



S90.09^{Q&As}

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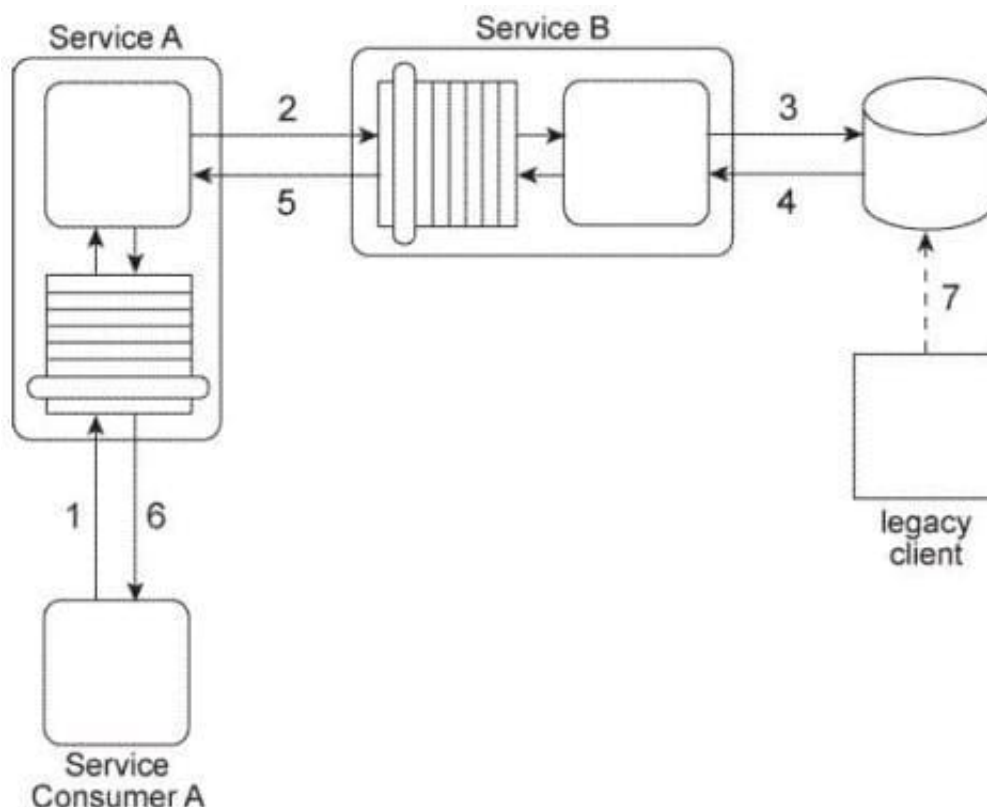
QUESTION 1

Service A is an entity service that provides a Get capability that returns a data value that is frequently changed.

Service Consumer A invokes Service A in order to request this data value (1). For Service A to carry out this request, it must invoke Service B (2), a utility service that interacts (3,4) with the database in which the data value is stored, Regardless of whether the data value changed. Service B returns the latest value to Service A (5), and Service A returns the latest value to Service Consumer A (6).

The data value is changed when the legacy client program updates the database (7). When this change happens is not predictable. Note also that Service A and Service B are not always available at the same time.

Any time the data value changes. Service Consumer A needs to receive it as soon as possible. Therefore, Service Consumer A initiates the message exchange shown in the Figure several times a day. When it receives the same data value as before, the response from Service A is ignored. When Service A provides an updated data value, Service Consumer A can process it to carry out its task.



Because Service A and Service B are not always available at the same times, messages are getting lost and several invocation attempts by Service Consumer A fail. What steps can be taken to solve this problem?

A. The Asynchronous Queuing pattern can be applied so that messaging queues are established between Service A and Service B and between Service Consumer A and Service A . This way, messages are never lost due to the unavailability of Service A or Service B .

B. The Asynchronous Queuing pattern can be applied so that a messaging queue is established between Service A and Service B . This way, messages are never lost due to the unavailability of Service A or Service B . The Service Agent pattern can be further applied to establish a service agent that makes a log entry and issues a notification when re-transmission attempts by the messaging queue exceeds a pre-determined quantity.



C. The Asynchronous Queuing pattern can be applied so that a messaging queue is established between Service Consumer A and Service A. This way, messages are never lost due to the unavailability of Service A or Service B. The Service Agent pattern can be further applied to establish a service agent that makes a log entry each time a runtime exception occurs.

