COVID BusinessPro

Alish Kadiwal, Bernadette Veninata, Zhuo Chen, Abraham Mugerwa

Faculty of Engineering & Applied Science
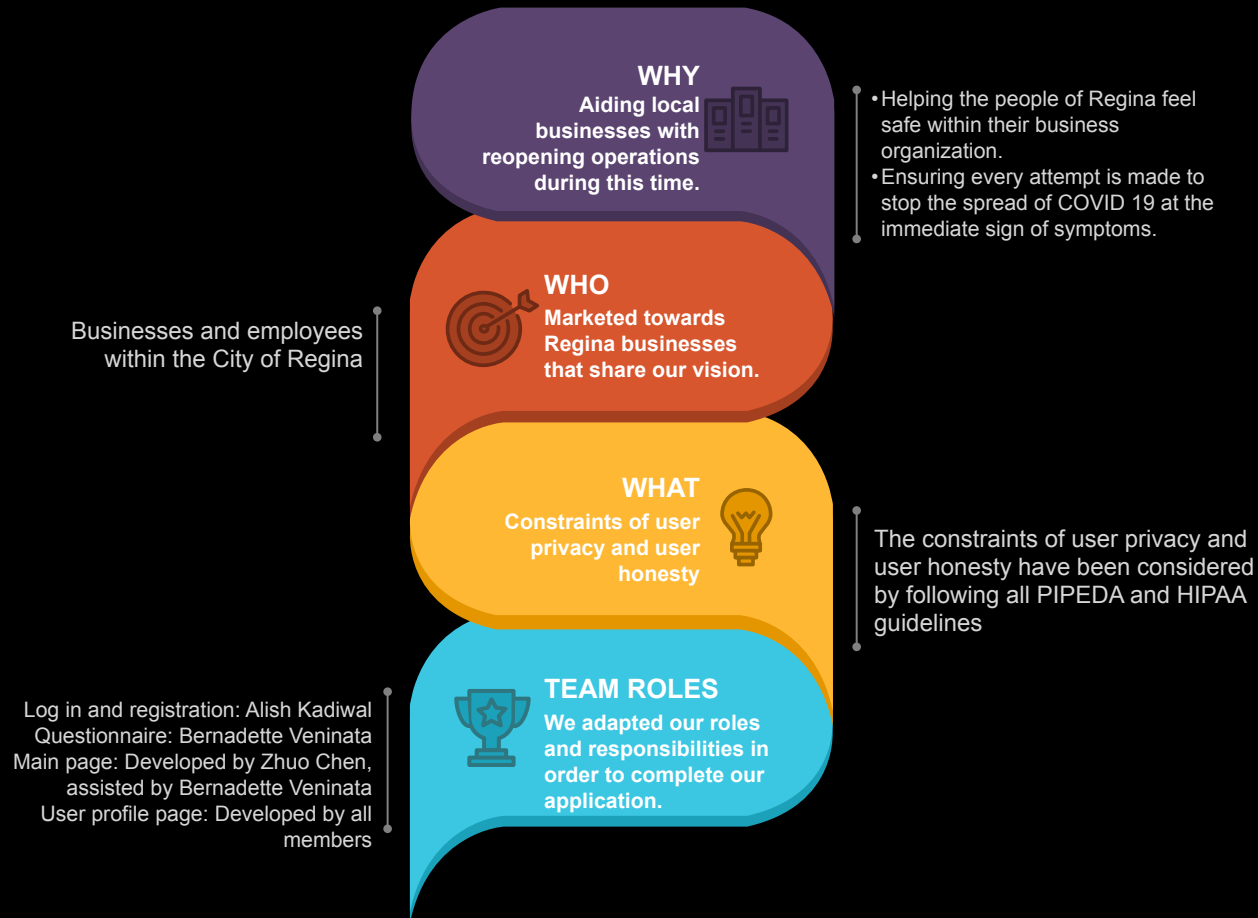
University of Regina

Covid BusinessPro, an application that allows businesses to track COVID 19 within their organization

PROJECT DESCRIPTION

WHY
Aiding local businesses with reopening operations during this time.

- Helping the people of Regina feel safe within their business organization.
- Ensuring every attempt is made to stop the spread of COVID 19 at the immediate sign of symptoms.

WHO
Marketed towards Regina businesses that share our vision.

Businesses and employees within the City of Regina

WHAT
Constraints of user privacy and user honesty

The constraints of user privacy and user honesty have been considered by following all PIPEDA and HIPAA guidelines

TEAM ROLES
We adapted our roles and responsibilities in order to complete our application.

