Getting started with GPT Actions

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Set up and test GPT Actions from scratch.

Weather.gov example

The NSW (National Weather Service) maintains a public API that users can query to receive a weather forecast for any lat-long point. To retrieve a forecast, there's 2 steps:

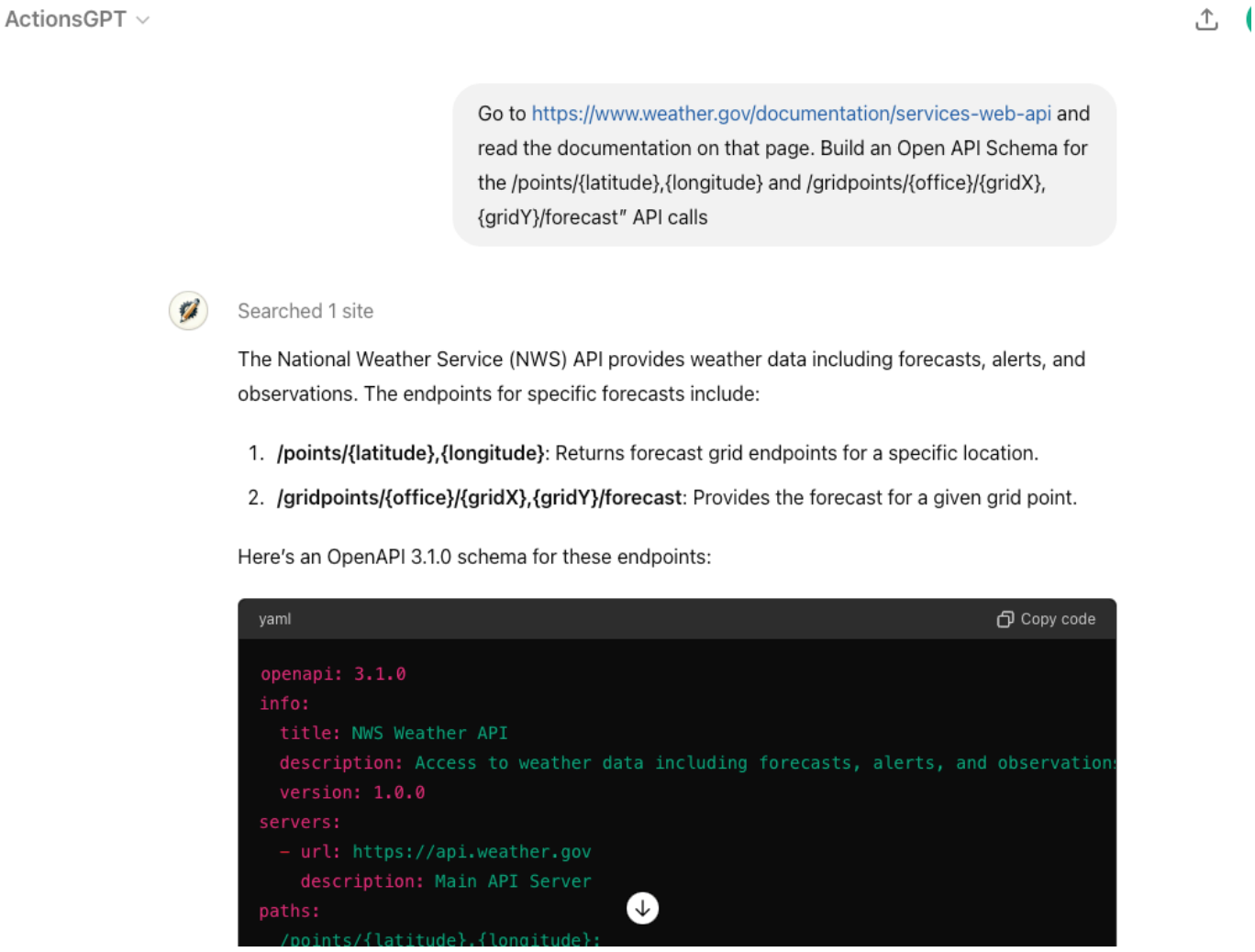
1. A user provides a lat-long to the api.weather.gov/points API and receives back a WFO (weather forecast office), grid-X, and grid-Y coordinates
2. Those 3 elements feed into the api.weather.gov/forecast API to retrieve a forecast for that coordinate

For the purpose of this exercise, let's build a Custom GPT where a user writes a city, landmark, or lat-long coordinates, and the Custom GPT answers questions about a weather forecast in that location.