D. None of the above.

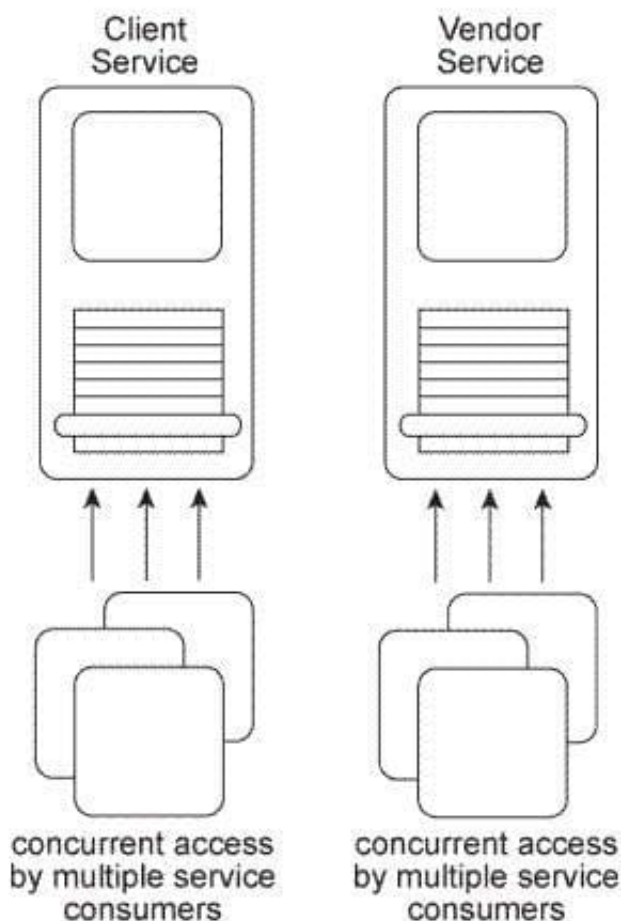
Correct Answer: A

QUESTION 2

The Client and Vendor services are agnostic services that are both currently part of multiple service compositions. As a result, these services are sometimes subjected to concurrent access by multiple service consumers.

The Client service is an entity service that primarily provides data access logic to a client database but also provides some calculation logic associated with determining a client's credit rating. The Vendor service is also an entity service that provides some data access logic but can also generate various dynamic reports.

After reviewing historical statistics about the runtime activity of the two services, it was discovered that the majority of concurrent runtime access is related to the processing of business rules. With the Client service, it is the calculation logic that is frequently required and with the Vendor service it is the dynamic reporting logic that needs to be accessed separately from the actual report generation.



Currently, due to the increasing amount of concurrent access by service consumers, the runtime performance of both



the Client and Vendor services has worsened and has therefore reduced their effectiveness as service composition members. What steps can be taken to solve this problem without introducing new services?

- A. The Rules Centralization pattern can be applied by extracting the business rule logic from the Client and Vendor services and placing it into a new Rules service. This will naturally improve the runtime performance of the Client and Vendor services because they will no longer be subjected to the high concurrent access of service consumers that require access to the business rules logic.
- B. The Redundant Implementation pattern can be applied to the Client and Vendor services, thereby establishing duplicate implementations that can be accessed when a service reaches its runtime usage threshold. The Intermediate Routing pattern can be further applied to provide load balancing logic that can, at runtime, determine which of the redundant service implementations is the least busy for a given service consumer request.
- C. The Rules Centralization pattern can be applied together with the Redundant Implementation pattern to establish a scalable Rules service that is redundantly implemented and therefore capable of supporting high concurrent access from many service consumers. The Service Abstraction principle can be further applied to hide the implementation details of the Rules service.
- D. None of the above.

Correct Answer: B

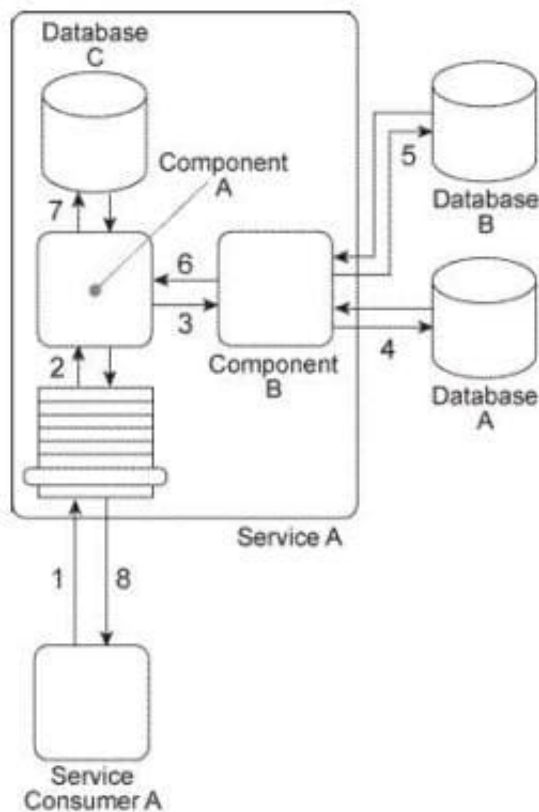
QUESTION 3

Service Consumer A sends Service A a message containing a business document (1). The business document is received by Component A, which keeps the business document in memory and forwards a copy to Component B (3). Component B first writes portions of the business document to Database A (4).