Log in and registration: Alish Kadiwal
Questionnaire: Bernadette Veninata
Main page: Developed by Zhuo Chen, assisted by Bernadette Veninata
User profile page: Developed by all members

BUSINESS CASE

BUSINESS CASE	
Proposed Project	Covid BusinessPro Web Application
Date Produced	October 26, 2020
Background	In the midst of a global pandemic, COVID-19 is threatening Regina businesses and employees alike. COVID-19 is an infectious disease, which is capable of being transmitted at around 2 meters. The symptoms of COVID-19 are fever, cough, fatigue, shortness of breath and even death. The usual onset duration is 2-14 days from infection. Research shows that working areas are highly susceptible to becoming infected with the virus. Our group believes that every attempt should be made to stop the spread of COVID-19 at the immediate sign of symptoms. Governmental apps currently being used in the province to track COVID-19 only allow users who have already tested positive to log their cases, at this point they have already been exposed to multiple people. Our group also believes that users should have the option to manually enter their data instead of having to allow access to their phone's GPS or bluetooth.
Business Need/ Opportunity	Our app is marketed towards Regina businesses. Businesses are the place where social interaction with others occurs most frequently, which increases the chance of cross infection. Currently, many businesses within Regina have had to temporarily close when exposed with an active case of COVID-19. Within a large business framework, this could become tedious and costly. Rather than clean entire premises and conduct a contact tracing investigation within the organization after a positive COVID-19 test result by an employee, our app provides an immediate alert to the employer, triggered when an employee has alert level 1 (3-4 symptoms) or alert level 2 (5 symptoms). Our app has a contact tracing component, which supplies an immediate chain of contacts within the business, reflecting who employees were in contact with, and in which areas of the building, or departments. Generated data helps to optimize the business response to take precautionary measures such as mandating the employee stay home and receive testing, and for the business to initiate a "deep cleaning" of related areas. Our app provides real time data for businesses to track trends, clusters and the spread of symptoms.
Options	1. Login/Logout/Register system 2. Privacy policy agreement 3. Entering and checking interface of pandemic symptoms 4. Display a group of employees' data/updated information in a section to the HR. 5. Auto-alert system (only can be received by HR) 6. Viewing employees, organized by department (only can be viewed by HR)

Cost-Benefit Analysis

Cost:
1. Cost of budget/time(10%) The users enter the wrong username/password/register with invalid information.
2. The cost of time and budget(5%) occupies less weight. The users neglects this agreement[potential risk and reduced quality]

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3. Equivalent budget/time(10%) as previous section. The user might use some nickname other than real name, and reduce the efficiency of stopping the spread of COVID-19.
4. Further financial expenditures and time required(20%). The symptoms can be varied, users also might forget to update their information.
5. The cost of time and fund for this section is around 15%. Employees from other departments might also see those collected information.
6. The main part of our app, occupies around 30% of total time and budget. The alert system might not be reactive or triggered until the HR opens this app.

Benefit:
1. The user becomes aware of privacy policy and only one simple operation they can do. [reduction of errors]
2. Keeping user data private using condition (hash).
3. Make the employees be more recognizable for management purposes.
4. Reducing the error operation by just checking the symptom box. Ongoing cost exits, in order to update new symptoms to the database and interface.
5. Only show the result of collected data, no operation required, easy to use.
6. No interacting operation with the device[reduction of errors], receiving alert from this app, easy to use. More easier to manage and react efficiently.

Recommendation

[This section contains the recommended option from the previous section.]

MVP 1: Login/Register system with Privacy Policy Agreement, Questionnaire Page and auto alert system
MVP 2: The above with the addition of a user profile which includes employees' data
MVP 3: The above with the addition of a main page which includes graphical representations of data

PROJECT CHARTER

PROJECT CHARTER	
Project Name	Covid BusinessPro Web Application
Date Produced	October 26, 2020
Project Goals	The Covid BusinessPro application aims to provide services to business enterprises in the city of Regina, Saskatchewan that assist with the COVID-19 pandemic. Our application will support the organization's goal of allowing employees to feel safe within their businesses and aid in the reopening of the organization. We will achieve this by providing a system that can track employee symptoms and provide contact tracing, notifying Human Resources when an employee has level 1 (3 to 4 symptoms) or level 2 (5 + symptoms) corresponding COVID-19 symptoms. Our application will also track user trends.
Project Objectives	○ Allowing the users to take a questionnaire of their related COVID-19 symptoms. ○ Improve speed and efficiency of "deep cleaning" of organization after a positive COVID-19 test result by an employee through contact tracing component of app, which supplies an immediate chain of contacts within the business, reflecting who employees were in contact with, and in which areas of the building or departments. ○ Optimize the business response to taking precautionary measures such as mandating the employee stay home and receive testing, by providing an immediate alert to the employer, triggered when an employee has alert level 1 (3-4 symptoms) or alert level 2 (5 symptoms). ○ Securely manage employee data by following PIPEDA and HIPAA guidelines and encryption of user data stored in our database.
Project Budget	$0.00
Project Sponsor	Dr. Timothy Maciag, University of Regina Software Engineering Professor
Project Manager	Zhuo Chen, Project Manager Bernadette Veninata, Project Manager Alish Kadiwal, Project Manager Abraham Mugerwa, Project Manager

Additional Key Project Stakeholders

Jane Doe, Human Resources Manager
John Smith, CEO

Overall Project Milestones	Dates
Idea & selection	Oct 2nd, 2020
Project idea selection & introduction vlog Project	Oct 9th, 2020
prerequisites/planning & vlog presentation	Oct 26th, 2020
Project design architecture & vlog presentation	Nov 6th, 2020
Project observe, analysis, and feedback	Nov 16th, 2020
Project storytelling & live Zoom demo/presentation	Nov 30th, 2020

Overall Project Risks

- Our application relies on employees entering and answering COVID-19 related questions honestly, and being open to share the places that they have been to within the organization.
- Safely managing employee data through the use of PIPEDA and HIPAA guidelines and encryption of databases.

