Renegade Hackathon 2021

Weather Emergency Alert System

Each year thousands of lives are taken by extreme weather conditions in Nepal. You as an IT professional need to devise a Weather Emergency Alert System (WEAS) so that people at risk zone need to be notified about the potential risk due to sudden weather changes. *As a part of this exercise you will also be conducting a Flood Risk Analysis.*

Follow (but not limited to) following guidelines to create a WEAS. Feel free to be creative in providing solutions and enhancement beyond the problem statement. You could create value by generating additional insights. However, the core objective has to be met.

Guidelines

- You may use any framework / language of your choice
- We expect you to create multiple web-service modules, ideally a Service Oriented Architecture
- All data has to persist in the database of your choice
- Follow best coding practices, maintainability, readability and proper test cases
- Use design patterns, creative data structures and algorithms that would optimize your code

Objectives

1. Location Drill Down
    - Your application should provide a mechanism to choose the location by following a drill-down
    - country > state > city
    - You could even do cool things such as use the Geo Location API's

2. Get the weather data for the current location
    - User should be able to view the current weather conditions based on the location that they choose
    - User can add multiple location on different rows to compare the temperatures - *be creative, these are the things that would get you a bonus point*

3. Flood Risk Assessment *(refer to the mind map below)*
    - There are specific survey questions that the end user must answer
    - Based on the answer choice a further question is asked

- This continues until the final risk value is reached
- Think of this as an Unbalanced Tree
  - You need to explore the proper schema / data structure to implement this
  - Keep in mind that the questions can change, rules can be modified
- What if i want to add another such Risk Assessment as a subsequent section, lets say a Tornado Risk Assessment *very unlikely in Nepal but who knows right* :)

Important

You cannot hard-code the Questions in the UI

Questions can go till the nth nested level

Questions should persist in the database

There could be m no. of Headers for Questions and shall not be hardcoded

4. Alert Mechanism *(refer to the form - alert group)*
   - You have the location details, use the Open API's provided below to fetch the temperature
   - If current temp < threshold temp send alert to max of 3 people that you have added to the Alter Group
   - Please do not hesitate to wow us by exploring effective areas that you can trigger the Alert Mechanism - *be creative, these are the things that would get you a bonus point*

5. Make sure to implement proper validations while expecting the User Input. And shall not just be limited to User Input.
   - Email Validation, Phone Validation
   - Name Validation like should be only alphabets
   - Use your reasoning as to what the appropriate validations should be
   - Handle Exceptions, Proper Error Logging etc.

Sample Form

Use this as a basic guide. Please use your imagination to explore areas that is beyond the scope of this bare-bone boring form.

SAMPLE FORM

PERSONAL DETAIL

Name *

Email *

Age *

Gender *

Female

Male

LOCATION

Country *

State *

City *

FLOOD RISK ASSESSMENT

Have you experienced one or more flooding event in your life ? *

Yes

No

ALERT GROUP

Add alert personnel * +

GROUP 1 x

Name

Relationship

Email

Phone

GROUP 2 x

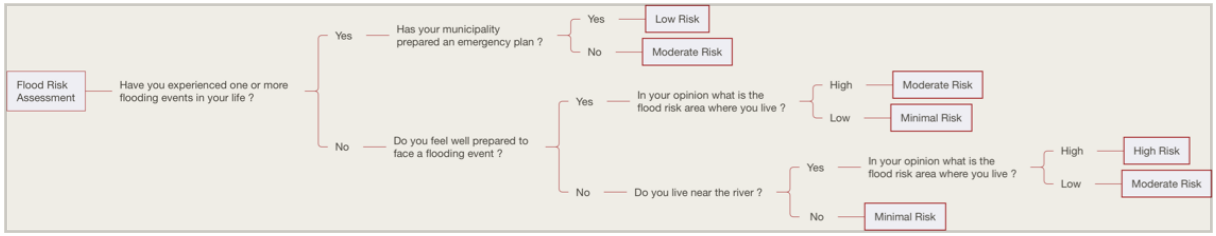
Name

Relationship

Email

Phone

Flood Risk Assessment Rules



You can use the free APIs exposed by various service providers. Following are some examples:

1. https://developer.accuweather.com/
2. https://openweathermap.org/api