



Group 5

Case Study 4: Government of Canada



Group Members:

Nadine Abdul-Hamid

Brett Adams

Calder Johnson

Arya Kumar

Omer Latif

Hisan Salimi

Kyle Tang



Vision

We envision an open data access platform operating as a centralized one-stop service for accessing, processing and viewing hundreds of data sets from the Government of Canada.

The data portal is to be developed as a means of transparency, equipping everyone with all data resources for many uses. Through setting a federal data usage ecosystem, we believe we can strengthen public services at the national level.



A Sample Business Case

How can we utilize open data to provide valuable market insights, advices and resources for small business owners looking to expand or enter new markets?



Requirements

1. Access Control for Authorized Users
2. Data Management for Users
3. Data Visualization for Data, Chart and Graph
4. Monitoring and Analytics
5. A User-Centric Design Approach Menu
6. Database Backup
7. Data Integrity
8. Multi-Language Environment
9. Compliance
10. Copyright



Risks


1. **Policy Changes:** new governments may prioritize other policies over open set data impacting the funding and relevance of data sets
2. **User Increase:** High user demand can lead to performance difficulties such as slow downs, timeouts, and service interruption
3. **Validated Data Access:** unauthorized access from people who have gained private data which could have an impact on its security, and confidentiality



Proposed solution

In our plan, our finished product should be able to:

1. Establish a user-centered and user-focused interface that addresses the needs of the data providers as well as consumers.
2. Security, integrity, and privacy of data must be guaranteed through the implementation of strong authentication, encryption, and access control systems.
3. Offer user friendly applications for transferring and managing data for providers.
4. Support the performance of data sources search, exploration, and extraction with a more advanced level of filtering and browsing.
5. Build an effective training module, tutorials, and support resources to guide users to leverage the platform to the maximum.
6. Develop a community generated model to keep on enhancing and increasing the range of services and datasets available through the portal.



How are we using the Open Data Set to accomplish this?

Back to Our Question:

How can we utilize open data to provide valuable market insights, advices and resources for small businesses looking to expand or enter new markets?

Solution using Open Data:

Providing small business owners with the ability to generate charts and reports using our product can be a valuable feature that can help them make informed decisions about where to invest and when to expand or enter.

