Principles of Software Engineering Spring 2023

FAU: CEN4010

ClimateSmart

Group 16

Team# (Not Yet Assigned by Professor)

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Milestone 1: Team Project Proposal and High-Level Description

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Executive summary - Jehad

Overview:

The weather notifier project named ClimateSmart, is a website designed to provide users with up-to-date weather information and personalized recommendations based on the users location. It includes custom weather alerts, personalized clothing recommendations, personalized travel recommendations, environmental data, and even to bring some water if the weather is too hot. With a user interface (UI), ClimateSmart is easy to use and provides a seamless experience for users. The team found the name ClimateSmart to be befitting for our web application because it communicates a sense of intelligence and environmental consciousness. The word "smart" implies that the service is intelligent, innovative, and able to make informed decisions or recommendations based on data analysis. In the context of weather and climate, the name ClimateSmart suggests a product that is designed to help users make informed decisions about their actions, such as choosing environmentally friendly travel options. The name suggests that the product is focused on the user's individual needs. Overall, ClimateSmart is a name that is both memorable and meaningful, and it is likely to resonate with users.

Key Advantages:

Customizable Weather Alerts: The weather notifier program allows users to set their own weather alerts based on temperature or other weather conditions. This feature ensures that users stay informed about weather changes that matter most to them. This allows users to not have to constantly check their phone’s to see if the weather is enjoyable outside or not.

Personalized Recommendations: The weather notifier program also provides personalized clothing and travel recommendations based on the user's location and current weather conditions. This feature helps users make informed decisions about what to wear and where to go, improving a person’s comfort and safety when planning a trip outside.

Environmental Data: The weather notifier program also includes environmental data, such as air quality information, which helps users stay aware of the health impacts of their surroundings.

Novelty:

The weather notifier project is unique in its combination of customizable weather alerts, personalized recommendations, and environmental data. While many weather apps provide basic weather information, few offer the level of personalization and customization that this program provides. Additionally, the inclusion of environmental data sets it apart from other weather apps, as it provides a holistic view of the user's surroundings and the impact on their health.

Values:

The weather notifier project values user empowerment, personalization, and awareness. By allowing users to customize their weather alerts and providing personalized recommendations, the program empowers users to make informed decisions about their clothing and travel plans prior to leaving their homes. Additionally, by including environmental data, the program encourages users to be aware of their surroundings and make choices that promote their

health and well-being. Overall, the weather notifier project aims to improve the user's quality of life and enhance their experience of the outdoors.

Competitive Analysis - Jehad

This is an analysis of our competitors' websites vs ClimateSmart. It focuses on 6 main features which include the homepage, design, navigation, search, content, and usability and 5 additional features that include personalized clothing recommendations, personalized travel recommendations, customizable weather alerts, environmental data, and in-app maps and radar. We'll use a numerical scale ranging from 1 = poor all the way to 5 = excellent, to rate the sites.

Key Features	Climate Smart	The Weather Channel	Accu Weather	National Weather Service	Weather Bug	Weather Underground
Homepage	5	4	4	2	5	1
Design	5	5	4	2	4	1
Navigation	5	5	4	2	4	4
Search	5	5	5	3	3	3
Content	4	5	5	4	5	3
Usability	5	5	5	4	4	4
Weather Information	5	5	5	4	5	4
Personalized Clothing Recommendations	5	0	0	0	0	0
Personalized Travel Recommendations	5	0	0	0	3	0
Customizable Weather Alerts	5	0	0	0	0	0
Environmental Data	5	0	5	2	5	0
In-App Maps and Radar	5	4	2	5	2	1

Mean:	4.91	3.16	3.25	2.33	3.33	1.75

ClimateSmart (4.91)

ClimateSmart's home page has a modern look and is simple with beautiful images of weather scenes and a simplistic search bar that has autocomplete for locations. The navigation is displayed across the site and is very unique and easy to navigate with. The content focuses on the weather of the region in your interest and it contains radars and it is very user friendly when it comes to personalizing any sort of recommendations such as alerts, clothing, and travel. These additional features are not to be found on other weather websites which is what makes ClimateSmart so unique.

The Weather Channel (3.16) https://weather.com/

The Weather Channel has a simple home page but the major issue is a ton of advertisements that are spread all over the place. Not too many images but a nice design nonetheless. Search bar is clean and has autocomplete. The navigation is displayed across the site and very simple. There is a great amount of content, but there are no cool features such as recommendations, it does contain maps and radars which is a must.

AccuWeather (3.25) https://www.accuweather.com/

AccuWeather has a nice and simple home page with a nice background image but just like other weather websites it has many advertisements that are distracting. It has a neat navigation panel and a search bar with autocomplete. The content is plentiful other than the

advertisements and the website is easy to navigate. It also displays accurate and clear weather information considering its name “Accu”. The only additional features the site utilizes are environmental data and maps which aren’t the best.

