SA - All Review Question

1. According to the lecture in decomposition strategies, how many steps are in the decomposition process?

A. 2

B. 3

C. 4

D. 5

2. Which step in the decomposition process involves analyzing the business process and creating a high-level domain model?

A. Identify business capabilities

B. Identify system operations

A. Identify business capabilities – It focuses on analyzing business processes and creating high-level domain models.

C. Identify services

D. Define service APIs and collaborations

3. Which one is not considered as an obstacle in decomposing an application into services?

D. God class is not easy to identify – This isn't an obstacle in service decomposition but a challenge in code structure.

A. Network latency

B. Reduced availability due to synchronous communication

C. Maintaining data consistency across services

D. God class is not easy to identify

4. What is not a characteristic of God classes?

D. Typically consist of more than one database in a class – God classes don't usually span multiple databases.

A. The bloated classes used throughout an application.

B. Containing a large number of fields mapped to a database table with many columns.

C. Implements business logic for many aspects of the application.

D. Typically consist of more than one database in a class.

5. According to the table, which service can be considered as a complex service in terms of collaboration between services?

A. Consumer Service

B. Order Service

C. Restaurant Service

D. Delivery Service

6. According to this diagram, which one should be considered as a Value object?

A. Consumer

B. Order

C. Location – A value object represents simple, immutable data like location.

C. Location

D. Courier

7. According to this diagram, which one should NOT be modeled as an Aggregate?

A. Courier / Location

B. Consumer / Restaurant

A. Courier / Location – These aren't aggregates, as they don't maintain consistency boundaries.

C. Restaurant / Address and MenuItem

D. Consumer / Payment Info

8. If a bounded context provided an XML schema of its provided data for other bounded contexts to use, which context map relationship is used?

A. Conformist

B. Anticorruption Layer

D. Published Language – Providing XML schemas means sharing a standardized language for integration.

C. Open Host Service

D. Published Language

9. When working with a big ball of mud system, which context map technique should be used?

A. Anticorruption Layer

B. Separate Ways

A. Anticorruption Layer – It protects a system from a messy legacy (big ball of mud) system.

C. Conformist

D. Customer/Supplier

10. What is Event-Storming used for?

A. Map out events within a domain
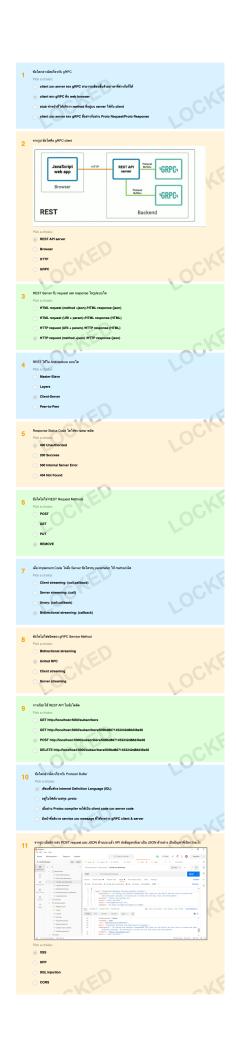
B. Capture concepts and processes for a specific domain

C. Model the domain

D. All are correct

11. List at least 5 keywords related to DDD.   Aggregate, Entity, Value Object, Domain Event, Bounded Context.

12. The address is considered as a value object.

A. True

B. False

C. It depends on the context and business model

D. No correct answer

▼ Review question #3

1 ข้อใดกล่าวผิดเกี่ยวกับ gRPC

Pick a choice:

- ○ client และ server ของ gRPC สามารถเขียนขึ้นด้วยภาษาที่ต่างกันก็ได้
- ◉ client ของ gRPC คือ web browser
- ○ stub ทำหน้าที่ให้บริการ method ที่อยู่บน server ให้กับ client
- ○ client และ server ของ gRPC สื่อสารกันผ่าน Proto Request/Proto Response

2 จากรูป ข้อใดคือ gRPC client

Pick a choice:

- ◉ REST API server
- ○ Browser
- ○ HTTP
- ○ GRPC

3 REST Server รับ request และ response ในรูปแบบใด

Pick a choice:

- ○ HTML request (method +json) /HTML response (json)
- ○ HTML request (URI + param) /HTML response (HTML)
- ○ HTTP request (URI + param) /HTTP response (HTML)
- ◉ HTTP request (method +json) /HTTP response (json)

4 REST ใช้ใน Architecture แบบใด

Pick a choice:

- ○ Master-Slave
- ○ Layers
- ◉ Client-Server
- ○ Peer-to-Peer

5 Response Status Code ใดให้ความหมายผิด

Pick a choice:

- ◉ 400 Unauthorized
- ○ 200 Success
- ○ 500 Internal Server Error
- ○ 404 Not Found

