DJS COMPUTE INTERVIEW TASKS

General instructions:

1. As given tasks are aimed to determine your basic understanding and knowledge of a particular topic or domain, feel free to use online resources to learn and perform accordingly.
2. Feel free to attempt as much as you know; It is not a compulsion to complete all the tasks of a particular domain.
3. You can perform tasks of multiple domains.
4. Do not copy the task just for the sake of completion.
5. Create a github repo named djs-compute-tasks and upload the jupyter notebook/colab/code-base there.
6. Provide the Github link to your task in the registration form.
7. For doubts, contact the mentors listed under departments or contact CP and VCP from the contacts below.

Yash Thakar - +91 82910 06737

Shruti Jain - +91 99303 15856

Mehek Jain - +91 90828 88529

Machine Learning and Data Analytics Tasks:

Task 1: Python

- Question 1
- Question 2
- Question 3
- Question 4
- Question 5
- Question 6
- Question 7

Task 2: Data Preprocessing and Visualization

The breast cancer survival dataset holds significant importance in medical research and patient care. By analysing this dataset, researchers can identify key factors affecting survival rates, enabling early detection and personalised treatment strategies. It aids in understanding the impact of various variables like tumour characteristics, treatment approaches, and patient demographics on outcomes like the survival of the patient. Such insights empower healthcare professionals to make informed decisions, improve prognosis, and enhance overall breast cancer management, ultimately contributing to higher survival rates and improved quality of life for patients.

The Dataset contains patient demographics like Age and Gender, Medical statistics like Protein Levels, Stage of the Tumour and Histology data (indicates the type of breast cancer) and prognostic and predictive factors like ER, PR and HER2 status and patient records like their Date of Surgery and Date of last visit.

Dataset: Kaggle Dataset Link

Colab: https://github.com/djscompute/compute-ml-da-tasks

Task 3: ML Model

Apply an appropriate ML algorithm on the same dataset to predict the survival chances and state its reason.

Use Lazy Predict in to apply multiple models and understand which models works better without any parameter tuning for which the reference is given below:
https://pypi.org/project/lazypredict/

Mentors:

- Hiya Jain - +91 99202 11157
- Mihir Randive - +91 70217 36297
- Harsh Shetye - +91 84199 88134
- Dhruv Varma - +91 98333 16865

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Web Development Tasks:

Task 1:
You're building a website for a coffee shop. They have a promotion where they offer a discount on coffee based on the quantity ordered.
Write a JavaScript function that takes the quantity of coffee bags as an argument and calculates the total cost after applying the discount rules:

- If the quantity is less than 5, there's no discount.
- If the quantity is between 5 and 10 (both inclusive), apply a 10% discount.
- If the quantity is more than 10, apply a 20% discount.
- The price per bag of coffee is $10.

Write the JavaScript function that calculates and returns the total cost after applying the appropriate discount.

References:

- https://youtu.be/8Cxn3AakfTk
- https://youtu.be/JwOROnOmuNQ

Task 2:
You've been given the task to create a pricing comparison table for a software company's website.
The table should have three different pricing plans: Basic, Pro, and Premium. Each plan should display its name, price, a brief description, and features. The features should be listed in a clear and organised manner. The pricing plans should be horizontally aligned, and each plan's details should be styled distinctly, with a different background colour for each plan. Additionally, when a user hovers their cursor over a feature, that feature's background should change to indicate interactivity.
Design the HTML and CSS to achieve this pricing comparison table. Focus on the layout, styling, and interactivity as described.

Brownie Point:

- Responsive Design: Make sure the pricing comparison table is responsive, meaning it adapts well to different screen sizes, such as desktop, tablet, and mobile.
- Pricing Animation: Add a subtle animation to the pricing details, suchQ as a bounce or Fade-in effect, to draw attention to the pricing section.

Task 3: Clone the Creative Agency Website
Objective: Create a clone of the website "Creative-agency-template-20151.webflow.io" using HTML, CSS, and JavaScript (or any preferred web framework).

Additional Points:

- Implement a dark and light mode toggle.
- Ensure the form is functional, processing submissions correctly.
- You can use a web framework for easier development.

References:

- https://youtu.be/iKg-hFIGnWE

Note:
It is not mandatory to replicate all elements; prioritise essential components while maintaining the original design.

Mentors:

Satvam Thakkar - +91 98501 90603
Vineet Chotaliya - +91 93266 74067
Mohammed Mehdi - +91 98337 34905

App Development Tasks:

Task 1: Understanding Flutter

Read the article on the differences between Flutter and React Native to gain insights into their pros and cons. This will help you make an informed decision about which technology to choose for your app development.

Article Link:
https://www.thedroidsonroids.com/blog/flutter-vs-react-native-what-to-choose

Task 2: Setting Up Flutter

Watch the video tutorial on setting up Flutter. Keep in mind that the setup process might not be straightforward, so pay close attention to the instructions in the video to ensure a smooth installation.

Video Link: Flutter Installation

Task 3: UI Enhancement for Bonus Brownie Points

As part of your app development preparation, we present you with an optional challenge to further enhance your skills and earn bonus recognition. Below, you'll find two screenshots showcasing different ui of the same app interface:

- The left screen requires improvement.
- The right side showcases the desired output with a well-designed UI.

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Following is the github link where you can find the jumbled code correct it and make it look similar to the image on the right side above:
[GitHub Repository Link]

Mentors:

- Shivam Nagori - +91 75068 01493
- Vishma Adeshra - +91 90042 68957
- Virum Ranka - +91 87670 01908

Creatives:

Task 1:
Create a Figma design for a website/app of your choice

Requirements:

- Header with clear navigation and search bar.
- Hero section with compelling imagery and CTA button.
- Featured events/products/categories sections.
- Testimonials for building trust.
- Footer with essential links and social icons.
- Responsive design

Submission:

- Use Figma to design the homepage.
- Share the Figma link for review.

Criteria:

- Creativity and originality.
- Consistency in design elements.
- User-centric approach.
- Attention to detail.

We're excited to see your design prowess! Good luck!

OR

Task 2:
Create a creative post/reel for an event/seminar you can 'Data2Insights'
Alternatively, You can showcase any previous work done in Canva.