Step 1: Write and test Open API schema (using Actions GPT)

A GPT Action requires an Open API schema to describe the parameters of the API call, which is a standard for describing APIs.

OpenAI released a public Actions GPT to help developers write this schema. For example, go to the Actions GPT and ask: *"Go to https://www.weather.gov/documentation/services-web-api and read the documentation on that page. Build an Open API Schema for the /points/{latitude},{longitude} and /gridpoints/{office}/{gridX},{gridY}/forecast" API calls"*



DEEP DIVE

See Full Open API Schema

ChatGPT uses the **info** at the top (including the description in particular) to determine if this action is relevant for the user query.

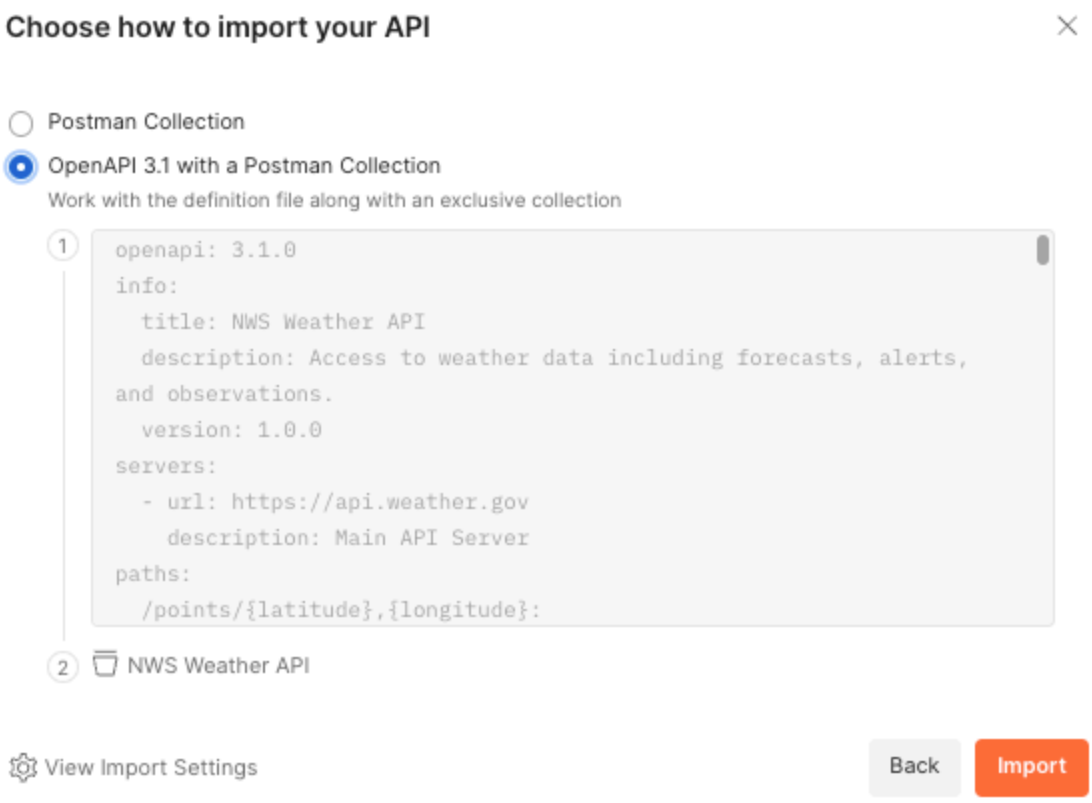
```
info:
  title: NWS Weather API
  description: Access to weather data including forecasts, alerts, and observations.
  version: 1.0.0
```

Then the **parameters** below further define each part of the schema. For example, we're informing ChatGPT that the *office* parameter refers to the Weather Forecast Office (WFO).

```
/gridpoints/{office}/{gridX},{gridY}/forecast:
  get:
    operationId: getGridpointForecast
    summary: Get forecast for a given grid point
    parameters:
      - name: office
        in: path
        required: true
        schema:
          type: string
        description: Weather Forecast Office ID
```