Component B writes the entire business document to Database B and then uses some of the data values from the business document as query parameters to retrieve new data from Database B (5).

Next, Component B returns the new data back to Component A (6), which merges it together with the original business document it has been keeping in memory and then writes the combined data to Database C (7). The Service A service capability invoked by Service Consumer A requires a synchronous request-response data exchange. Therefore, based on the outcome of the last database update, Service A returns a message with a success or failure code back to Service Consumer A (8).

Databases A and B are shared and Database C is dedicated to the Service A service architecture.



There are several problems with this architecture: First, the response time of Database A is often poor, resulting in Component B taking too much time to provide a response to Component A. This results in Component A consuming too many runtime resources while it holds the business document in memory and it also causes unreasonable delays in responding to Service Consumer A. Additionally, Database B is being replaced with a different database product that supports a proprietary file format. This will disable the current interaction between Component B and the new Database B. What steps can be taken to solve these problems?

A. The State Repository pattern is applied so that Component A can defer the business document data to a state database while it waits for a response from Component B. The Service Data Replication pattern is applied so that Component B can interact with a database that is replicated from the shared Database A. This will improve performance and reliability that will affect both Component A and Service Consumer A. Finally, the Legacy Wrapper pattern is applied so that Database B is wrapped in a standardized contract. This will establish a new wrapper utility service that will allow Database B to be replaced with a different database product without affecting Service A. Furthermore, the Data Format

Transformation pattern can be applied within the new wrapper utility service to enable it to convert to and from the new proprietary file format.

B. The State Repository pattern is applied so that Component A can defer the business document data to a state database while it waits for a response from Component B. The Asynchronous Queuing pattern can be applied so that a messaging queue is established between Service Consumer A and Service A, thereby guaranteeing delivery and avoiding Service Consumer A from being tied up too long waiting for Service A to respond. Finally, the Data Format Transformation pattern can be applied to enable Component B to convert to and from the new proprietary file format introduced by the database product that is replacing Database B.

C. The Legacy Wrapper pattern is applied so that Database B is wrapped in a standardized contract. This will establish a new wrapper utility service that will allow Database B to be replaced with a different database product without affecting Service A. The Data Format Transformation pattern can be applied within the new wrapper utility service to enable it to convert to and from the new proprietary file format. The Service Data Replication pattern is applied so that Component B can interact with a database that is replicated from the shared Database B, regardless of what database product is



used to replace Database B. The Service Abstraction principle can be further applied to hide the implementation details, including the changes mentioned in this solution, from Service Consumer A.