6 ข้อใดไม่ใช่ REST Request Methods

Pick a choice:

- ○ POST
- ○ GET
- ○ PUT
- ◉ REMOVE

7 เมื่อ implement Code ในฝั่ง Server ข้อใดระบุ parameter ให้ method ผิด

Pick a choice:

- ○ Client streaming: (call,callback)
- ○ Server streaming: (call)
- ○ Unary: (call,callback)
- ◉ Bidirectional streaming: (callback)

8 ข้อใดไม่ใช่ชนิดของ gRPC Service Method

Pick a choice:

- ○ Bidirectional streaming
- ◉ United RPC
- ○ Client streaming
- ○ Server streaming

9 การเรียกใช้ REST API ในข้อใดผิด

Pick a choice:

- ○ GET http://localhost:5000/subscribers
- ○ GET http://localhost:5000/subscribers/609bd8671452242d88d36e36
- ◉ POST http://localhost:5000/subscribers/609bd8671452242d88d36e36
- ○ DELETE http://localhost:5000/subscribers/609bd8671452242d88d36e36

10 ข้อใดกล่าวผิด เกี่ยวกับ Protocol Buffer

Pick a choice:

- ◉ เขียนขึ้นด้วย Internet Definition Language (IDL)
- ○ อยู่ในไฟล์นามสกุล .proto
- ○ เมื่อผ่าน Protoc compiler จะได้เป็น client code และ server code
- ○ มีหน้าที่อธิบาย service และ message ที่ใช้ระหว่าง gRPC client & server

11 จากรูป เมื่อมีการส่ง POST request และ JSON ด้านบน แล้ว API ส่งข้อมูลกลับมาเป็น JSON ด้านล่าง เป็นปัญหาด้านใดเรียกว่าอะไร

Pick a choice:

- ◉ XSS
- ○ HPP
- ○ SQL Injection
- ○ CORS

▼ Review question #4

2. Which one in these following options is not a synchronous communication mechanism?

A. HTTP

B. gRPC   **C. AMQP** – AMQP (RabbitMQ) is asynchronous, unlike HTTP, REST, or gRPC.

C. AMQP

D. REST

3. If we would like our kitchen microservices to cook for specific food types, which kind of queue can we use in RabbitMQ?

A. Queue with exchange type is direct with the use of wildcard keys

B. Queue with exchange type is fanout   **C. Queue with exchange type is direct with the use of routing keys** – Direct exchanges route messages to specific queues.

C. Queue with exchange type is direct with the use of routing keys

D. Queue with exchange type is headers with the use of wildcard keys

4. What is INCORRECT about RabbitMQ?

A. RabbitMQ's based protocol is AMQP

B. RabbitMQ queue types enable the flexibility of message handling

C. RabbitMQ is a message broker   **D. RabbitMQ supports the replay messages** – RabbitMQ doesn't support message replay; messages are transient.

D. RabbitMQ supports the replay messages

5. Why is fair-dispatching introduced in RabbitMQ?

A. We need a work queue that works as round-robin   **D. Different consumers may work at different speeds** – Fair dispatch ensures balanced message processing.

B. Producer may produce too many messages

C. Several producers may compete to produce the messages

D. Different consumers may work at different speeds

6. Which one does not relate to REST?

A. Binary messages in the Protocol Buffers format using HTTP/2

B. Often in the form of an XML document or JSON object   **A. Binary messages in Protocol Buffers format using HTTP/2** – This is gRPC, not REST.

C. Uses the HTTP verbs (method) for manipulating resources

D. The most popular REST IDL is the Open API Specification

7. If all workers are interested in the same thing, which kind of queue SHOULD we use?

A. Queue with exchange type is topic

B. Queue with exchange type is direct

C. Worker queue

D. Queue with exchange type is fanout

D. Queue with exchange type is fanout
- A fanout exchange broadcasts messages to all bound queues, suitable when all workers need the same data.

8. Which one is incorrect about the Circuit breaker pattern?

A. Relating to designing your services to prevent partial failures

B. Included in the five groups of communication patterns under the Discovery topic

C. We need to decide how your services should recover from an unresponsive remote service

D. Developing Robust RPI Proxies are needed

B. Included in the five groups of communication patterns under the Discovery topic
- Circuit breaker patterns are for failure management, not part of discovery patterns.

9. What is not a characteristic of Brokerless architecture in an Asynchronous messaging pattern?

A. Services must use one of the discovery mechanisms

B. Higher network traffic and latency compared to Broker-based architecture

C. Higher operational complexity compared to Broker-based architecture

D. Availability is reduced compared to Broker-based architecture

D. Availability is reduced compared to Broker-based architecture
- **False**: Brokerless systems typically have higher availability since there is no central point of failure like a broker.