- Scope risk: completing all MVPs within a reasonable amount of time in order to complete all project goals/objectives.

STAKEHOLDER ANALYSIS

STAKEHOLDER ANALYSIS				
Project Name	Covid BusinessPro Web Application			
Name	**Project Role**	**Power**	**Interest**	**Level of Support**
[Name of the person or group.]	[Project role/title or the reason that they are a stakeholder.]	[High/ Low]	[High/ Low]	[Supportive/ Neutral/ Unsupportive]
John Smith, CEO	Making sure that the business is taking the right preventative measures to reduce the exposure in their workplace	High	High	Neutral
Jane Doe, HR Manager	Ensuring all staff are signed up to have access; Responsible for reporting possible cases, when they receive feedback from the application	High	Low	Neutral
Dr. Timothy Maciag	Project sponsor/ Provides and approves project activities and provides necessary feedback to Project Managers	High	High	Supportive
Zhuo Chen	Project Manager	High	High	Supportive
Bernadette Veninata	Project Manager	High	High	Supportive
Alish Kadiwal	Project Manager	High	High	Supportive
Abraham Mugerwa	Project Manager	High	High	Supportive

STAKEHOLDER MANAGEMENT PLAN

STAKEHOLDER MANAGEMENT PLAN		
Project Name	Covid BusinessPro Web Application	
Name	**About the Stakeholder**	**Plan**
[Name of the person or group.]	[Background and characteristics of the stakeholder.]	[Details the approach to be taken to build an effective relationship with the stakeholder.]
John Smith	John Smith has been the CEO of ABC Company for over 20 years and he is responsible for over 500 employees with the head office located in the city of Regina with numerous outlets across the province. Mr. Smith has agreed to contract with The Apple Dongles for the app upon completion of development.	We will meet with John Smith periodically and incrementally to review the status of development of the application. We will strive to ensure that we meet the goals and needs of ABC company.
Jane Doe	Jane Doe is a Human Resources Manager at ABC Company. She has been tasked by Mr. Smith to coordinate between the staff and vendors on how the business will limit the spread of Covid amongst its employees. She is not too keen on the idea of using an app to keep track of all the employee information.	We will have daily scrums with Jane Doe in order to ensure she is aware of how we plan to implement our application with the use of the employee data, and how we will strive towards privacy amongst each individual. She will advise us from an administrative standpoint what type of information may be available to us.
Dr. Timothy Maciag	Dr. Timothy Maciag is a professor at the University of Regina and is the project sponsor for our application. He has a strong knowledge of software systems and development and is providing oversight to the project to ensure it is meeting expectations and to provide necessary feedback to Project Managers.	We will have weekly scrums with Dr. Maciag to get approval on the direction of our project and make sure we are on the right track in terms of software practices and development strategies. We will provide Dr. Maciag with MVPs twice a month and receive necessary feedback.
Zhuo Chen	Zhuo is currently enrolled in ENSE-374. He is among the four Project Managers/members of The Apple Dongles who have decided to design and implement the Covid BusinessPro Web Application as a Project Manager.	Team members/Project Managers will communicate daily and meet once a week to determine a division of tasks and ensure that all tasks are being completed timely and in a manner that upholds the standard of our project goals/objectives.
Bernadette Veninata	Bernadette is currently enrolled in ENSE-374. He is among the four Project Managers/members of The Apple Dongles who have decided to design and implement the Covid BusinessPro Web Application as a Project Manager.	Team members/Project Managers will communicate daily and meet once a week to determine a division of tasks and ensure that all tasks are being completed timely and in a manner that upholds the standard of our project goals/objectives.
Alish Kadiwal	Alish is currently enrolled in ENSE-374. He is among the four Project Managers/members of The Apple Dongles who have decided to design and implement the Covid BusinessPro Web Application as a Project Manager.	Team members/Project Managers will communicate daily and meet once a week to determine a division of tasks and ensure that all tasks are being completed timely and in a manner that upholds the standard of our project goals/objectives.
Abraham Mugerwa	Abraham is currently enrolled in ENSE-374. He is among the four Project Managers/members of The Apple Dongles who have decided to design and implement the Covid BusinessPro Web Application as a Project Manager.	Team members/Project Managers will communicate daily and meet once a week to determine a division of tasks and ensure that all tasks are being completed timely and in a manner that upholds the standard of our project goals/objectives.

PROJECT SCOPE STATEMENT

Based on students comments and professor comments we wanted to ensure that we were protecting users privacy, therefore a user privacy policy as well as hashing were added to our project and the live map was removed.

PROJECT SCOPE STATEMENT

Covid BusinessPro Web Application

Project Deliverables

Login/SignUp and Databases:

- Single Login and Sign up page with a tab to select one or the other.
- All the user info and details will be encrypted via hash key Protocols.
- For current MVP we are entering all the data in the same table and there is no generated Access code for HR.