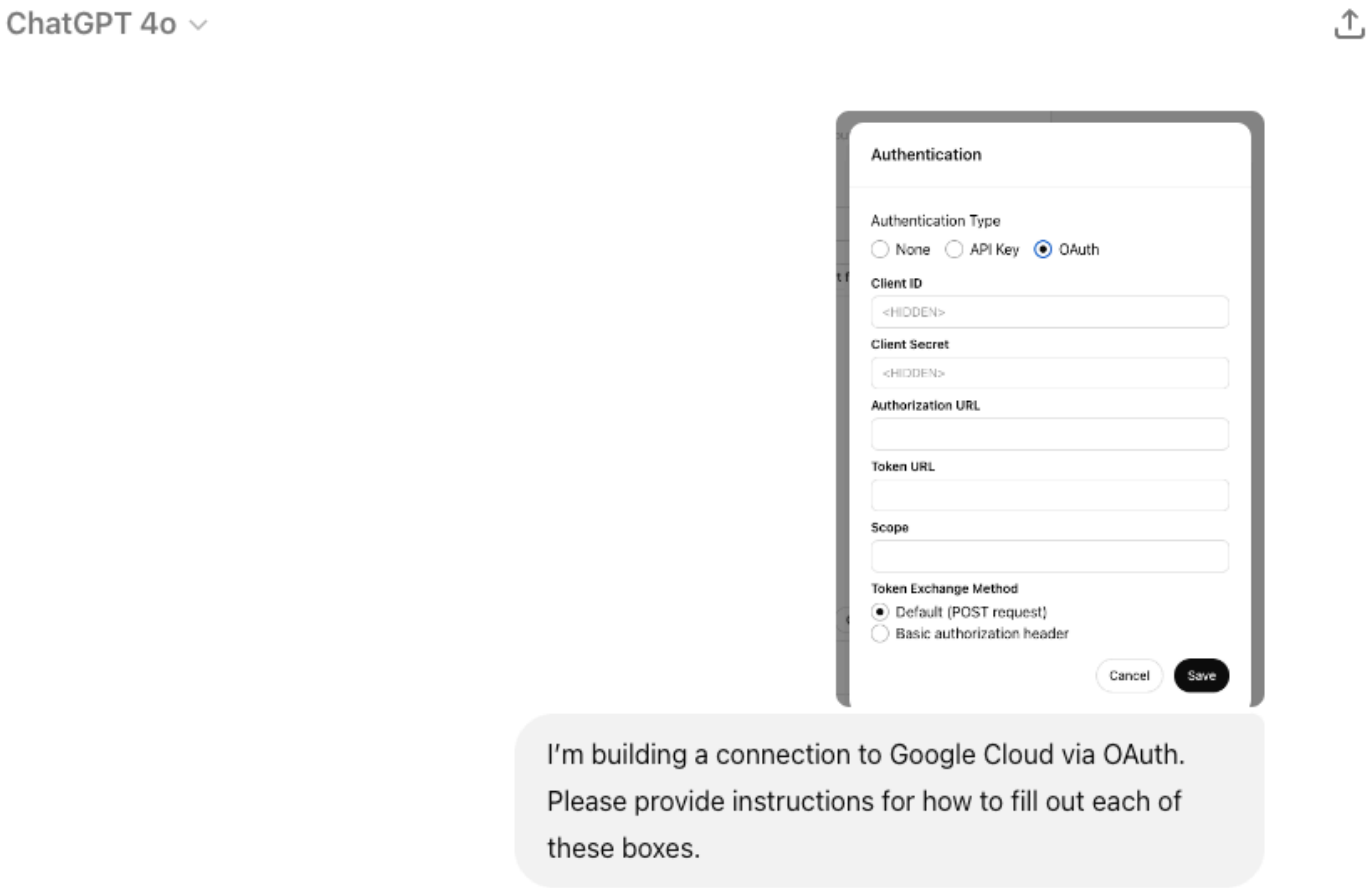
Key: Pay special attention to the **schema names** and **descriptions** that you use in this Open API schema. ChatGPT uses those names and descriptions to understand (a) which API action should be called and (b) which parameter should be used. If a field is restricted to only certain values, you can also provide an "enum" with descriptive category names.

While you can just try the Open API schema directly in a GPT Action, debugging directly in ChatGPT can be a challenge. We recommend using a 3rd party service, like Postman, to test that your API call is working properly. Postman is free to sign up, verbose in its error-handling, and comprehensive in its authentication options. It even gives you the option of importing Open API schemas directly (see below).