D. None of the above.

Correct Answer: A

QUESTION 4

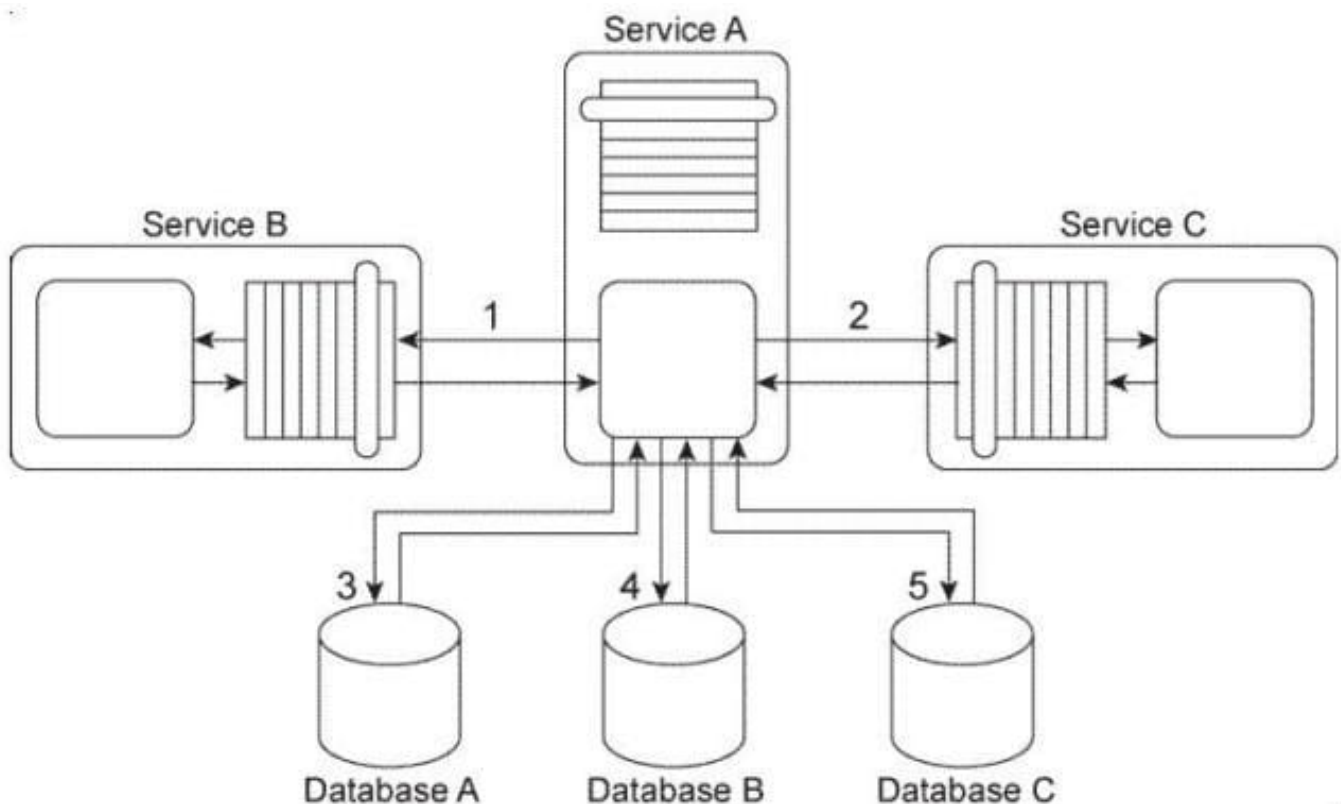
Service A is an entity service that provides a set of generic and reusable service capabilities. In order to carry out the functionality of any one of its service capabilities, Service A is required to compose Service B

(1) and Service C (2) and Service A is required to access Database A (3), Database B (4), and Database C (5). These three databases are shared by other applications within the IT enterprise.

All of service capabilities provided by Service A are synchronous, which means that for each request a service consumer makes. Service A is required to issue a response message after all of the processing has completed.

Depending on the nature of the service consumer request, Service A may be required to hold data it receives in memory until its underlying processing completes. This includes data it may receive from either Service A or Service B or from any of the three shared databases.

Service A is one of many entity services that reside in a highly normalized service inventory. Because Service A provides agnostic logic, it is heavily reused and is currently part of many service compositions.



You are told that Service A has recently become unstable and unreliable. The problem has been traced to two issues with the current service architecture. First, Service B, which is also an entity service, is being increasingly reused and has itself become unstable and unreliable. When Service B fails, the failure is carried over to Service A. Secondly,



shared Database B has a complex data model. Some of the queries issued by Service A to shared Database B can take a very long time to complete. What steps can be taken to solve these problems without compromising the normalization of the service inventory?

A. The Redundant Implementation pattern can be applied to Service A, thereby making duplicate deployments of the service available. This way, when one implementation of Service A is too busy, another implementation can be accessed by service consumers instead. The Service Data Replication pattern can be applied to establish a dedicated database that contains an exact copy of the data from shared Database B that is required by Service A .

B. The Redundant Implementation pattern can be applied to Service B, thereby making duplicate deployments of the service available. This way, when one implementation of Service B is too busy, another implementation can be accessed by Service A instead. The Service Data Replication pattern can be applied to establish a dedicated database that contains an exact copy of the data from shared Database B that is required by Service A .

C. The Redundant Implementation pattern can be applied to Service B, thereby making duplicate deployments of the service available. This way, when one implementation of Service B is too busy, another implementation can be accessed by Service A instead. The Service Data Replication pattern can be applied to establish a dedicated database that contains a copy of the data from shared Database B that is required by Service A . The replicated database is designed with an optimized data model in order to improve query execution performance.