National Weather Service (2.33) https://www.weather.gov/

The home page of the National Weather Service website is not the best and seems very messy and you are presented with a huge radar map of the United States that is very pixelated. There are 2 navigation bars which make it very difficult to look at. The search bar is small and not in a clear location but it does have autocomplete. There is plenty of information regarding the weather but it does not contain the three additional features. The maps and radar are also not clear compared to others.

WeatherBug (3.33) https://www.weatherbug.com/

The WeatherBug homepage is simple and neat and has a basic design and it delivers the weather information directly. The navigation bar is simplistic and easy to navigate. The search bar has autocomplete, the content is plentiful and the site is easy to use. Compared to other sites, WeatherBug contains 3 of the additional features but the travel recommendations and maps are not the best.

Weather Underground (1.75) https://www.wunderground.com/

Weather Underground’s homepage was unorganized and there was no design whatsoever. The navigation was not so bad, the search bar has autocomplete and there was not much content

about. The site is easy to use and has basic weather information. The site does not contain any of the additional features except for the maps and radar which does not load.

Planned Advantages:

ClimateSmart aims to deliver clear sufficient information to users. ClimateSmart will not overwhelm users with endless advertisements but instead deliver quality content. Unlike the other weather websites, ClimateSmart offers features that those sites do not offer or they do but they are not as good, such as personalized clothing which assists users in which clothes are to be most fitting depending on the weather that day, personalized travel recommendations which suggest whether it is a good day to go out or to stay home, custom weather alerts to alert you if the weather is satisfactory to you then you can go ahead with your outdoor activities, environmental data to show the quality of the air outside, and maps and radars to visually represent the weather map. Users will find all these features to be very beneficial to their daily life. ClimateSmart will deliver these features with the best of quality. User's who are seeking quality content, an engaging yet simple interface, and a place where they can check out the weather, ClimateSmart is what they are looking for!

Data Definition - Francisco

ClimateSmart	The name of our weather application.
User Interface	The graphical user interface used to display weather data, including buttons, menus, or controls used to interact with the application.
User	The user of the weather application, they may be searching for recommendations on what to wear outside.
API	The weather API used to retrieve weather data for their current location.
Database	The database used to store weather data for the application, including any tables or fields used to store the weather data.
Location	The geographical location for which weather data is being displayed.
Current Weather Conditions	The current weather conditions at the selected location, such as temperature, humidity, wind speed and direction, pressure, and cloud cover.
Forecast	A prediction of future weather conditions at the selected location for a specific time period, such as the next 24 hours or the next week.
Weather Alerts	Alerts for calm to severe weather conditions.
Units of Measurements	The units of measurements used to display weather data, such as Celsius or Fahrenheit for temperature, and miles per hours or kilometers per hours for wind speed.

Overview, Scenarios and Use Cases - Aiyaan

Use Case - Location Search

Seeking information about the current weather the user opens ClimateSmart and uses the search bar to enter a location. ClimateSmart will then display the weather data of the specified location.

1. Description:
    Use case shows how a user can interact with ClimitSmart to search for specific information

2. Actors:
    2.1 User
    2.2 Website

3. Preconditions:
    3.1 An internet connection belonging to the user
    3.2 Website is accessible

4. Primary Flow of Events:
    1. User opens ClimitleSmart
    2. User enters the location in the search tool
    3. Website displays the weather data of specified location
    4. Terminate Use Case: Location Search

5. Alternate Flows
    5.1 Location specified by user is not found
        If the term entered by the user in step 2 of primary events is not recognized by the system
    1. ClimiteSmart informs the user that no data is found on the location and they should try again
    2. Repeat step 2 of primary flow of events

Use Case - Recommendations

The user seeks more information about the impact the weather will have or is having on their situation. Using the search tool the user can find the location they are interested in and explore the options provided by ClimateSmart to find more information.

1. Description:

Use case describes the way users can access unique information provided by the website

2. Actors:

2.1 User

2.2 Website

3. Preconditions:

3.1 An internet connection belonging to the user

3.2 Website is accessible

4. Primary Flow of Events:

1. User opens ClimitleSmart

2. User enters the location in the search tool

3. Website displays the weather data of specified location and the option to see recommendations

4.User chooses to learn about the recommendations

5. Website displays the recommended clothing, travel method, and activities unique to the location

6.Terminate Use Case: Recommendations

5. Alternate Flows

5.1 Location specified by user is not found

If the term entered by the user in step 2 of primary events is not recognized by the system

1. ClimiteSmart informs the user that no data is found on the location and they should try again

2. Repeat step 2 of primary flow of events

Use Case - Weather Notifier

The user wants to know the change is weather without keeping the website open or does not want to visit it again to check on the same locations. Once a user has found a location they are interested in they have the option to set up notifications sent by ClimateSmart.

1. Description:

Use case explains how a user can set up notification for when specific thresholds are broken.

