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Weather Aggregator Documentation

I chose to focus on the weather aggregator for my final project because I am interested in how organizations like the NWS program their satellites and instruments to gather data related to weather. I believe it is important for every person alive to have access to tools like this to ensure public safety among communities whether they are urban and populated or rural and less populated.

The first thing I set out to find was other weather aggregators. The two that I had easily found on google were Forecast Advisor and OpenWeatherMap. Both of these aggregators are good, but they are not what I am looking for. Forecast Advisor is very impressive in how it shows not only the weather in an area, but also the sites and organizations it pulls data from. OpenWeatherMap only shows the weather for the city entered but it also provides a way to receive alerts. That being said, you would need to pay a monthly fee for their subscription service to even do so. What I am looking for is something free, reliable, and only requires a phone number and zip code.

OpenWeatherMap for Tucson:

<https://openweathermap.org/city/5318313>

Forecast Advisor for Tucson:

<https://www.forecastadvisor.com/Arizona/Tucson/85714/>

The second thing I was interested in finding was some sort of API for sending texts from a piece of software to a phone. I had found a few APIs that were able to be rented, like Twilio. But since I want to tackle this as an amateur project, I decided that I wanted to spend the least amount of money possible. After searching more, I was able to find a StackOverflow post about sending an SMS in Python without the need for a third-party API. StackOverflow user ‘acamso’ suggests utilizing Python’s built-in smptlib or aiosmptlib libraries a long with using a cell providers unique email address as {number}@{host}.

The third and last thing pertains to servers. In order for this program to be effective, it needs to be running 24/7 for obvious reasons. There are servers online that can be rented for an hourly or monthly fee, but again, I need this to be cheap so I don’t have to have people pay for the service. I asked some of my friends who majored in CIS and they said the cheapest option would be to purchase a Raspberry Pi for $45 - $90 as it would be a one time purchase and it “just sips” electricity. This is needed to store the information provided by the user and to send out the texts for the location that the user had opted in for.

For a bit of secondary research, I looked at how the NWS handles its emergency alerts. On their website, they have pages such as an FAQ and emergency alert success stories. Both these pages go into great detail regarding how exactly these types of programs work.

One issue I have is that I am not sure what a realistic time would be to cycle through the entire program. Tentatively, I set it to 10 minutes to go through every zip code in the United States. If I could, I would figure out how to have it cycle the entire United States within seconds.

The Pseudocode

A screenshot of a computer program

Description automatically generated

Works Cited

*Sending SMS texts in python without the need for a 3rd party API?*. Stack Overflow. (2020, July 19). https://stackoverflow.com/questions/62476801/sending-sms-texts-in-python-without-the-need-for-a-3rd-party-api

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