Log in:

- Users must enter a valid business email address following format example: email@email.com
- Users must enter a valid password
- On submit, a successful registration will take the employee to the questionnaire page and HR to the main page
- An unsuccessful login will cause an error message to appear letting the user know what went wrong.
- Encrypted hash key Protocols

Registration:

- Option to register account as a Human Resource manager or a regular employee
- Must register name of business
- User must enter a unique username
- Users must enter a valid business email address following format example: email@email.com
- Passwords can be strong or weak.
- User must Enter Authentication Code
- a successful registration will take the employee to the questionnaire page and HR to the main page
- This information will be stored in a database.
- An unsuccessful login will cause an error message to appear letting the user know what went wrong.
- The title of the application, as well as a Tab menu that leads to the login page
- User will be redirected to privacy policy which they will have to accept upon registration
- Encrypted via hash key Protocols

Questionnaire:

- A checklist of symptoms of Covid 19 ranging from most common and least common where users can check off the symptoms that most apply to them.
- Every Symptom is regarded as severe.

- A log of locations within the business (entered by HR) where the user will check off which departments they have entered that day.
- The above information will be stored in a database.
- An alert triggered/sent to HR if a user has alert level 1 (3-4 symptoms) or alert level 2 (5 symptoms)
- Navigation bar includes the Logo, User Profile and Logout tab.

Main Page(Only For HR)

- Alert notification to show the number of employees in the alert table and the person who is the most recent added into the alert table.
- Display alerts for HR from employees who have checked off a certain number of symptoms to trigger the alert levels, colour coded for easy viewing. Pulled from alert table in database.
- Alerts can be checked off once HR has finished addressing the alert.
- Departments table for HR to quickly search an individual employee and access their user page to view their symptoms. Departments table pulled from the database.
- HR can scroll through the list of departments
- Be able to select which department the wish to view
- Show a list of employees in that department
- Also allow HR to be able to search by name for the employee.

User Profile

- Shows the logs of location and dates.
- Updated user symptom graph.
- Graph retrieves the value from the Symptoms table and displays it on the user profile page.

Project Exclusions

Since we are aware of PIPEDA and HIPAA guidelines, We won't be going in depth regarding the safety protocols and following all the government procedures in our app.

PROJECT ROLES AND RESPONSIBILITIES

PROJECT ROLES AND RESPONSIBILITIES		
Project Name	Covid BusinessPro Web Application	
Name	**Role**	**Responsibilities**
[Team member name.]	[Their role or job title.]	[Detailed description of their project responsibilities and job duties.]
Developed by Zhuo Chen, assisted by Bernadette Veninata	Their role is to complete the Main pages for HR	**Main Page:** • Show alerts that notifies HR of a possible exposure in response to what the employee fills out on the checklist. • Display the alert levels as different colours for less serious to most series to easily identify. • Displays a departments tab for HR to search through the database for employees in different departments • HR will have access to view individual employee user page • Accessible only by HR
Bernadette Veninata	Their role is to complete the Questionnaire Page	**Questionnaire Page:** • Display a checklist of symptoms of Covid-19 where users can check off the symptoms that most apply to them • A list of departments within the business (entered by HR) where the user will check off which departments they have entered that day • The above information will be stored in a database. • An alert triggered/sent to HR if a user has alert level 1 (3-4 symptoms) or alert level 2 (5 symptoms) • The title of the application, as well as an option to log out or go to user profile page
Alish Kadiwal	Their role is to complete the Login and Registration pages	**Log in:** • User must enter a valid business email address following format example: email@email.com • Users must enter a valid password • On submit, a successful login will take employees to the questionnaire page and human resources to the main page • An unsuccessful login will cause an error message to appear and redirect back to the login page. • The title of the application, as well as tab leads to the registration page

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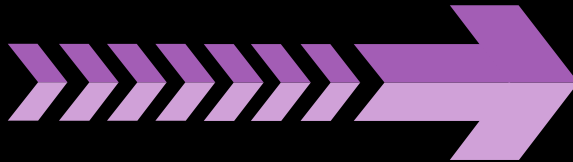• Encrypted via hash key Protocols

Registration:
- Option to register account as a Human Resource manager or a regular employee
- Must register name of business
- User must enter a unique username
- User must enter a valid business email address following format example: email@email.com
- User must enter a valid password
- User must enter authentication value (determined by HR)
- On submit, a successful registration will take employees to the questionnaire page and human resources to the main page
- An unsuccessful registration will cause an error message to appear and redirect back to the login page.
- This information will be stored in a database
- The title of the application, as well as a tab that leads to the login page
- User will be redirected to privacy policy which they will have to accept upon registration
- Encrypted via hash key Protocols

Alish Kadiwal. Bernadette Veninata, Zhuo Chen, Abraham Mugerwa	Their role is to create the User Profile page	**User Profile Page:** • A dated log of questionnaire answers over the past week • A dated log of locations (within the business) user has been to over the past week • The above information will be retrieved from a database • Display a graph of symptoms over the past week based on questionnaire answers, to be pulled from the database • Information will only be accessible by the user and HR. (User's information will not be visible to colleagues) • The title of the application, as well as an option to log out, and a button that leads to the questionnaire page.