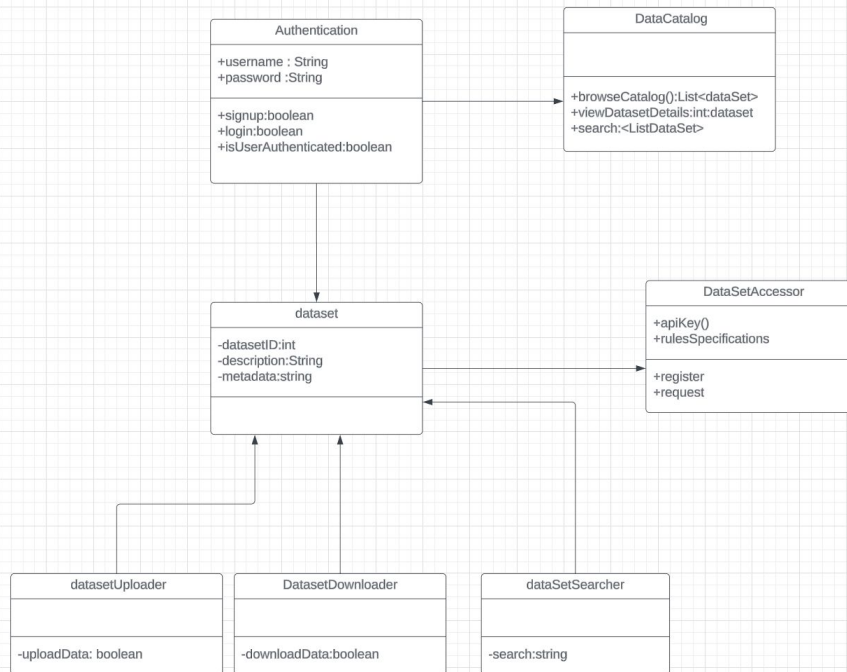


UML Diagram

Application Architecture

1. **Authentication:** This class operates user session and assures that users accessing the system have the authorisation to do so.
2. **DataCatalog:** This class regulates the dataset stored in the system
3. **DataSet:** This class represent each dataset and provides metadata about them.
4. **DataSetAccessor:** operates access permission for datasets. It manages which datasets can be accessed and provides ways to receive or restrict access.
5. **DataSet Uploader:** This class handles the functionality of uploading datasets in the system
6. **DataSetDownloader:** This class handles the functionality of downloading datasets in the system
7. **DataSetSearcher:** This class handles the functionality of searching datasets in the system

UML Diagram





Frontend - HTML/CSS/Javascript

Created a user-friendly interface for easy navigation.

Responsive design for seamless access across devices.

Intuitive layout to facilitate data exploration and interaction.

Implementation of user authentication, data downloading, and data searching functionalities.



Backend - Firebase

- **Effortless Authentication Management**
 - Streamlined user session operations with Firebase
 - Ensures authorized access through robust user authentication
- **Seamless File Storage & Retrieval**
 - Firebase as the backbone for data management
 - Structured file storage processes with real-time access
- **Strategic Design Pattern Integration**
 - Pure Fabrication: For abstract Firebase setup configurations
 - Indirection: Mediating user interactions for sign-up and login operations
 - Creator: Centralized file link generation for secure downloads
- **Optimized Data Handling Flow**
 - A coherent, logical sequence from user authentication to data manipulation
 - Enhanced data security with minimal code complexity



Application of Design Patterns

Throughout the application development process, we used numerous design patterns to improve the structure and maintainability of our code. An example is pure fabrication, when we held all configuration details for our Firebase backend in an abstract `firebaseConfig` object.

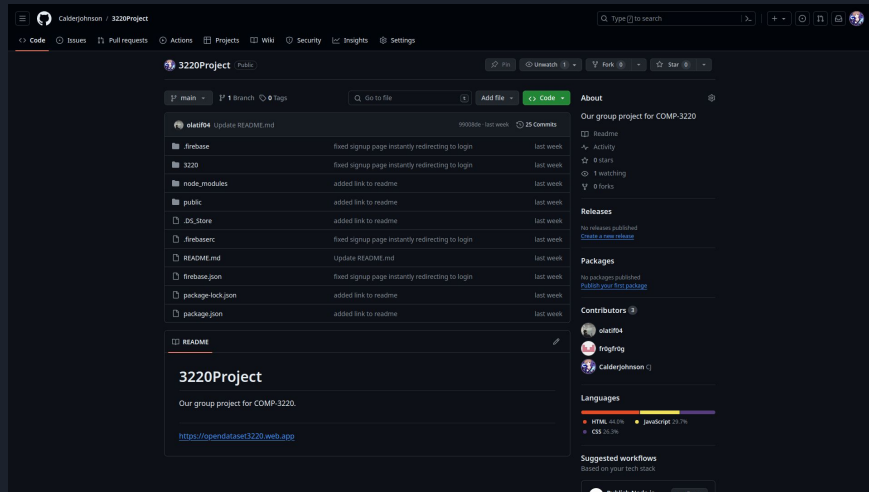


App Demo...

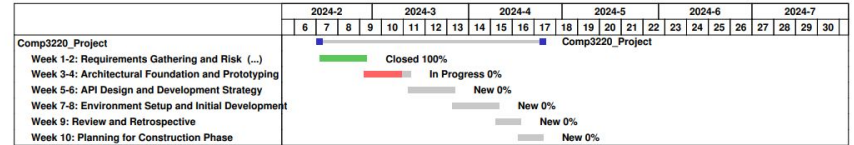
Allow us to demonstrate our application!

Development Tools

We used a number of tools to organize and streamline the development process, including Github for version control and code sharing, and Redmine for task tracking.



Comp3220_Project





Next Iteration Plan

Addition of an API to provide programmatic interface to datasets.

Addition of functionality to upload and submit datasets for review.

Addition of admin accounts to review upload dataset requests and moderate datasets available through the portal.