Step 2: Identify authentication requirements

This Weather 3rd party service does not require authentication, so you can skip that step for this Custom GPT. For other GPT Actions that do require authentication, there are 2 options: API Key or OAuth. Asking ChatGPT can help you get started for most common applications. For example, if I needed to use OAuth to authenticate to Google Cloud, I can provide a screenshot and ask for details: *"I'm building a connection to Google Cloud via OAuth. Please provide instructions for how to fill out each of these boxes."*



Often, ChatGPT provides the correct directions on all 5 elements. Once you have those basics ready, try testing and debugging the authentication in Postman or another similar service. If you

encounter an error, provide the error to ChatGPT, and it can usually help you debug from there.

Step 3: Create the GPT Action and test

Now is the time to create your Custom GPT. If you've never created a Custom GPT before, start at our Creating a GPT guide.

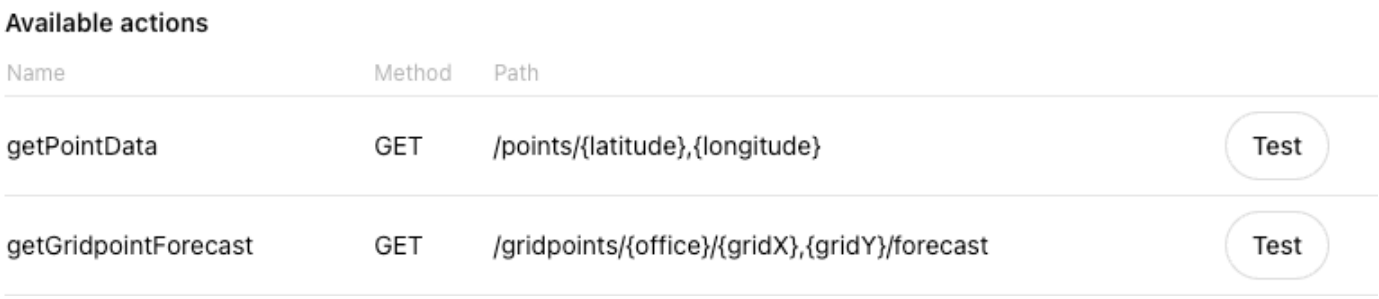
1. Provide a name, description, and image to describe your Custom GPT
2. Go to the Action section and paste in your Open API schema. Take a note of the Action names and json parameters when writing your instructions.
3. Add in your authentication settings
4. Go back to the main page and add in instructions