DESIGN ARCHITECTURE

Class Diagram — Addition of alert table, departments table, and the combination of questionnaire tables as one
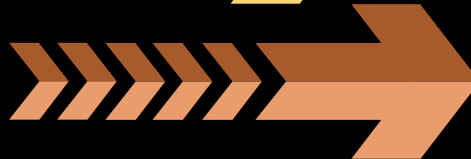
Data Flow Diagram — Sign up page, privacy policy page, questionnaire page, user profile page and main page

Sequence Diagram — Relationship and transfer of information between employee and human resources

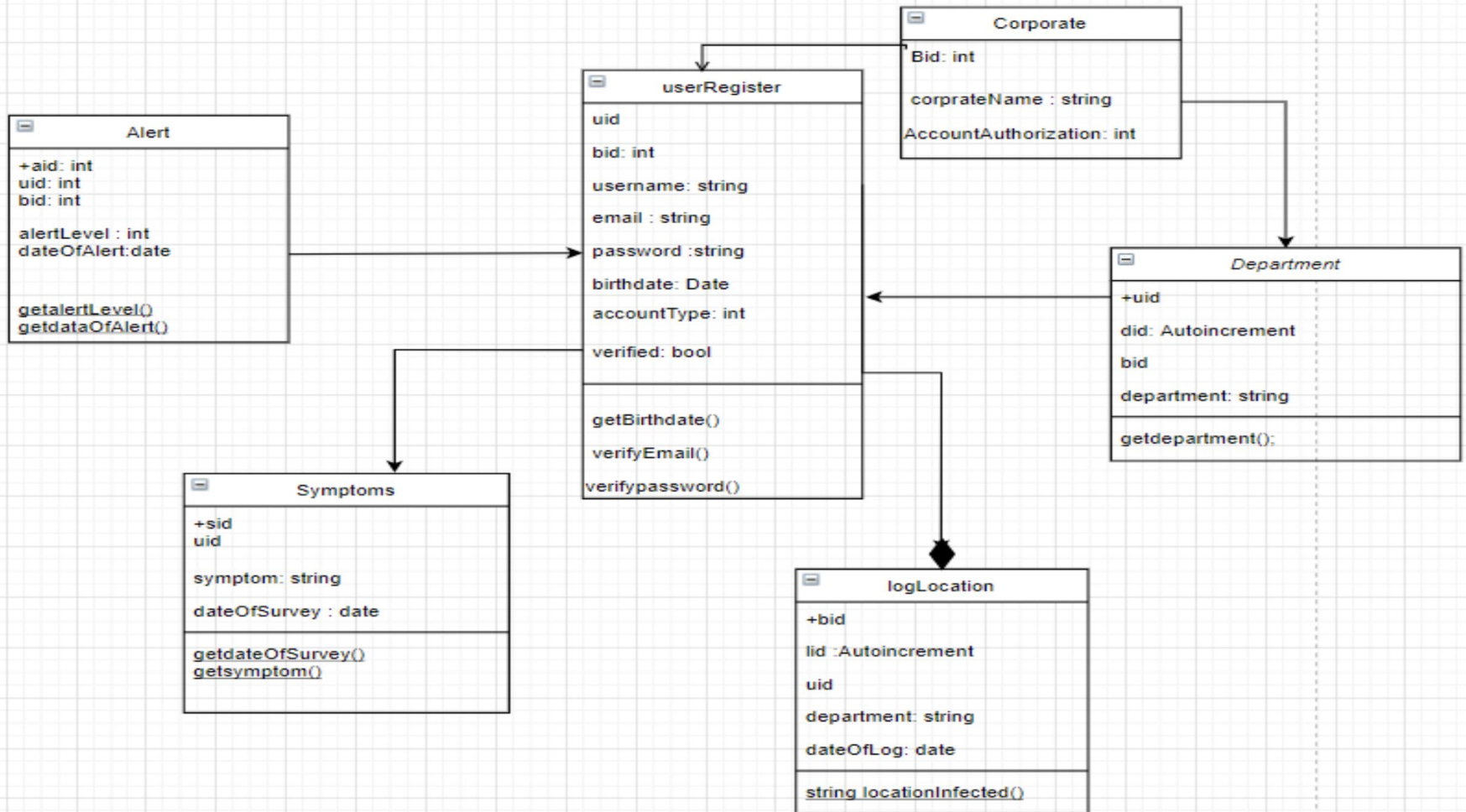**Low Fidelity Sketch** — Position of alert table and department list has been swapped for better user experience