10. Which one is not a characteristic of the invocation-based IPC mechanism?

A. A client sends a request and the service sends back a response

B. A client may send requests to many services in a command

C. Clients may block waiting for a response

D. The client assumes that the response will arrive in a timely fashion

B. A client may send requests to many services in a command
- Invocation-based IPC involves one-to-one requests and responses.

11. Which issue in the following options is not necessary for an Asynchronous messaging pattern?

A. Which is better between Brokerless vs. Broker-based architectures?

B. How to design the Circuit breaker pattern when a service does not respond?

C. What kinds of messages will be used?

A. Which is better between Brokerless vs. Broker-based architectures?
- Not necessary: This is a design choice and does not affect the fundamental operation of an asynchronous messaging pattern.

D. Which type will be used between a point-to-point channel or a publish-subscribe channel?

12. Which one in these following options is not an asynchronous interaction style?

A. One-way notifications

B. Publish/async responses

C. Request/response
- Request/response is synchronous, unlike the other asynchronous styles listed

C. Request/response

D. Publish/subscribe

13. Which one is not a benefit of using gRPC?

A. Appropriate for an API with a rich set of update operations

B. Bidirectional streaming enables both RPI and messaging styles of communication

C. Takes less work for JavaScript clients compared to REST/JSON-based APIs

C. Takes less work for JavaScript clients compared to REST/JSON-based APIs

gRPC requires additional libraries and tooling, making it more complex for JavaScript clients.

D. Enables interoperability between clients and services written in a wide range of languages

14. From this command:

```
docker run -d --name some-rabbit -p 5672:5672 -p 8080:15672 rabbitmq:3
```

Which choice is INCORRECT?

A. The container name is rabbitmq:3

B. 8080 is a public port to access the RabbitMQ management

A. The container name is rabbitmq:3
- `rabbitmq:3` is the image name, not the container name.

C. We start RabbitMQ with its default ports

D. We are starting RabbitMQ in detached mode

▼ Review question #5

1. Architecture? (คำถามหาย)

A. Stateless stream processing

Answer: C. Orchestration
Since the question is missing, based on the options provided, orchestration is related to architectures that involve centralized control over services.

B. Choreographies

C. Orchestration

D. Stateful stream processing

2. In event-driven architecture, what is the primary benefit of using events for notification and state transfer?

A. It ensures immediate processing of all service requests.

B. It allows services to operate independently without direct calls to each other.

C. It reduces the reliability of the system by distributing tasks.

D. It increases the processing time of each event.

3. Which type of communication does not expect an immediate reply from the service?

A. Asynchronous

B. Stateless

C. Synchronous

D. Stateful

4. Which one is not a drawback of the API composition pattern?

A. Implementing is more complex compared to CQRS.

B. Lack of transactional data consistency.

C. Risk of reduced availability.

D. Increased overhead.

5. Which one in the following option is not a benefit of using the CQRS pattern?

A. Improves separation of concerns.

B. Enables the efficient implementation of diverse queries.

C. Simplifies the complexity in implementing querying logic.

D. Makes querying possible in an event sourcing-based application.

6. Which of the following scenarios may not be a good decision for CQRS Query-side view stores?

A. PK-based lookup for JSON object → Use a document store such as MongoDB or DynamoDB

B. Query-based lookup for JSON object → Use an RDBMS such as MySQL

C. Text queries → Use a text search engine such as Elasticsearch

D. Graph queries → Use a graph database such as Neo4j

7. Which one is not a querying pattern?

A. Polling Publisher

B. Command query responsibility segregation (CQRS)

C. API composition pattern

Answer: A. Polling Publisher
Polling Publisher is an event-driven pattern, not specifically a querying pattern.

8. Which of the following statements is incorrect regarding the operation of Commands, Events, and Queries?

A. Event - No response returned from the destination service.

B. Query - No request to change the status of the destination service.

C. Command - There must always be a response back from the destination service.

Answer: C. Command - There must always be a response back from the destination service.
Commands may not require an immediate response; they request a state change without guaranteeing a reply.

D. Command - A request is made to change the status of the destination service.

9. Which one is not a participant in the API composition pattern?

A. A provider service

B. An API composer

Answer: C. A querying broker
A querying broker is not typically part of the API composition pattern.

C. A querying broker

10. What best describes an event in event-driven architecture?

A. A request for data retrieval without side effects.

B. A request to perform an operation that changes the state of the system.

Answer: D. A fact and notification about something that has occurred, without an expectation of a response.
Events are notifications of occurrences without expecting a response.

C. A function that triggers a series of synchronous responses.

D. A fact and notification about something that has occurred, without an expectation of a response.

▼ Review question #6

1. Which one relates to the external API ownership model that the client teams own their API module layers and common layers?

