

## Week 3 Quiz

1. Which of the following statements are true about "loosely-coupled systems"? Select all that apply.

- Stable and predictable APIs enabled teams at Amazon to function as a loosely-coupled system.

*Correct: Nice work! APIs allowed teams at Amazon to communicate and serve data and functionality through a stable interface. This allowed individual teams to plug into one another, and any reconfiguration or retooling within any given team did not affect the others.*

- Loosely-coupled systems give you the ability to always be architecting.

*Correct: Yes! With loosely coupled systems, you can easily swap out components for new ones, allowing you to always be architecting and constantly adapting to the changes in business requirements and available technology.*

- Building loosely-coupled systems helps you ensure your decisions are reversible.

*Correct: Nice job! Loosely-coupled systems allow for decisions to be reversed, because you can introduce a new/updated component without disturbing your overall system.*

- With a loosely-coupled system, if you need to swap out one of the components, you'll likely have to redesign the entire system for it to function correctly.

2. In which of the following scenarios would you consider running your data engineering workloads on premises vs. on the cloud? Select all that apply.

- You're working on a task that has stable and predictable demands for computing resources, and your company already has these resources established in its own data centers.

*Correct: Since you're expecting no fluctuations in the demand and your organization already has the needed resources, then it makes sense to run the workload on-premises.*

- You're looking to run your workload in a highly resilient environment that ensures data recovery in case of disaster or system failures.

- You're working with data that your company is required by law to have full control over the systems and subsystems used for compute and storage and the data must be kept within a specific geographic location.

*Correct: If you keep your workload on premises, you can have full control over your data and where it must be stored, as required by law.*

- You're working on an application where you might experience fluctuating demands for compute resources and you need your system to handle transient load spikes.

3. Which of the following is true about serverless computing?

- Serverless services are always the least expensive option.
- It means that the server that runs the service or application is abstracted from you, so that you don't need to worry about scaling, managing, and maintaining it.
- It means that the service is a low-code environment that requires less coding effort.
- It means that you wrap your code and dependencies in a single unit that can be run on any server.

4. What is Enterprise Architecture? (As defined in this course)

- Enterprise architecture is the design of systems to support change in an enterprise, achieved by flexible and reversible decisions reached through a careful evaluation of trade-offs.
- Enterprise architecture is a sub-area of Data Architecture that is focused on optimizing how data is served throughout the enterprise.
- Enterprise architecture is the design of organizational structure and hierarchy of an enterprise, including roles and responsibilities.

5. This week you saw two examples of security approaches that you can take to protect your data: the "zero- trust" approach and the "hardened-perimeter" approach. What is the main difference between the two approaches?

- Taking a "hardened-perimeter" approach means that you block or restrict access to all external connections, while treating all internal traffic within your organization as trusted. On the other hand with "zero-trust", no users or applications are trusted by default, whether they are internal or external to your organization's network.
- There is no difference between these two approaches as the "hardened-perimeter" approach implies building a "wall of security" around all the data resources of your system and "zero trust" means you trust no external actors with access to your data systems, which is effectively the same thing.
- Taking a "zero-trust" approach means that you block or restrict access to all external connections, while allowing all internal traffic within your organization's network. On the other hand, "hardened- perimeter" assumes that you consider all users and applications as untrusted by default whether they are inside or outside the organization's network.

*Correct: That's right, and in the modern era of cloud computing, where resources are typically connected over the internet, the notion of a "hardened-perimeter" has eroded, such that you should adopt a zero- trust approach in all the data systems you build.*

6. True or False: The statement "you can think of batch processing as a special case of streaming" simply means that, since data is just information about events that are happening continuously out in the world, essentially all data is streaming at its source. Therefore, streaming ingestion could be thought of as the most natural or basic approach, while batch ingestion just imposes arbitrary boundaries on that same stream of data.

- False

- True

7. When it comes to considerations around building your own solution from scratch versus using an available open source or managed service, what does it mean to "avoid undifferentiated heavy lifting"? Select all that apply.

- Avoiding undifferentiated heavy lifting means always choosing low-code / no code service options when available because these types of tools allow you to do less work and still get to a good result.

- Avoiding undifferentiated heavy lifting means avoiding doing work that costs significant time and resources but doesn't add value in terms of cost savings or advantage for the business.

*Correct: That's right, oftentimes using an available open source or managed service solution will actually be cheaper than paying a team to build from scratch and free you up to focus on other tasks instead of spending time deploying and maintaining a custom tool.*

- Avoiding undifferentiated heavy lifting in some cases means choosing to pay for a managed or proprietary service instead of a free open source option because it saves your team time and effort and allows you to dedicate your time to areas that add more value for the business.

*Correct: That's right, in some cases, a free open source solution may seem appealing but if the time and resources it would take to implement and maintain it are significant, a managed or proprietary service could be cheaper in the long run and free you up to do other work.*

8. "Choose common components wisely" is one of the principles of good data architecture. Which of the following statements true about this principle? Select all that apply.

- Common components can be any tool or technology that has broad applicability within an organization and that can be shared by different teams.

*Correct: Common components can be anything that has broad applicability within an organization, including things like object storage, version-control systems, observability, monitoring and orchestration systems, and visualization tools.*

- Making a "wise" choice of common components is considered an act of leadership because it helps the company stay up-to date with the latest technology.
- Common components are popular components that are widely used across many organizations.

- Making a "wise" choice of common components is considered an act of leadership because it means that you identify the tools that help teams do their best work and work well with each other.

*Correct: Making a wise choice of common components that will be used across teams means you are identifying opportunities, removing barriers to productivity and avoiding one-size-fits-all solutions.*

9. What are the key pillars of the AWS Well-Architected Framework?

- Plan for Failure, Architect for Scalability, Prioritize Security, Embrace FinOps
- Common Components, Leadership
- Always be Architecting, Build Loosely Coupled Systems, Make Reversible Decisions
- Operational Excellence, Security, Reliability, Performance Efficiency, Cost Optimization, Sustainability