MVC Diagram — Model portion has been changed to account for updated databases
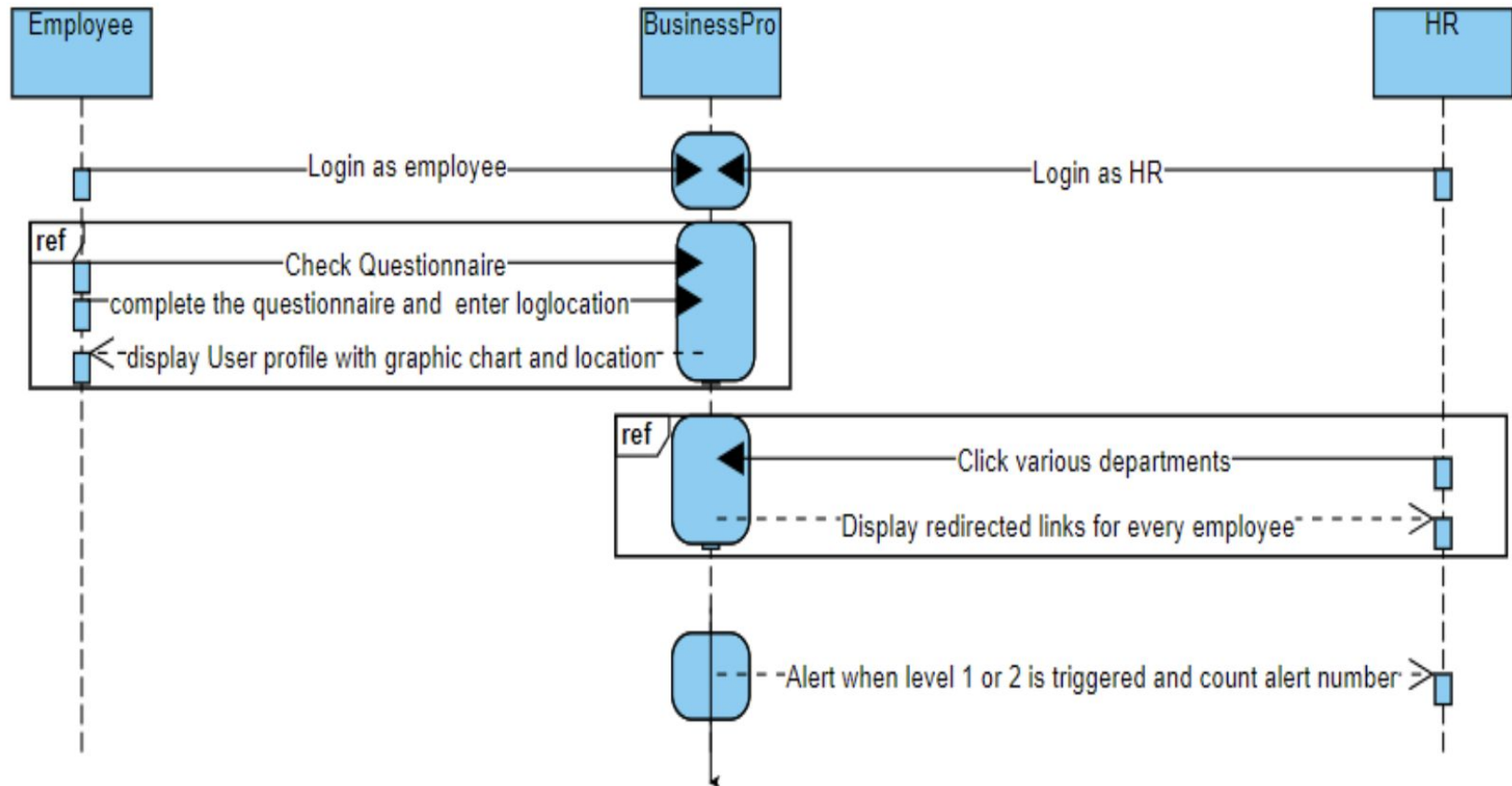
CLASS DIAGRAM