D. None of the above.

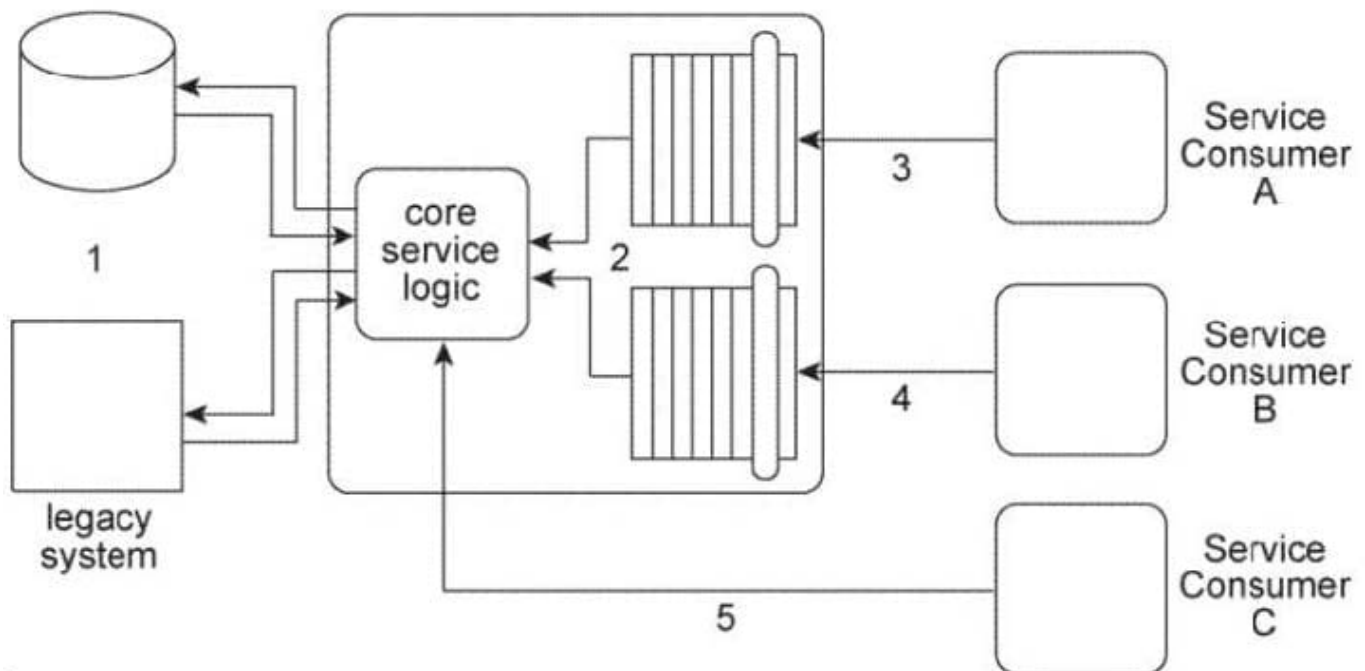
Correct Answer: C

QUESTION 5

The architecture for Service A displayed in the Figure shows how the core logic of Service A has expanded over time to connect to a database and a proprietary legacy system (1) and to support two separate service contracts (2) that are accessed by different service consumers.

The service contracts are fully decoupled from the service logic. The service logic is therefore coupled to the service contracts and to the underlying implementation resources (the database and the legacy system).

Service A currently has three service consumers. Service Consumer A and Service Consumer B access Service A's two service contracts (3, 4). Service Consumer C bypasses the service contracts and accesses the service logic directly (5).



You are told that the database and legacy system that are currently being used by Service A are being replaced with different products. The two service contracts are completely decoupled from the core service logic, but there is still a concern that the introduction of the new products will cause the core service logic to behave differently than before. What steps can be taken to change the Service A architecture in preparation for the introduction of the new products so that the impact on Service Consumers A, B, and C is minimized?

A. The Service Abstraction principle can be applied to hide the implementation details from the core service logic of Service A, thereby shielding this logic from changes to the implementation. In support of this, the Service Facade pattern can be applied to position Facade components between the core service logic and Service Consumers A and B. These Facade components will be designed to regulate the behavior of Service A. The Contract Centralization pattern can be applied to force Service Consumer C to access Service A via one of its existing service contracts.

B. A third service contract can be added together with the application of the Contract Centralization pattern. This will force Service Consumer C to access Service A via the new service contract. The Service Facade pattern can be applied to position a Facade component between the new service contract and Service Consumer C in order to regulate the behavior of Service A. The Service Abstraction principle can be applied to hide the implementation details of Service A so that no future

service consumers are designed to access any of Service A's underlying resources directly.

C. The Service Facade pattern can be applied to position Facade components between the core service logic and the two service contracts. These Facade components will be designed to regulate the behavior of Service A. The Contract Centralization pattern can also be applied to force Service Consumer C to access Service A via one of its existing service contracts.

D. None of the above.

Correct Answer: C