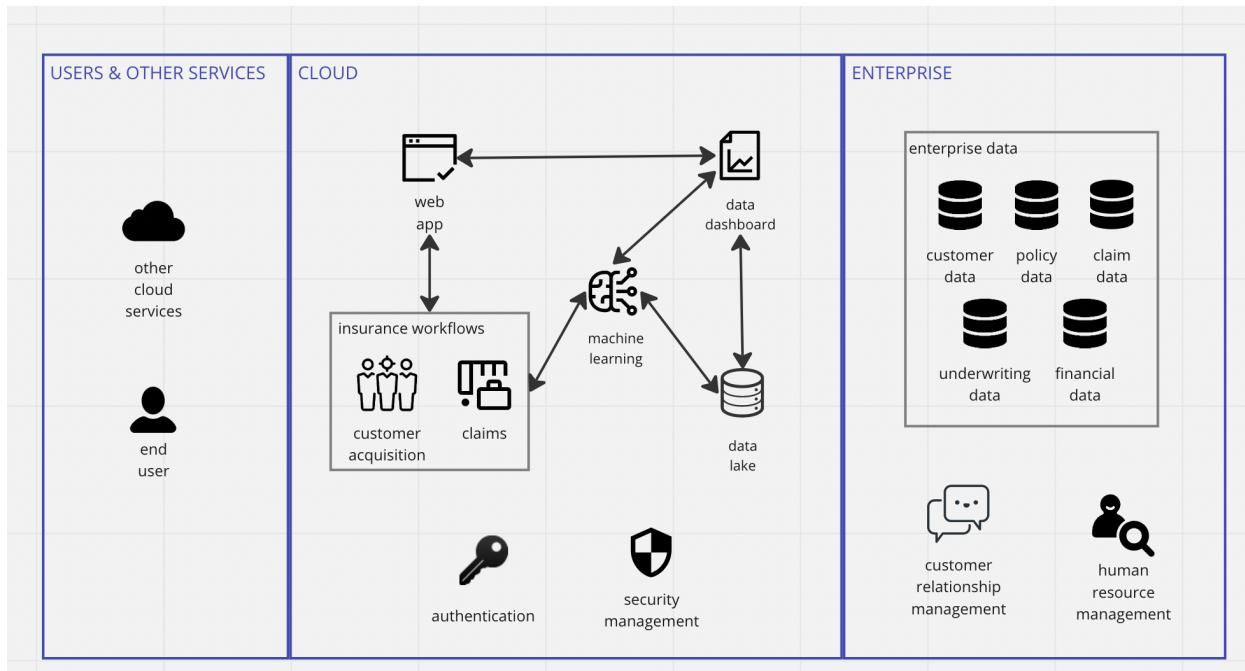
## Optimization

Due to time constraints, we didn't implement the customer side and administration management. We could include those features in later stages. Also, in the current stage, since we don't have so much data, we host the data in the front end and locally. In the future, as business grows, we may deploy the app onto Azure Cloud, and connect to Azure database.

- Customer relationship management (CRM): A CRM system could use a data-driven workflow-based database to store information about customer interactions and transactions, as well as information about customer demographics and preferences. This could be used to track customer inquiries and complaints, as well as to provide personalized recommendations and support.
- Human resources management: A data-driven workflow-based database could support human resources management by storing information about employee records, performance evaluations, and benefits. This could be used to track employee progress and support performance management and succession planning.

## Reference Architecture

Our designed architecture is a hybrid cloud architecture that contains three layers. Moving from left to right in the diagram, the first layer depicts personas such as customers, agents, and other cloud partners. The cloud and the enterprise form the hybrid cloud layer. These layers provide a compliant and secure infrastructure for several components and capabilities described in the Use Case Design section. In particular, they provide capabilities to collect, prepare, and govern unstructured data and to analyze and infuse insights in insurance workflows using machine learning models.



## Components List

Title	Description
Other cloud services	Business partners such as hospitals and DMV
End user	Including customers, application users, and third parties
Web app	As described in Implementation section
Data dashboard	Data visualization of machine learning model results and raw data
Data lake	Cloud object storage
Machine learning	Defines algorithms and retrains models based on different data dimensions
Customer acquisition	Responsible for orchestrating the customer acquisition process
Claims	Claims functions such as intake, triage, and processing
Authentication	Delivers identity and access management services for solution users
Security management	Including information, network, and cyber security management
Enterprise data	As described in Data section
Customer relationship management	As described in Optimization section
Human resource management	As described in Optimization section

## **Data Governance**

- Data security  
All data in transit must be sent over secure protocols and any data that is stored in the cloud or data center must be encrypted. Customers, claims adjusters, and agents must be authenticated and checked for authorization before they're allowed access to business functions.
- Data management and integration  
Augment data quality with artificial intelligence and machine learning and get insights from data analytics to assist with decision-making