DATAFLOW DIAGRAM

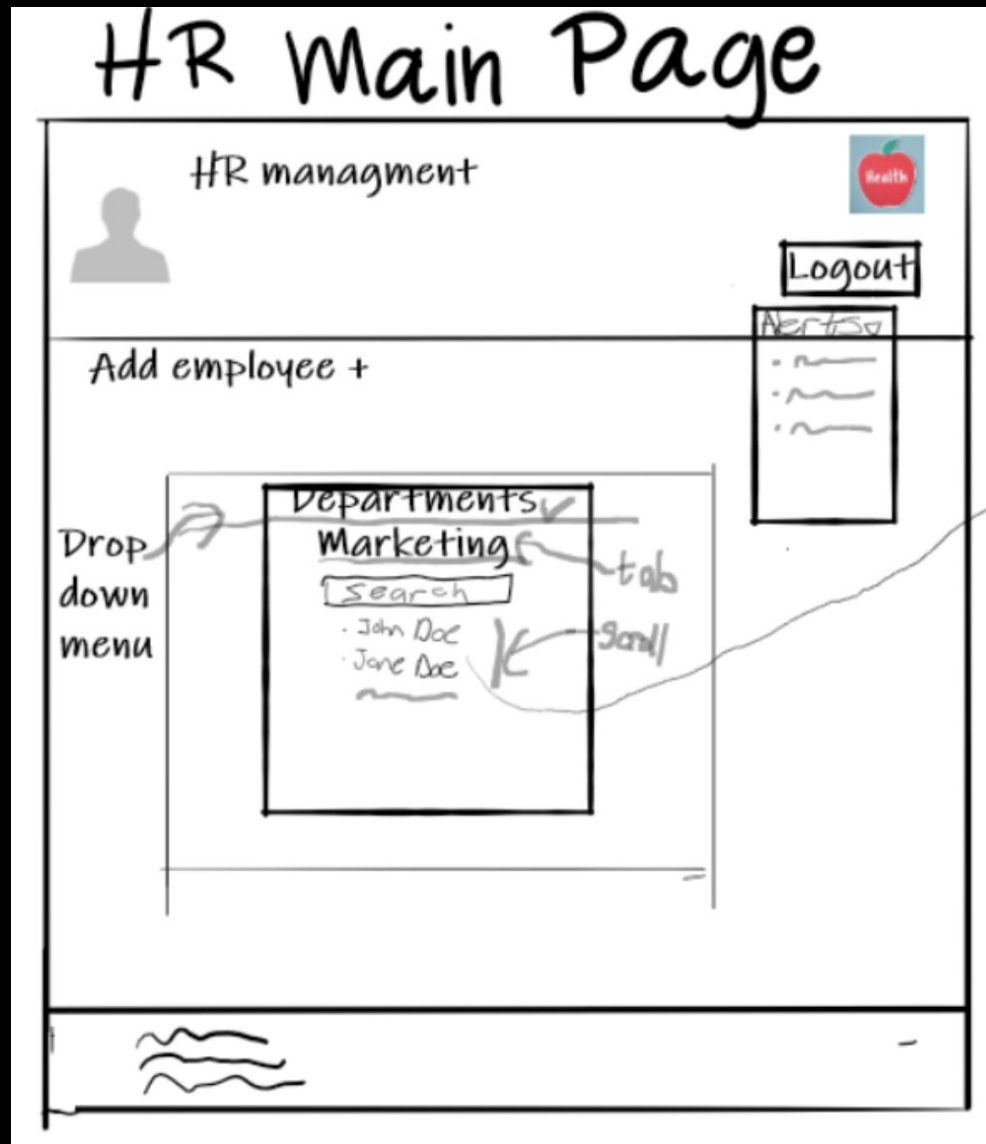Covid Application Data Flow
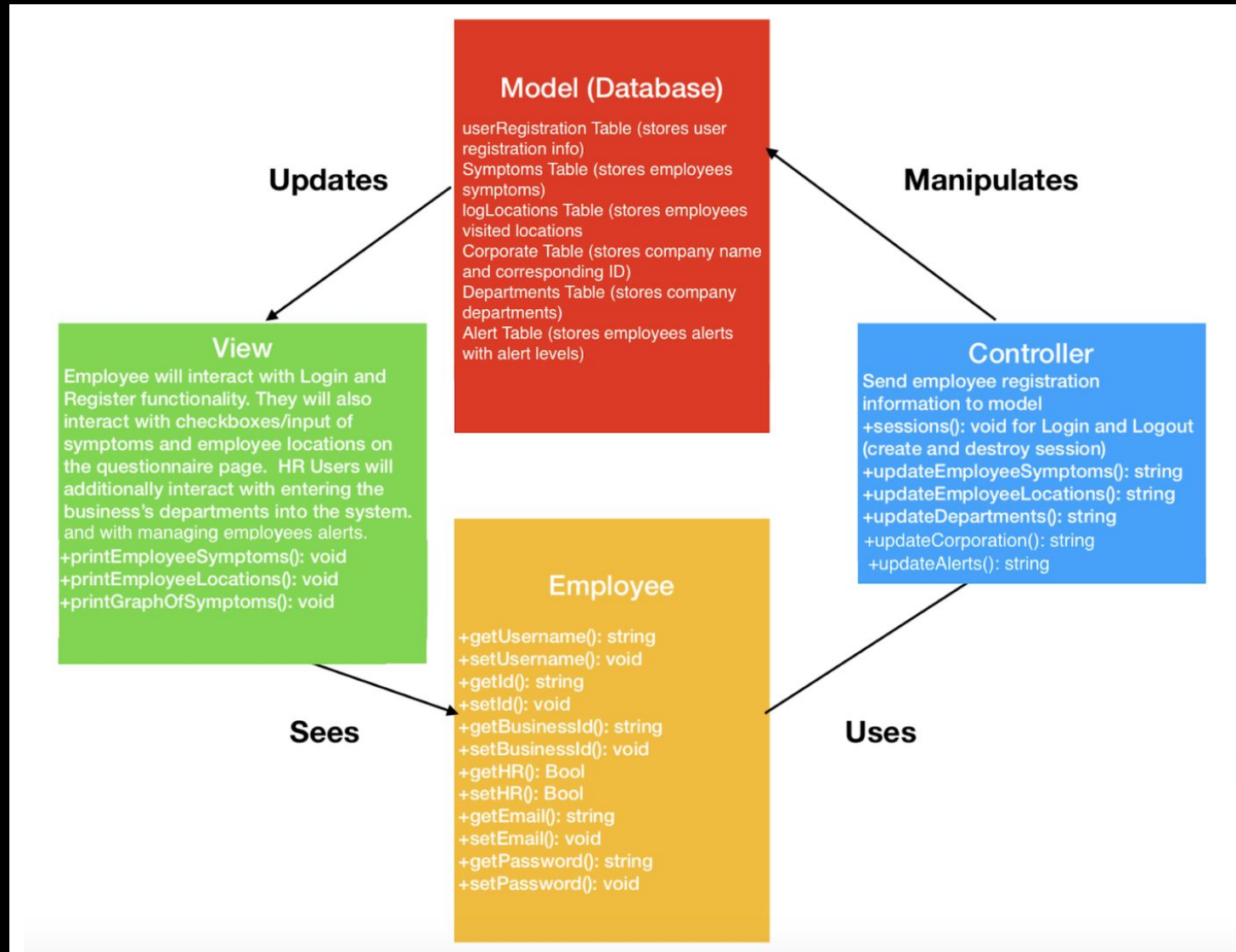Team: apple dongles | November 29, 2020
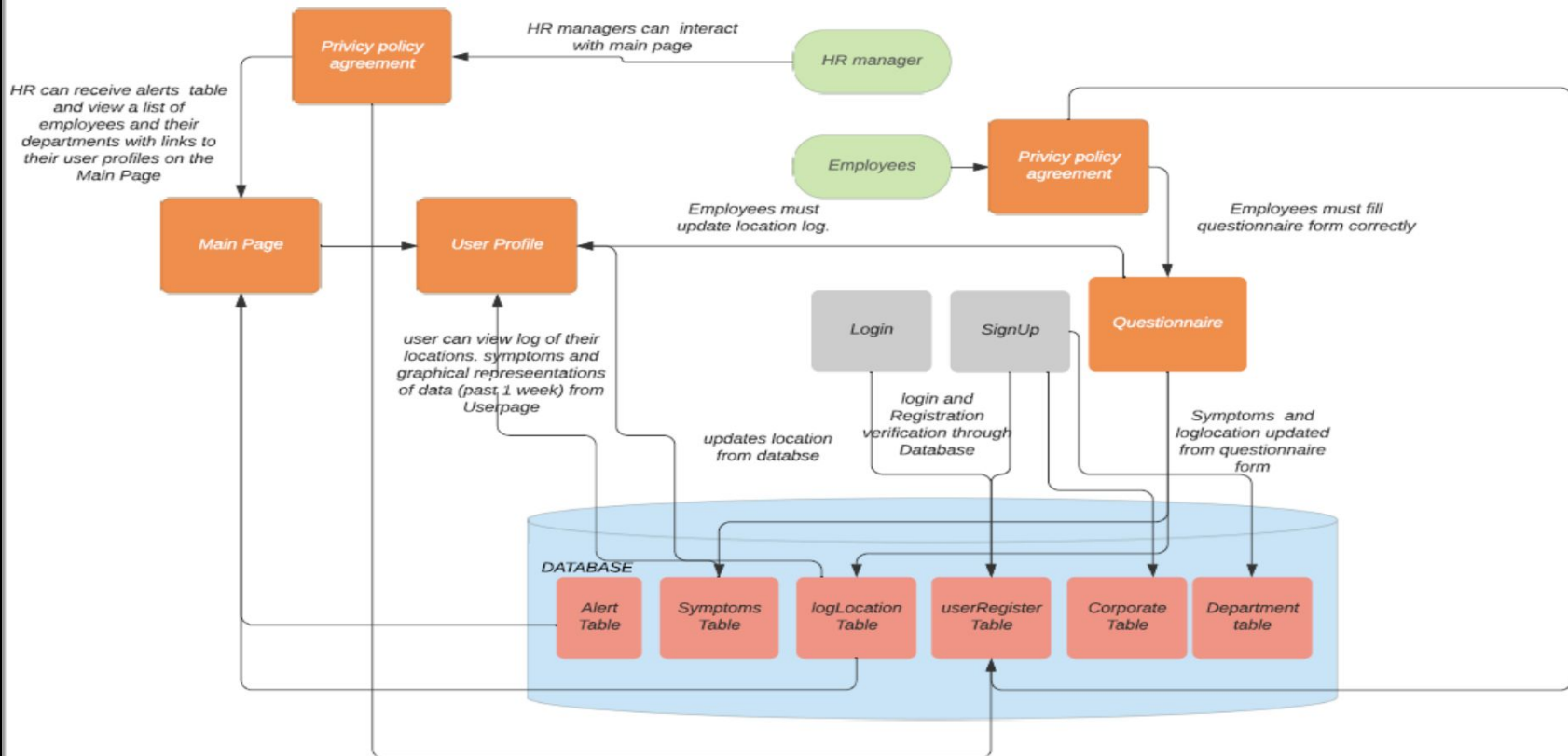
SEQUENCE DIAGRAM

