Task 1: Coding

Here is the background information on your task

We have signed a new account - Daikibo Industrials, a global leader in the manufacturing of heavy machinery, founded and headquartered in Tokyo, Japan. They needed assistance with a variety of problems and were impressed to find out Deloitte could help in all verticals.

Daikibo is in the process of integrating IIoT (Industrial Internet-of-Things) devices to monitor, measure and analyze their manufacturing processes. Half of their infrastructure uses devices streaming telemetry data in one format, and the other half - in another. They need your help to combine the two.

Here is your task

Take the following steps to complete the task:

1. Create an account at **repl.it**.
2. Fork **this project** into your workspace.
    - After navigating to the project - find the Fork button on the page and press it.
3. Get acquainted with the 2 data formats by exploring the files (**hint**: it's the same message, represented in 2 different formats):
    - *data-1.json*
    - *data-2.json*
4. Explore the target unified format by looking at the file data-result.json. This is the format you should aim to output in your solution.
5. Complete the solution located in the file *main.py*.

The project is setup in a way to test your solution automatically as you run it.

Find the 2 functions in need of implementation and finish them (look for comment lines starting with "IMPLEMENT:").

Use repl.it to run your project and test your solution (look for a big Run button, currently located at the top).

Don't mind the red color of the console output and the message on failed repl process when you run the project - the important thing is to see no failures in the tests.

- Successful tests produce output looking similar to this

Please use comments in *main.py,* if you need to leave notes on your solution.

Hint: notice the timestamps of the 2 telemetry formats are different, but the target format is exactly like one of them (milliseconds). You will need to convert the other format (ISO) to it. Check the resources for a link to a SO post that can help.

Here are some resources to help you

1. https://docs.replit.com/getting-started/intro-replit
2. https://stackoverflow.com/questions/60442518/python-3-convert-iso-8601-to-milliseconds/60443033#60443033

Task 2: Data Analysis

Here is the background information on your task

Having your data unification algorithm, Daikibo's tech team has converted all telemetry data collected from the 4 factories of the company:

- Daikibo Factory Meiyo (Tokyo, Japan)
- Daikibo Factory Seiko (Osaka, Japan)
- Daikibo Berlin (Berlin, Germany)
- Daikibo Shenzhen (Shenzhen, China)

Each location has 9 types of machines, sending a message every 10 min. Daikibo has been collecting this data for 1 month (May 2021) and they've just shared this data in the form of a single JSON file.

The reason this client wanted to collect telemetry was to answer 2 questions:

1. In which location did machines break the most?
2. What are the machines that broke most often in that location?

Here is your task

Your second task is to analyse the telemetry data collected by Daikibo (and unified with your algorithm) in a software called Tableau. Here are the steps that you need to take:

1. Download the 1 year free trial of Tableau. (Link in the Resources, Gmail account works)
2. Install Tableau on your computer and register an account with the same email you used to download the software.
3. Download the daikibo-telemetry-data.json.zip file -> unzip -> and import it in Tableau.
4. Create a calculated measure field "Unhealthy" with the value of 10 for every unhealthy status (representing 10min of potential down time since the previous message).
5. Create a bar-chart: Down Time per Factory.
6. Create new sheet with a new bar-chart: Down Time per Device Type.
7. Create a Dashboard with the 2 previous sheets and set the first chart to be used as a filter (selecting factory in the first chart, shows only the down time of the machines in this factory there in the second chart).
8. Select the factory with the most down time (click on its bar), make a screenshot of the dashboard and upload it as a submission for this task.

Aside from all the external learning resources, and especially if you have no prior experience with analytics software - please find a step-by-step Task Guide pdf attached in the resources below to help you out.

Here are some resources to help you

Tableau Download : https://www.tableau.com/academic/students

Task 3: Development

Task Overview:

What you'll learn : How to turn a client's desires for a project into a proposal

What you'll do : Write a proposal for creating a dashboard

Here is the background information on your task:

Analyzing offline data is great, but having a real-time overview of processes and smart alerts when things break is even better. Our client would like us to build a real-time manufacturing status dashboard. The first task of this process is drafting a development proposal.