DEEP DIVE

Guidance on Writing Instructions

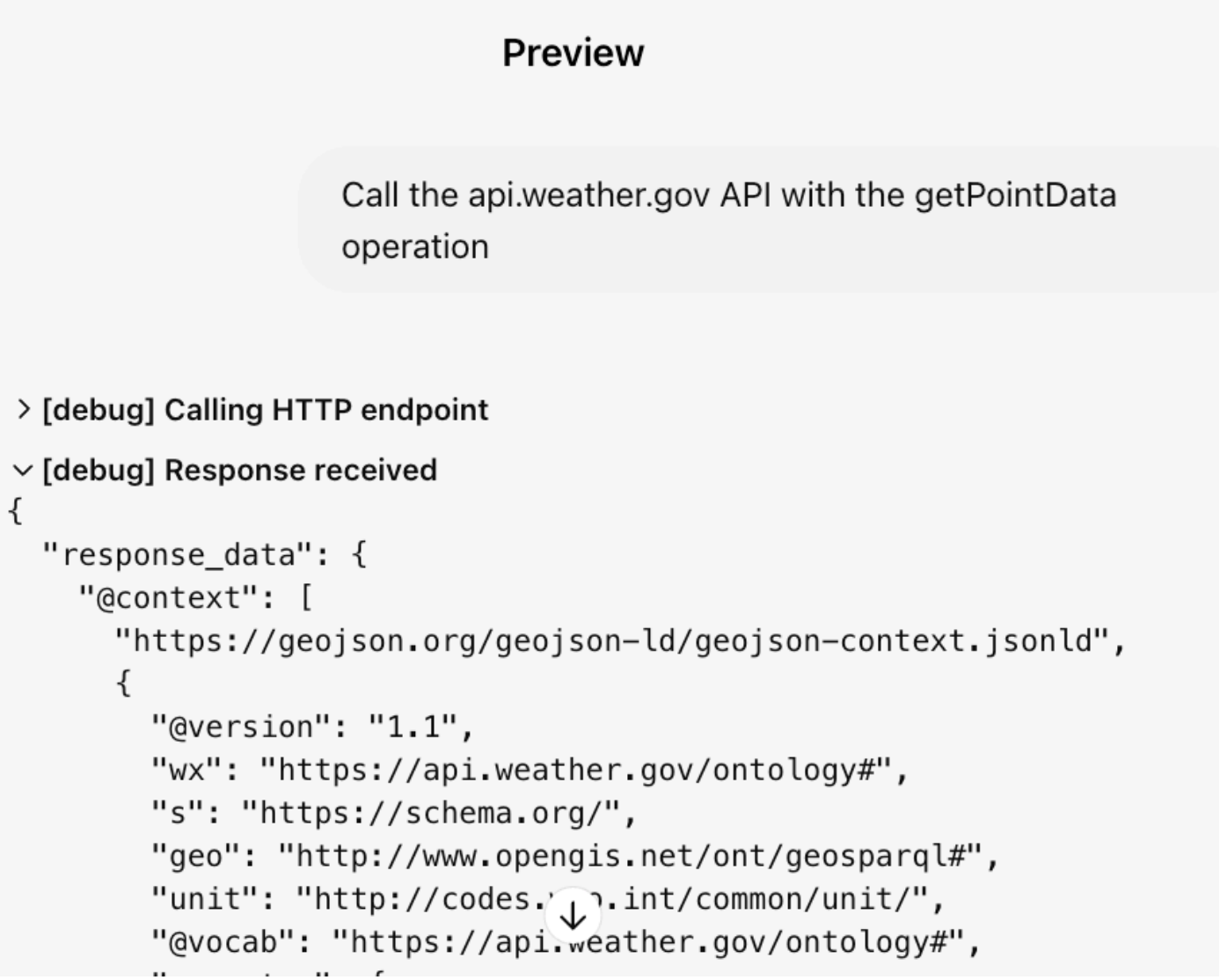
Test the GPT Action

Next to each action, you'll see a **Test** button. Click on that for each action. In the test, you can see the detailed input and output of each API call.



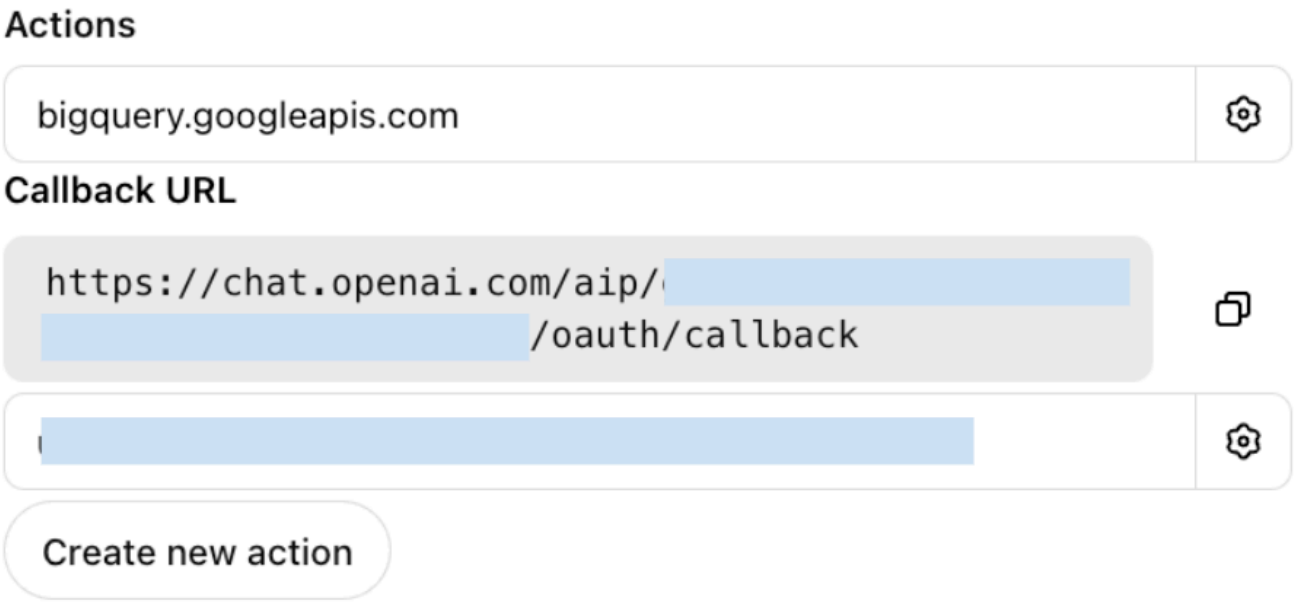
If your API call is working in a 3rd party tool like Postman and not in ChatGPT, there are a few possible culprits:

