

--Q3. A paragraph on what PaaS, SaaS and IaaS are and the differences between them.

Software as a Service (SaaS) is fully managed by cloud services that users are able to directly apply the application. Users are not required to install or download any applications. Instead, it can be run on the web browser. For example, the functionality of Google Docs is similar to Microsoft Word. In the former, users can address the documents from the web browser without downloading the application. In addition, for all infrastructures such as storage, or even application version, users only need to connect to the Internet, and then use it directly on the web browser.

Platform as a Service (PaaS), clients can run their own data or copies of the application on the cloud service without building infrastructures, databases, security, and even operating systems. Users are able to concentrate on developing their coding, application, and testing. For instance, Google App Engine (GAP) provided a platform for developers for building their applications. Developers do not need to worry about storage or security. All these are handled by providers. They can just focus on developing their application.

Infrastructure as a Service (IaaS) provided fundamental services, such as computing, storage, servers, and data centers. Users can purchase IaaS based on consumption, like utility billing. For example, Google Cloud Dataproc offers Spark environment for users to use. Clients have to configure how many clusters they want to use. However, users do not require to build up the environment. Based on these resources that clients' consume, providers will charge the fee to clients.

In conclusion, Of these three services, SaaS is the most simple and convenient for users to use, but narrowing functionality, and vice versa. In addition, the difference between PaaS and IaaS, IaaS should configure operating systems, databases, and security. PaaS merely demand to focus on their own code, testing and developing application.

--Q4. A paragraph on the differences between ETL and ELT. Also, list the pros and cons of each in a chart.

ETL vs. ELT

	Pros	Cons
ETL	1. Can be implemented in either on-premise or cloud-based environment.	1. Loading speed slow because data must be transformed in a staging area before it's load.
	2. Can deal with more complex transformation	2. ETL is not ideal for dealing with large volumes of data
	3. ETL is a well-developed process.	3. Only can handle structured data
ELT	1. ELT can ingest data in any format. Such as unstructured data	1. The true advantage only possible when paired with the storage and processing power of the cloud.
	2. Transformation typically happens only when analysis is demanded. Thus more efficiency.	2. Limited tools available that offer support for ELT processes.
	3. ELT model can be applied to new sources of data to quickly capture the information in the data lake.	3. Regulations may prohibit companies from storing sensitive data, even if that information is removed in a later transformation.

Literally, the difference between ETL and ELT is the sequence of occurring for Transformation and Load. The critical factor differentiating the two is when and where the transformation process is executed.