Project Topic

1. Resilient Systems

* Build a service. For example, it can be a simple weather reporting system that serves feeds based on existing Weather web services (e.g. https://weather.gc.ca/business/index\_e.html).
* Extend your service to have a *heart-beat* service similar to ping (http://en.wikipedia.org/wiki/Ping\_(networking\_utility))
* Design and implement ways to make your service resilient. You should start with the set of failure scenarios you wish to combat (e.g. process termination (due to unforeseen runtime errors such as NullPointerException), resource inavailability such as network failure, or server failure). Your strategy may include designing a secondary monitoring service that restarts the primary service when heart-beat is interrupted.
* Your final design must span over multiple machines, so you can cope with server failure.

Requirements for Proposal

Please submit a 3 page project proposal that includes:

On page 1:

Title (Page 1)

Group Members (Page 1)

Abstract (Page 1) - 1-2 paragraphs describing briefly problem statement and proposed solution.

Pages 2 & 3:

Project Statement

Requirements

Preliminary Architecture

Proposed Solution.

Possible Weather API

<http://openweathermap.org/api>

<http://www.wunderground.com/weather/api/>

<https://weather.gc.ca/business/index_e.html>

Implementations needed

Feeds

* **Current Condition & Forecast ATOM feed** - contains the latest current conditions and 7 day forecast details for a town/city. This feed offers the following weather elements:
  + **Warning/Watch** events from issue time to the time it is ended;
  + **Current Conditions:** Hourly weather conditions, temperature, pressure, visibility, humidity, dew point, wind, air quality health index\*, and wind chill/humidex (\* where available); and
  + **Forecast** for 7 days.

Note: ATOM feed for some locations may not have all the above weather elements.

The Current Condition & Forecast ATOM link is located at the bottom of all Current Conditions & Forecast web pages.

* **Warning ATOM feed** - will alert you when a watch or warning is in effect for a selected region. We offer two levels of Warning ATOM feeds:
  + **Small geographic** coverage is associated with the Current Condition & Forecast web pages, which will alert of watches/warnings in a specific community city or town. This link is located at the bottom of all Current Conditions & Forecast web pages.
  + **Large geographic** coverage is associated with the report page of the Public warnings which will alert of watches/warnings in a given region. This link is located at the bottom of the Warnings and Watches content section of Alerts.
* **Marine ATOM feed** - consists of latest Marine weather updates as well as watches and/or warnings for an entire area including splits. This feed contains the following weather elements:
  + **Marine Warning/Watch** events including ice warnings from issue time to the time it is ended;
  + **Forecast** weather conditions includes: winds, waves, weather & visibility and outlooks for up to 5 days; and
  + The link to the Marine can be found at the bottom of the marine forecast web page.

Weather Links

Do you want to provide yourself and your website visitors with up-to-date weather information? Environment Canada's weather information can be available at your fingertips by following some simple steps.

Below are two examples. One that shows forecast and current conditions and the other is static forecast information where no current conditions are available for the location.

By clicking on these Weatherlinks, you are linked directly into Environment Canada's website where you can receive full weather details, including weather watches and warnings.

Design for Feeds includes reading the website and parsing the information to generate brief descriptions for country and city in question.

Design for Weblinks would be to use JSON and HTTP requesting protocols to retrieve the data for specific countries and cities.

Can use FireBug to put the webpage into debug mode to get more data on how the POST and PRE conditions of a page work like. This will allow to call and get the information in java and present it to the requester.

Require a JSON, HTTP, xml java library for parsing the webpages to get the data that is needed and present it to the requesting client.

The server will gather the information using threads, each client request will be processed as a different thread to allow for faster response time from the server.