- The parameters in ChatGPT are wrong or missing
- An authentication issue in ChatGPT
- Your instructions are incomplete or unclear
- The descriptions in the Open API schema are unclear



Step 4: Set up callback URL in the 3rd party app

If your GPT Action uses OAuth Authentication, you'll need to set up the callback URL in your 3rd party application. Once you set up a GPT Action with OAuth, ChatGPT provides you with a callback URL (this will update any time you update one of the OAuth parameters). Copy that callback URL and add it to the appropriate place in your application.



Step 5: Evaluate the Custom GPT

Even though you tested the GPT Action in the step above, you still need to evaluate if the Instructions and GPT Action function in the way users expect. Try to come up with at least 5-10 representative questions (the more, the better) of an **"evaluation set"** of questions to ask your Custom GPT.

Key: Test that the Custom GPT handles each one of your questions as you expect.

An example question: *"What should I pack for a trip to the White House this weekend?"* tests the Custom GPT's ability to: (1) convert a landmark to a lat-long, (2) run both GPT Actions, and (3) answer the user's question.

What should I pack for a trip to the White House this weekend?

Sure, let's get the weather forecast for the White House this weekend so you can pack accordingly. First, I'll need to convert the location of the White House into latitude and longitude coordinates.

The White House is located at approximately:

- Latitude: 38.8977° N
- Longitude: 77.0365° W

Next, I'll retrieve the forecast data for this location. Please hold on for a moment.

Talked to api.weather.gov

The following was shared:

```
latitude: 38.8977
longitude: -77.0365
```

Talked to api.weather.gov

The following was shared:

```
office: "LWX"
gridX: 97
gridY: 71
```

Here's the weather forecast for Washington, D.C. (near the White House) for this weekend:

Friday

- **Daytime**: Sunny, with a high near 96°F. South wind 2 to 6 mph.
- **Night**: Mostly clear, with a low around 75°F. South wind 2 to 6 mph.

Saturday

- **Daytime**: Mostly sunny, with a high near 100°F. Southwest wind 2 to 6 mph.
- **Night**: Partly cloudy, with a low around 79°F. A slight chance of showers and thunderstorms between 8 PM and 2 AM. South wind 6 mph.

Sunday

- **Daytime**: Partly sunny, with a high near 101°F. A slight chance of showers and thunderstorms after 2 PM. Southwest wind 3 to 8 mph.
- **Night**: Mostly cloudy, with a low around 78°F. Showers and thunderstorms likely between 8 PM and 2 AM, then a chance of showers and thunderstorms. Southwest wind 7 mph. Chance of precipitation is 60%.

Packing Suggestions:

1. **Clothing**: Light, breathable clothing to stay cool during the day (shorts, t-shirts, dresses).
2. **Footwear**: Comfortable shoes for walking, as you'll likely be doing a lot of sightseeing.
3. **Sun Protection**: Sunglasses, sunscreen, and a hat to protect against the sun.
4. **Evening Wear**: A light jacket or sweater for the evenings when the temperature drops slightly.
5. **Rain Gear**: A small umbrella or a rain jacket in case of showers and thunderstorms.
6. **Hydration**: A reusable water bottle to stay hydrated in the heat.

Enjoy your trip! If you need any more information, feel free to ask.

Common Debugging Steps

Challenge: The GPT Action is calling the wrong API call (or not calling it at all)

> *Solution:* Make sure the descriptions of the Actions are clear - and refer to the Action names in your Custom GPT Instructions

Challenge: The GPT Action is calling the right API call but not using the parameters correctly

> *Solution:* Add or modify the descriptions of the parameters in the GPT Action

Challenge: The Custom GPT is not working but I am not getting a clear error

Solution: Make sure to test the Action - there are more robust logs in the test window. If that is still unclear, use Postman or another 3rd party service to better diagnose.

Challenge: The Custom GPT is giving an authentication error

Solution: Make sure your callback URL is set up correctly. Try testing the exact same authentication settings in Postman or another 3rd party service

Challenge: The Custom GPT cannot handle more difficult / ambiguous questions

Solution: Try to prompt engineer your instructions in the Custom GPT. See examples in our prompt engineering guide

This concludes the guide to building a Custom GPT. Good luck building and leveraging the OpenAI developer forum if you have additional questions.