A. API composition pattern

B. Backends for frontends pattern

Answer: B. Backends for frontends pattern
BFF allows client teams to own and customize APIs tailored to their needs.

C. Web API pattern

D. API gateway pattern

2. Which one is not supported by KONG API gateway?

A. Authentication

B. Request Logging

C. API composition

Answer: C. **API composition**
Kong handles authentication, logging, and routing but does not perform API composition.

D. Routing mapping

3. In designing an API gateway, which option is incorrect about using synchronous vs. asynchronous I/O?

A. The drawback of asynchronous I/O is that the callback-based programming model is much more complex.

B. Designing and implementing a synchronous I/O is more straightforward than an asynchronous I/O.

Answer: C. **In asynchronous I/O API gateway, the single loop event thread is still blocked until the event handler finishes its job.**
In asynchronous I/O, the event loop should not be blocked by event handlers.

C. In asynchronous I/O API gateway, the single loop event thread is still blocked until the event handler finishes its job.

D. A synchronous I/O API gateway is heavyweight because a number of concurrent threads will be created.

4. What one is not the problem for the client app outside fireware to connect to microservices?

A. Lower bandwidth internet

B. Unstable API risk

Answer: C. **Single API request**
Single API requests are beneficial, reducing complexity for the client app.

C. Single API request

D. Higher Latency

5. Which one is not a drawback of using API gateway for external API pattern?

A. A risk that the API gateway becomes a development bottleneck.

B. A highly available component that must be developed, deployed, and managed.

Answer: D. **The client development teams will have additional modules under their control.**
Having control over additional modules can be a benefit, not a drawback.

C. Encapsulation of an internal structure of the application might be violated.

D. The client development teams will have additional modules under their control.

6. Which one is not the place we implement the authentication function?

A. API gateway

B. At the backend Microservices

C. Explicitly implement the edge function services

D. Client-side app

7. What is not a duty of the Edge function?

A. Metrics collection

B. Data aggregation

C. Caching

D. Rate limiting

8. Which one is not an API gateway responsibility?

A. API composition

B. Request routing mapping

C. Protocol translation

D. Message broking

9. Which one effectively helps the API gateway be more reliable?

A. Avoid implement edge functions in the gateway

B. Use backends for frontend pattern to separate the gateways

C. Most of them do not implement HTTP method-based routing.

D. Run multiple instance of gateway behind a load balancer

▼ Review question #7

1. Which of the following is NOT a key deployment pattern discussed for microservices?

A. Language-specific packaging

B. Deploying as a standalone application

C. Deploying as a container

D. Serverless deployment

2. What advantage does deploying a service as a container offer over a virtual machine (VM)?

A. Containers encapsulate the technology stack better than VMs.

B. Containers provide a heavier isolation compared to VMs.

C. Containers generally have faster setup and more efficient resource utilization than VMs.

D. Containers require more system administration than VMs.

3. Which deployment pattern is best described by "automatically runs enough instances of your service to handle incoming requests and charges based on the time taken and memory consumed"?

A. Kubernetes

B. Serverless deployment

Answer: B. **Serverless deployment**
Serverless computing automatically scales and charges based on usage.

C. VM deployment

D. Language-specific packaging

4. In the context of Kubernetes, what is NOT a function of the control plane?

A. Managing networking including load balancing across pods

B. Configuring the data plane to route traffic

C. Storing the cluster data in a NoSQL database

Answer: C. **Storing the cluster data in a NoSQL database**
Kubernetes uses etcd, a key-value store, not a general NoSQL database.

D. Scheduling containers across the cluster

5. What is the primary benefit of using a service mesh in microservices architecture?

A. It increases the deployment complexity and administrative overhead.

B. It restricts the scalability of microservices.

Answer: D. **It provides rule-based load balancing and simplifies traffic routing.**
Service meshes offer advanced networking features for microservices.

C. It replaces the need for Kubernetes in managing services.

D. It provides rule-based load balancing and simplifies traffic routing.

6. Which one of the four phases of an automated test might be omitted?

A. Setup

B. Exercise

Answer: D. **Teardown**
Teardown can be omitted if the test environment is ephemeral or isolated.

C. Verify

D. Teardown

7. What type of test is an acceptance test for an individual service?

A. Unit tests

B. Integration tests

C. Component tests

D. End-to-end tests

8. Which one refers to a set of examples that defines the interaction between a consumer and a provider?

A. Contract

B. SUT

C. Test Double

D. Driver

9. What type of test is related to the strategy to test the individual adapter classes that implement the communication?

A. Unit tests

B. Integration tests

C. Component tests

D. End-to-end tests

10. According to the given figure, what number is related to the Persistence test?

A. 1

B. 2

C. 3

D. 4