Citrine Full-Stack Technical Challenge

1) Writing

Communication to both technical and non-technical coworkers is critical. For this part of the challenge, pretend that you are living in the Hypothetical world described below Hypothetical scenario: You are an engineer working on the Data Ingestion pipeline. You see developers struggle to release their code, as they sometimes produce bugs or mess up the deployment scripts. You believe that a continuous integration and deployment system would dramatically improve the quality and cadence of engineering work, but the CTO is skeptical when you bring it up:

- We have too many customers to configure CI/CD for - at Citrine every customer gets their own AWS account
- We should release our code at the end of every sprint
- Each team uses different technologies
- We can't afford to take engineers off of product work to work on it

Write an e-mail to our CTO to convince him that implementing a CI/CD workflow would be a worthy investment.

2) Software

Write a web service in one of the following languages: Java, Scala, Clojure, Python, Ruby, JavaScript. It will perform unit conversion to SI from their "widely used" counterparts. Our tests are automated, so be sure to design your API path exactly as described below. **Please submit code you would be comfortable contributing to a shared codebase or "production" code. In addition to running automated tests, we will also read your code.**

It has a single method to convert units.

Method: **GET**
Path: **/units/si**
Query parameter: **units** . "A string containing any number of SI units multiplied or divided, which might contain parenthesis. Examples: "degree", "degree/minute", "(degree/(minute*hectare)) ", "ha*°"

Return a JSON object with two values:
unit_name : a string of units converted to their SI counterpart. They do not need to be reduced, so something like "(s/s)" for "(min/min)" is acceptable. The parenthesis should match the input.
multiplication_factor : a floating point number (with 14 significant digits) you can use to convert any input in the original units to the new widely-used SI units.

Example: GET "/units/si?units=degree/minute" -> { “unit_name”: "rad/s", “multiplication_factor”: 0.00029088820866572 }

The table below denotes valid input & conversion factors for you to implement. Either values from the left 2 columns are valid input, with the exception of ‘minute’: please use only the quote (‘) character to denote plane angle, and reserve “minute” and “min” for time.

Name	Symbol	Type	SI Unit Conversion
minute	min	time	60s
hour	h	time	3600s
day	d	time	86400s
degree	°	Plane angle	$(\pi / 180)$ rad
	‘	Plane angle	$(\pi / 10800)$ rad
second	“	Plane angle	$(\pi / 648000)$ rad
hectare	ha	area	10000 m^2
litre	L	volume	0.001 m^3
tonne	t	mass	10^3 kg

Please deliver your application in a way that is easy for us to run. Acceptable choices include a dockerfile, a running service on Heroku, a jar file, etc. We also need your source code, which can be attached in an archive or a link to a publicly accessible git repo.