A company works with number of employee, all the workers are dependents on the employees.even if one of the employee resign the job immediately then assigned work will not be finished at the time, so delivery of the project to the clients will be delayed. company planned to make solution for this, they want to know which employee to resign this month or next month. if they know previously, they can arrange alternative to avoid such problem. As an ai engineer you must give solution to this,

1. How will you achieve this in ai.
2. Find out the 3 stage of problem identification.
3. Name the project.
4 .Create the dummy dataset.

1. How will you achieve this using AI?

This is a **Supervised Machine Learning - Classification** problem.

We want the model to predict: Will Resign (1) or Will Not Resign (0)

Steps to achieve this:

1. Collect the historical employee data.
2. Prepare and clean the data.
3. Label the data (clearly)
4. Choose ML model
5. Train the model
6. Test and evaluate
7. Deploy and monitor (use in real time to predict current employee risk)

2. Find out the 3 stage of problem identification?

Stage-1: Problem understanding:

Goal:

To identify employees who are likely to resign suddenly (this month or next month), so the company can take early action and avoid project delays.

Why it's important:

When one employee resigns unexpectedly, the dependent workers can't finish their work on time. This leads to project delivery delays to clients, causing loss of trust and revenue.

Stage-2: Data Understanding:

To solve the problem with AI, we need to understand what data we have to collect.

Example data about each employee includes:

Feature:

1. **Employee name** or **ID** - we have to identify the employee.
2. **Department** - Resignation trends may differ in department to department.
3. **Years of company** - To know about the employee behaviour. It may differ in new and old employee.
4. **OverTime** - Indicates work pressure
5. **Salary level** - Low salary ay cause dissatisfaction.
6. **Job satisfaction** - It Affects the employee comfortable and happiness.
7. **Label** - 1 if employee resigned ,0 if employee will not resign

This labelled data helps us use Supervised Machine Learning.

Stage-3: Problem Formulation (Convert to ML Task)

Now we turn the business problem into a machine learning problem:

- Type of ML: Supervised Learning
- Type of Output: Classification (Resign = 1, Not Resign = 0)
- Goal: Train a model that predicts whether an employee will resign in the next month.

We will:

- Train the model on past data (who resigned and who didn’t)
- Use it to predict for current employees
- Flag employees at **risk of resigning**, so the company can take action.

3. Name the project:

Predictive Resignation Risk System

4. Create the Dummy Dataset

Employee ID	Department	years_at_company	Over-time	Job-satisfication	salary_level	Resigned (Label)
E001	QA	2	Yes	2	10000	1
E002	Development	3	No	2	20000	0
E003	Testing	2	No	4	15000	0
E004	Design	1	Yes	3	12000	1