Here are some resources to help you:

- **Libre Office**

Here is your task

Write a formal & informative, but short development proposal for the following project:

- Private dashboard with health status of the 9 machines in each of Daikibo's 4 factories, for which they collect telemetry.
- Access to the page happens only within client's Intranet.
- Authentication is synced to internal authentication server (users can leverage their company-wide accounts).
- The dashboard consists of a single page, listing the current statuses of all monitored devices.
- The view is collapsible/expandable at a factory level, as well as device level (showing history of statuses).

What to include (please take a look at the document template):

1. Overview
    - An intro to the proposal and a high-level description of the project
2. Scope
    - Describe the functionality of the project
    - Reference the graphics included in the template
3. Estimate
    - A total man-hour estimate + breakdown for Development, Testing, and Integration
4. Timeline
    - List the milestones of the project
5. Support
    - Let the client know they can rely on continuous product support (bug fixes, support tickets, new functionality)

For this task you will need an office package - MS Office works if you have that, but you can also use a free software like Libre Office (find a link in the Resources). Please find a template for your proposal document in the resources. Keeping the document as long as it is in the template (in terms of number of pages) is a good idea.

Task 4: Cyber Security

Task Overview

What you'll learn

- How to support a client in a cybersecurity breach
- How to read web activity logs

What you'll do

- Help a client determine the source of a data breach
- Answer questions to identify suspicious user activity

Here is the background information on your task:

A big news publication has revealed sensitive private information of Daikibo Industrials' – a production problem has caused their assembly lines to stop, threatening the smooth operation of supply chains relying on Daikibo's products. The client suspects the security of their new status board may have been breached.

Here is your task

In this task you will be joining our Cyber Security team. Your job is to:

1. Determine if the alleged breach could have happened from an attacker on the Internet, directly (no access to Daikibo's VPN).
    - **Hint:** go back to the scope requirements of the status dashboard (previous task) and look for the answer there
2. Inspect a *web_requests.log* file (listing only data from a period when the alleged attack has to have happened):
    - Try to spot suspicious requests
        - **Hint:** in the Resources section you can find a diagram example on how to read the logs file
        - **Hint:** Look for longer sequences of user requests
        - **Hint:** notice the order of request from Login → to requests for the dashboard page's resources (styles, scripts, images, etc.) → to api requests for the actual statuses of the machines
        - **Hint:** How would you recognize if an automated request to the API happens at an exact interval of time (assume no such functionality is available in the dashboard)
    - If you've identified such requests - make sure to write down the id of the user (it's part of the requests)

Here is how the *web_requests.log* file is structured:

- There is a sequence of blocks of text, divided by an empty line
- Each block represents the activity of a unique IP address (no 2 blocks have the same IP)
- The block starts with the IP address followed by a table of the requests made to Daikibo's telemetry dashboard by the device with this IP address, sorted by time
- The IP addresses are from the internal Daikibo's network and are static
- 1 block can represent 1 or multiple browsing sessions
- Sessions made on different dates require new login
- There is **no continuous polling/pushing of data** between client & server - the users need to refresh the page to get the latest
- **Hint:** For an easier visual inspection, open up the file in a code editor like Sublime Text or Visual Studio Code, expand the window to the full width of your screen and decrease font size until you no text breaks on new line

When you believe you have answered the 2 questions above - submit the task by taking a quick quiz to check your discoveries. Start the quiz by clicking 'Start your quiz' below. Good luck!

Task 4: Cyber Security

Question 1 of 2

Q 1/2: Is there a way for a hacker to access Daikibo's manufacturing status dashboard directly from the Internet?

- ○ Yes, they only need to steal the credentials of a Daikibo employee.
- ○ Yes, they can "brute-force" the authentication service and get in.
- ○ No, because Daikibo's employees follow perfect security guidelines and would never have allowed their credentials to get stolen.
- ◉ No, the attacker has no direct access to the status dashboard.

