

Simple Documentation Template Paper
CSC 414 Software Design
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For my we be asking a user to enter in a selected city and state then the program will provide the information for each state and city entered by the user. This project is coded in the Phyton programming language and is ran in the phyton compiler using the .py file. When ran, the user will be asked to enter in a city and state to be giving the information. The first thing that will be ran in the code after the input is the while loop to the user will have an exit to end the program. We have and exit to allow user to not get stuck in a while loop and end the program. If the user does not input a correct state, they will ask to try again until a valid state is entered. We want our program to be able to catch errors and handle them correctly without crashing the program.

```
# set looping to true
looping = True
# list of states
list_of_states = ["Alaska", "Alabama", "Arkansas", "American Samoa", "Arizona", "California",
                  "Colorado", "Connecticut", "District of Columbia", "Delaware", "Florida",
                  "Georgia", "Guam", "Hawaii", "Iowa", "Idaho", "Illinois", "Indiana", "Kansas",
                  "Kentucky", "Louisiana", "Massachusetts", "Maryland", "Maine", "Michigan", "Minnesota",
                  "Missouri", "Mississippi", "Montana", "North Carolina", "North Dakota", "Nebraska",
                  "New Hampshire", "New Jersey", "New Mexico", "Nevada", "New York", "Ohio", "Oklahoma",
                  "Oregon", "Pennsylvania", "Puerto Rico", "Rhode Island", "South Carolina", "South Dakota",
                  "Tennessee", "Texas", "Utah", "Virginia", "Virgin Islands", "Vermont", "Washington", "Wisconsin",
                  "West Virginia", "Wyoming"]

# while the program is looping we will use number 1 to exit program
while looping:
    # tell user to press 1 to exit the program
    print('--Enter 1 to EXIT program--')

    # while looping ask user for city and capitalize first letter
    city = input('Please enter a city: ').capitalize()

    # if city is 1 break loop
    if city == "1":
        print("You have selected to Exit the program. Goodbye.")
        exit()
        break

    # while looping ask user for city and capitalize first letter
    state = input('Please enter a state: ').capitalize()

    # if city is 1 break loop
    if state == "1":
        print("You have selected to Exit the program. Goodbye.")
        exit()
        break

    # if user enters in invalid state ask user to try again
    if state not in list_of_states:
        print("Invalid Choice for state! Please try again or 1 to exit program.")
        continue
```

After the program is done checking the user input, we will use an API to get additional information for the user about the city and state. This information will output the coordinates and

weather of the city and state imputed by the user. The weather API address and key is provided by the a free website that allows user to access to use inside their own code. For this program, the weather API is 'http://api.openweathermap.org/data/2.5/weather?q=' and the weather key is '&appid=fc623e7c1bc984adfa3864bb04c2fc46'. This data will be used. With the current API used we can access weather data from the API. We will use the call the API from the city name they have entered. The API collects weather data from different sources such as weather models, satellites, and radars. The API along with the API key allows the user to provide a request and gets the information delivered to them.

```
# weather API and KEY
weather_api = 'http://api.openweathermap.org/data/2.5/weather?q='
weather_key = '&appid=fc623e7c1bc984adfa3864bb04c2fc46'

# show full api
the_api = weather_api + str(city) + ',' + str(state) + weather_key

# request
the_request = requests.get(the_api)
main_data = the_request.json()

# city name
city_name = main_data['name']
# city coordinates
city_coordinates = main_data['coord']
# city weather
city_weather = main_data['weather']
city_weather = city_weather[0]

# output to user city name and state
print('\n--' + str(city_name) + ', ' + str(state) + ' Coordinates--')
# city coordinates longitude and latitude
print('Longitude: ' + str(city_coordinates['lon']))
print('Latitude: ' + str(city_coordinates['lat']))

# print weather description
print('\n--' + str(city_name) + ', ' + str(state) + ' Weather--')
print(city_weather['main'])
print(city_weather['description'])
```

After the API process is completed a series and collected the data, if statements will consider if the state typed in by the user is listed for additional information. The if statement will run to find out if one of the states selected by the user is listed and a function will run for that state. If the state is in not in one of the ifs statements, the program will run a function. The reference for the API address is listed below. To get access to the API address you are needed to pay for a subscription or sign up with an active email account.

References

- [1] OpenWeatherMap.org. (n.d.). Pricing. Retrieved November 15, 2020, from <https://openweathermap.org/price>