LOW FIDELITY SKETCH

MODEL VIEW CONTROLLER DIAGRAM

GITHUB REPRESENTATION

REPOSITORY

The Apple Dongles Repository

- Since we are sharing the same server, we were collaborating well on that and we also performed regular commits

- Major benefit of having commits is we were able to bring back previous edits with ease

- Project installation explains thoroughly how we used a VS Code extension to connect to server and git

- MySQL database

KANBAN BOARD

KanBan Board

- Thanks to classmates comments, we began using our KanBan Board more regularly

- Recently, we have added the future envisioned MVPs

- Previous columns were: User stories, MVPs, to do, in progress and done

- We have completed all of our user stories and our MVP

PROJECT DEMO

What makes our project an MVP?

- Provides the minimum, basic functionality of alerting HR of symptoms and locations for contact tracing.

- Allows us to collect information on the users experiences before producing any further functionalities or MVPs.

- All pages included in our application are necessary to provide it's core value.

- Our team is happy with our ability to efficiently produce employee alerts and notifications in real time.

- Our application may be improved by only allowing the employee to take the questionnaire once per day.

- Future MVPs that we envisioned still jive well, such as: The option to register as an individual use outside off a business setting, the addition of a map with the latest COVID 19 data in the area, and a news feed of recent COVID 19 news in my area.

Team Reflection

University of Regina