Great Work!

You got it! In the original scope of the project we have listed that the dashboard will be living in Daikibo's Intranet. The only remote access to it would be through VPN tunnelling.

Task 4: Cyber Security

Question 2 of 2

Q 2/2: Looking at the web_requests.log - what is the user id with the most suspicious activity?

- ○ 5Eckr4DTaLLDaDMGqmMJ3g
- ◉ mdB7yD2dp1BFZPontHBQ1Z
- ○ dBCm2JjBU815PB8zPDvKqv
- ○ rxExVoSitLbzzw1bTJwNuJ

Great Work!

Nailed it! It starts off with a regular login -> browsing of the dashboard. But then it turns into a regular, once-per-hour (see the time stamps) automated check of the statuses in all 4 factories with no page resources being loaded and with an obviously non-human punctuality.

Task 5: Forensic Technology

Task Overview

What you'll learn

- How to help a client draw conclusions from data

What you'll do

- Add a column to classify data in an Excel sheet

Here is the background information on your task:

After a worrisome number of internal complaints on gender inequality (in terms of pay), Daikibo Industrials wants us to help them investigate.

The Forensic Tech team has built an algorithm to quantify “level of gender pay equality” for most/all job roles within the company, in all company locations. Our Forensics lead thinks it will be a great welcoming task for you to finish the job.

Here is your task

We have processed all data on employee compensation and we've generated an excel file (Equality Table.xlsx, available in the Resources) containing 3 columns:

1. Factory
2. Job Role
3. Equality Score (integer; ranging between -100 and +100; 0 is ideal)

Here is your final task:

- Create a 4th column (Equality class), classifying the equality score in those 3 types:
  - Fair (+-10)
  - Unfair (<-10 AND >10)
  - Highly Discriminative (<-20 AND >20)

Examples:

- 6 → Fair
- -9 → Unfair
- -30 → Highly Discriminative

Please find the Equality Table you need to edit from the resources below. When you are done - upload the edited version of the file.

Resume Snippet

Take your updated resume and apply for **Jobs**, **Programs**, **Events** and **Talent Networks**.

Deloitte Australia Technology Job Simulation on Forage - January 2025

- Completed a job simulation involving data analysis for Deloitte's Technology team
- Created a data dashboard using Tableau
- Wrote a proposal for a client project to create a functioning dashboard
- Used Excel to classify data and draw business conclusions

Use our resume guidance here

Forage

1 Add to your Resume 2 Stand out on LinkedIn 3 Use in interviews!

Use the simulation in interviews

Recruiters look for candidates who...	How Forage has prepared you...	What you should say...
Show an interest in their company	You've spent several hours learning about how the company works - this shows you are interested!	I really enjoyed learning more about [company name]'s culture through the [simulation name] name]. These aspects stood out to me [insert what you liked].
Understand the job you are applying for	You've experienced a day on the job. You now know what the job involves and what you'll be doing.	I've done [simulation name] and I understand that as a [job name] I'll be working on [insert relevant tasks] and this excites me because [insert reason].
Are motivated to build your skills	You've completed real work tasks and gained relevant skills for the job - make it easy for recruiters to see this!	I've done [simulation name] and I've now practiced [these skills] which I know are important to succeed as a [job name] at your company.

Interview Tip

In a typical interview you'll be asked "why are you interested in this role?" or "why are you interested in working at our company?". Use this interview tip to explain why you want the job.

"Why are you interested in this role?"

I recently participated in Deloitte's job simulation on the Forage platform, and it was incredibly useful to understand what it might be like to participate on a technology team at Deloitte.

I was able to reconcile data, create a dashboard and advise a client on a data breach. I practiced using Tableau and Excel and built my data analysis skills in a real-world context.

Doing this program confirmed that I really enjoy working on technology problems for clients and I'm excited to apply these skills on a team at a company like Deloitte.