2. Actors:

2.1 User

2.2 Website

3. Preconditions:

3.1 An internet connection belonging to the user

3.2 Website is accessible

4. Primary Flow of Events:

1. User opens ClimitleSmart

2. User enters the location in the search tool

3. Website displays the weather data of specified location and provides the option for notifications.

4. User chooses to sign up for notifications.

5. User is asked to enter a threshold value that acts as the temperature value the user wants to monitor

6.When temperature of location is at or past the threshold a notification is sent to the user

7.Terminate Use Case: Weather Notifier

5. Alternate Flows

5.1 Location specified by user is not found

If the term entered by the user in step 2 of primary events is not recognized by the system

1. ClimiteSmart informs the user that no data is found on the location and they should try again

2. Repeat step 2 of primary flow of events

Initial List of High-Level Functional Requirements - David

1. Notifications

   -With location services enabled by the user, the app will constantly check for significant weather disturbances and inform the user of possible actions to take - tailored to their location and the type of weather experienced. These notifications will not be abused for advertising and other unnecessary alerts to annoy the user and distract them from important information.

2. Radar

   -There is a tab specifically for radar, mapping the past day's local and global information as well as estimates made by reputable organizations across the world. When the user looks at storms they will see areas witnessing lightning, tornadoes, etc., and if it is a large-scale hurricane or blizzard, they will see the path the storm may take. On this tab the user will be given actions and or activities in their area, as described in point 4.

3. Personalization Options

   -After the installation of the app and creation of an account, the app will ask for certain information about the user - allergies, age group, notification preferences, etc. These answers will dictate if certain notifications and information is necessary to each user, making the experience more personal, but still giving the option to change preferences if the user feels inclined.

4. Recommendations

-After the app compiles user preferences, location, and forecast, the app will show recommended precautions to take - such as defined evacuation routes, local activities to enjoy the day, and clothing options in line with user preferences.

List of Non-Functional Requirements - Briana

Performance:

1. Responsiveness: The website will be responsive, operating on various monitor sizes, ranging from 7” to 27”. It can be displayed with resolutions ranging from 1024 x 600 to 1900 x 1200.
2. When a user enters a specific location in the search tool, the weather data should be calculated within 10 seconds.
3. Testing: The performance of the functional specs and the speed per transaction will be tested.
4. Reliability: Downtime should be no longer than 10 hours in a time period of 3 months. Downtime is used to perform maintenance and updates. The system should be fully operational otherwise.
5. Bug counts: no more than 7 bugs can be in the system during testing and integration. No more than 5 bugs can remain in the system after delivery.
6. Execution Speed: On a high speed internet connection, the home page should load within 100-300 milliseconds.
7. Robustness: The time needed to restart after a failure should be under an hour. The percentage of events that cause a failure should be under 1%.

Usability:

1. Training: The website should be very user friendly requiring little to no training for any person.
2. Words on screen are readily visible to the user.
3. Accessible: The system will be available 24 hours a day, 7 days a week.
4. Downtime: There will only be downtime when necessary and an alert will be sent ahead of time.
5. Expected load: The system will allow for up to 100 users at a time.
6. Browser compatibility: The system will be compatible with major browsers including Google Chrome, Safari, Internet Explorer, and Mozilla Firefox.
7. Computer/Operating system compatibility: The system can operate on any computer that can run one of the supported browsers listed above.

Maintainability:

1. Webpage does not include advertisements, so external links are not needed. This results in the maintainability of the site to be easier.
2. Everyone on the development team has the ability to edit front end code and back end code.

Supportability:

1. Coding: The system will be coded using HTML5, CSS, and Javascript. Once the code is produced, it shall be reviewed, tested, and finalized by a developer. Classes and ID tags shall be agreed upon, so there is efficiency and as little errors as possible.

Security:

1. Login/Password System: The system will have a login/password for users who decide to sign up for notifications. This will save their location data.
2. Encryption: No encryption will be required as there are no purchases or credit cards needed.
3. The utilization of Bootstrap and jQuery frameworks will be properly used and cited.

High-Level System Architecture - Jehad

Software Products:

Tools: VS Code

Languages:

HTML - language that will allow the browser display the website

CSS - language used to decorate the web pages

JS - scripting language used for client side functionality that will be handled for User Interface(UI) needs to make the user experience enjoyable OR

Frameworks: Bootstrap will be the framework that will be used for code construction for web pages within the groups project, might use alertify.js as a javascript framework

API's: OpenWeatherMap API

Browser Compatibility: The weather notifier system will be a web-based web app that operates on at least two of the all of the major browsers, including Google Chrome, Safari, and Internet Explorer

Team

Team Leader, Front & Back End Developer:

- ★ Jehad Ismail - Product Owner & GitHub Master

Back-End Developers:

- ★ Francisco Guerrero - Scrum Master
- ★ David Uzan - Developer Team

Front-End Developers:

- ★ Briana Jackson - Developer Team
- ★ Aiyaan Nayani - Developer Team

Checklist

a) Team decided on basic means of communications - DONE

b) Team found a time slot to meet outside of the class -

c) Front and back end team leads chosen - DONE

d) Github master chosen - DONE

e) Team ready and able to use the chosen back and front-end frameworks - DONE

f) Skills of each team member defined and known to all - DONE

g) Team lead ensured that all team members read the final M1 and agree/understand it before submission -

History table (revisions dates)
