



Test Cases for `fetch_weather_data`

Below are test cases covering valid, invalid, and missing city names, as well as API failure scenarios for the provided `fetch_weather_data` function.

Valid City Name

- **Input:** "London"
- **Expected Output:**
A dictionary containing keys: "location", "temperature", "windspeed", "weathercode", with appropriate values for London.
- **Example:**

```
{  
  "location": "London, GB",  
  "temperature": 18.2,  
  "windspeed": 5.1,  
  "weathercode": 1  
}
```

Invalid City Name

- **Input:** "Xyzabcnotarealcity"
- **Expected Output:**

```
{"error": "City 'Xyzabcnotarealcity' not found."}
```

Missing City Name (Empty String)

- **Input:** ""
- **Expected Output:**
Since the geocoding API will not find results for an empty string, the output should be:

```
{"error": "City '' not found."}
```

Missing City Name (None)

- **Input:** None
- **Expected Output:**
The function will likely raise an exception when passing None to the API. If not handled, it may result in a request error. Expected:

```
{"error": "Request failed: ..."} # The actual error message may vary depending on ho
```

API Failure: Geocoding API Unreachable

- **Setup:** Simulate network error or server down for the geocoding API.
- **Input:** "Paris"
- **Expected Output:**

```
{"error": "Request failed: ..."} # Error message from requests.exceptions.RequestExc
```

API Failure: Weather API Unreachable

- **Setup:** Simulate network error or server down for the weather API after geocoding succeeds.
- **Input:** "Berlin"
- **Expected Output:**

```
{"error": "Request failed: ..."} # Error message from requests.exceptions.RequestExc
```

Weather Data Unavailable

- **Setup:** Geocoding succeeds, but weather API returns no "current_weather" key.
- **Input:** "Tokyo"
- **Expected Output:**

```
{"error": "Weather data unavailable."}
```

Summary Table

Test Case	Input	Expected Output/Behavior
Valid city	"London"	Weather data dictionary
Invalid city	"Xyzabcnotarealcity"	{"error": "City 'Xyzabcnotarealcity' not found."}
Missing city (empty string)	""	{"error": "City '' not found."}
Missing city (None)	None	{"error": "Request failed: ..."}
Geocoding API failure	"Paris"	{"error": "Request failed: ..."}
Weather API failure	"Berlin"	{"error": "Request failed: ..."}
Weather data unavailable	"Tokyo"	{"error": "Weather data unavailable."}

These cases comprehensively test the function's behavior with different types of city name inputs and API error scenarios, ensuring robust error handling and correct responses.

