Some used architecture pattern

Layerd pattern:

Subtasks:

Each layer provide sevices to the next higher level

Layer has:

- Presentation layer
- App layer
- Business Logic layer
- Data access

Used in :

- Desktop app
- E_commerce web app.

Client _server pattern:

client-server architectural pattern is a widely used model for designing distributed software systems where multiple clients communicate and collaborate over a server

used in:

- bank system
- email
- document sharing

Master _Slave pattern:

Master compute and control slave

Slaves is processes does not   depend on each other

Used in :

- Real time application

Event bus pattern:

The Event Bus pattern is an architectural pattern used to facilitate communication and interaction between different components components communicate by sending and receiving events through a centralized event bus or message

Used in:

Android notification

Pipe flow pattern:

 Structure system produce and process data

Used in:

Work flow of bioinformatics

Peer to peer:

A peer-to-peer (P2P) network is a decentralized network architecture where participants, known as peers, communicate and share resources directly with each other without relying on a central server

Used in :

- Iot
- File sharing

   Model_view _controller:
   The Model-View-Controller (MVC) architectural pattern is a design pattern commonly used in software engineering to separate the concerns of an application's user interface and business logic.

Comparison between SQL and power query:

	SQL	Power Query
Focus	SQL (Structured Query Language) is primarily focused on querying and managing relational databases. It's used	Power Query is designed for data transformation and ETL (Extract, Transform, Load) operations. It's used to connect

	to retrieve, modify, and manipulate data within databases.	to various data sources,
Environment	SQL is a language that is used within database management systems like MySQL, PostgreSQL, SQL Server, etc. It's often written as queries in text format.	Power Query is a tool that's integrated into Microsoft Excel, Power BI, and other Microsoft products.
Performance	SQL is optimized for querying and managing databases, making it more efficient for large-scale data operations.	Power Query might not be as performant as SQL for handling very large datasets or complex operations. It's more focused on ease of use and visualization.

Amazon Web Services (AWS):

provides a range of machine learning (ML) services that cater to different aspects of the machine learning lifecycle.

- **Amazon SageMaker:** Amazon SageMaker is a comprehensive platform for building, training, and deploying machine learning models.
- **Amazon Rekognition:** Amazon Rekognition is a service for image and video analysis. It can identify objects, people, text, scenes, and activities within images and videos.
- **Amazon Comprehend**: Amazon Comprehend is a natural language processing (NLP) service. It can analyze text to extract insights, such as sentiment analysis, entity recognition, and language detection. It's used for tasks like understanding customer feedback, social media analysis, and content categorization.

Several programming languages that originally supported single-threaded execution have evolved over time to incorporate multi-threading capabilities as:

1. **Python**

2. **Php**
3. **Ruby**
4. **Javascript**

Robotic process automation(RBA):

Problems:

- **Lack of it recourses**
- **Poor strategies**
- **Employee resistance**

Benefits :

- **Reduction of cost**
- **Higher productivity**
- **Improved quality**

RBA Tools :

- **Ui path**
- **Power automate**
- **Automation ANYWhere**

What is Cron Jobs?

Cron is a utility program that enables you to input commands to schedule tasks continuously at a specific time. The tasks you schedule in cron are called Cron Jobs. Also, it allows you to determine the type of tasks you want to automate and the time for execution.

How to add a cron job on Windows?

On Microsoft Windows, cron jobs are known as Scheduled Tasks. They can be added through the Windows Task Scheduler user interface, by using PowerShell

Examples for crons tasks:

- disk space monitoring
- schedule backups

Web scraping :

software applications or libraries that enable you to extract data from websites and web pages. They automate the process of retrieving information from websites, which can be useful for data collection, research, analysis, and more

some of Web scraping tools:

Beautiful Soup:

Scrapy

Selenium