Hello everyone, Sarah Price here! I hope you enjoyed our intro! I will be talking on behalf of Team Ursula. As you just saw Canada is full of unique landscapes and a large variety of wildlife. Something that is not talked about much is Canadian Earthquakes! Tectonic plates around the earth are constantly moving, and when there is movement along faults and plate boundaries, earthquakes will occur.

Everything in this world in connected from wildlife, waterways, building development to earthquakes! It is our mission through Project Ursula to develop educational software where users can view earthquake data on a map with all the corresponding data. We are targeting research students from elementary school to university.

The data that will be presented in our software will be from Canada; including the dates ranging from 1985 to 2019, latitude, longitude, depth, magnitude, magnitude type and the (province(s)) which were affected. The data will be viewed and manipulated to fit “Team Ursula’s” capsule project. The goals of this project are to create a DDL, DML and stored procedures with SQL, which ultimately will communicate between a C# Visual studios compiler. That data will then be able to be viewed on a google map.

This is Team Ursula. Members of the group include Bibhu, Bishwash, Sarah D and myself Sarah Price. First a little about the group name, we chose this specific name for our project because earthquakes can have huge impacts on different parts of the earth depending on how big they are. You may recognize the name Ursula from a popular Disney movie, “The little mermaid”. The character Ursula, is a big, mean Octopus that not only causes mischief with little mermaid, but also to her environment surrounding her. Just how earthquakes affect their surroundings. We also chose this name to represent our project because Octopus live deep in the ocean where a lot is still unknown, they live and see into parts of the world where humans are not able to explore or cannot yet see. Earthquakes are not visible to the eye and there is still a lot to learn about the many effect’s earthquakes have on the environment and the magnitude it places on structures around them. Ursula is also a big snacker which has become a huge part of the online learning experience, we are all hidden in our dens with our food.

Project Ursula will take research from the government of Canada website, https://open.canada.ca/data/en/dataset/4cedd37e-0023-41fe-8eff-bea45385e469,

We will manipulate the data to suit the needs of this project. We will be tracking all minutes to hours worked on this project. And don’t worry we have put time aside for crying.

We have created a system point tracker to make sure all project requirements are met.

To start off the project, sprint one our focus is location markers, which will be led by myself. A SQL database will be created, in order to allow the data to be retrievable by other users and applications. In the first sprint out of four, our project will store the data, given by the csv file. The SQL database will include a DDL, DML and a stored procedures, which will allow the system to compile the data and eventually communicate with a C# application, as well as a web method handler, java script. Again our main focus in this sprint is the location markers, which would be a total of 75 points. On the presentation layer a google map will appear, the user will have a pull down menu where they will decide which year of earthquake data they would like to view. All location markers will appear on the map of Canada from that year. The user can then select a location marker to view all corresponding data with that earthquake. We would also like to give the user an option to click more then one earthquake. This will make it easier for them to compare earthquakes and the distance between the markers. Our presentation layer will communicate with our business logic layer which then communicates with our database layer. Creating a marker would have the user connect more with the data on a different level of learning and again, be able to visualize what they see on the google map.

In Sprint 2 our focus is now updating our software to create polylines. This will be a total of 105 points. The scrum master for this sprint is Bibhu. This sprint will include the option to create a polyline between two marked earthquakes to show the distance between the two. In the business logic layer, using C#, we will create a polyline object which uses the distance formula to calculate the distance between the selected locations. Our presentation layer will now include the option to show the polylines. All data from each earthquake will still appear on the side. There will be a button selection where the user can click "show polyline." There will separate buttons to be able to clear, delete, and update the selection for the polylines. There will able also be the option from the first sprint to be able to view all earthquakes within the year selected or just the selected earthquakes.

Our 3rd sprint will be focusing on polygons and our scrum master will be Biswash. Our presentation layer will now provide the user with the option to create a polygon around the earthquake they have selected. The polygon will show a specific distance around where the earthquake occurred. There is a bit of discussion already on changing this up to be able to create a polygon around the most active earthquakes of the year chosen. The user will still have the option to show just location markers or polylines. The selected dataset will show to the screen.

A colour scheme will appear to show how high the earthquake was on the magnitude scale. The C# layer will communicate with the database layer to read and create the polygon shape which will then be portrayed to the presentation layer. It is our goal to help the user visualize what surrounding areas would be most affected by the earthquakes. Just like the polyline option, there will be a delete, clear and update selection for the polygons. User can now pick polylines, polygons, or both.

In Sprint 4, our focus will be a heatmap overlay. Our scrum master for this sprint is Sarah D. The sprint will include implementing code to create a heat map on top of the google maps. The purpose of the heat map is to compare and contrast the magnitude of the chosen earthquakes and be able to visualize how bad the earthquakes were that the user selected. A heatmap can be chosen to show all earthquakes for the year selected or only those that the user specifically selected. The end goal of this entirety is to have the C# application communicates to SQL, which then further communicates with the web browser to produce the heat map. The earthquake data will still appear next to the map in a graph format. This will ensure the user will be provided with all necessary earthquake data for analysis.

We have created a UML for our project, which is shown here. This UML diagram will help to build our project efficiently and to avoid the waterfall method of development.

Team Ursula hopes to inform students while assisting in their research on the earthquakes that have taken place. and to put into perspective how our world is constantly evolving.