This technical challenge is intended as a canvas to express both your technical coding ability and problem solving skill. A complete solution that covers all situations is highly recommended but not essential, however it is expected that you will identify challenges and justify any decisions made up to the final state of your submission.

The main objective of this problem is to provide an idea of your:

- Technical ability
- Problem solving skill
- Ability to make informed, independent decisions where multiple options exist, with appropriate justification
- Ability to communicate your solution and rationale with professionalism and understanding

This task may be completed in the language or frameworks of your choice, and there are no limitations to dependencies, provided they are available publicly and included or documented in your submission (e.g a dependency or requirements file).

Overview

An asset management organisation has recently commissioned a new device to be installed company assets for reporting of various information related to its current status. As these assets are globally distributed, information from the device contains a standardised UTC timestamp along with its current position.

The provided CSV file contains sample measurements from these devices around the world. The first column contains a unique identifier for the device. The second column contains the timestamp of the reading in UTC. The final two columns contain the longitude and latitude coordinates of where the reading was taken in decimal format.

id	timestamp_utc	longitude	latitude
Unique identifier of the device.	Timestamp in UTC at which the reading was taken.	Longitudinal coordinate of the reading in decimal format.	Latitudinal coordinate of the reading in decimal format.

Your task

Write a program that reads from this CSV file and provides, for a given device identifier, the timestamp of the reading in the local time zone where the reading was obtained. This output should have the format:

```
dd/mm/yyyy hh:mm Z +/-hhmm
```

For example, a reading at 10:30 UTC on 12/05/2016 from (151.209900, -33.865143) would be represented as:

```
05/12/2016 21:30 AEDT +1100
```

Provide a document with answers to the following questions:

- What challenges did you encounter during the timestamp conversion? How did you resolve these?
- Were there any details where you had to make assumptions or decide to implement imperfectly?
- If you were to redo this task, what improvements would you consider making?

Submission

Please provide a complete archive of your project files and submit this by email to careers@section6.nz.

Extension 1

Now that you have a solution to localise measurement timestamps, provide this as a RESTful web service. Feel free to expose as much functionality as you like, but as a minimum, your service should be able to respond with the localised timestamp in the specified format when queried with the device identifier.

Extension 2

The organisation now has a requirement that live measurements be obtained from the device. Provide an implementation using websockets to permit on the fly translation of the device data contained in the CSV.

Extension 3

When multiple rows are present for a single device identifier, provide the capability to retrieve the distance travelled between the coordinate of the measurement and its last measured position. **Hint:** You may wish to look at the Haversine formula.