S90.09 Q&As

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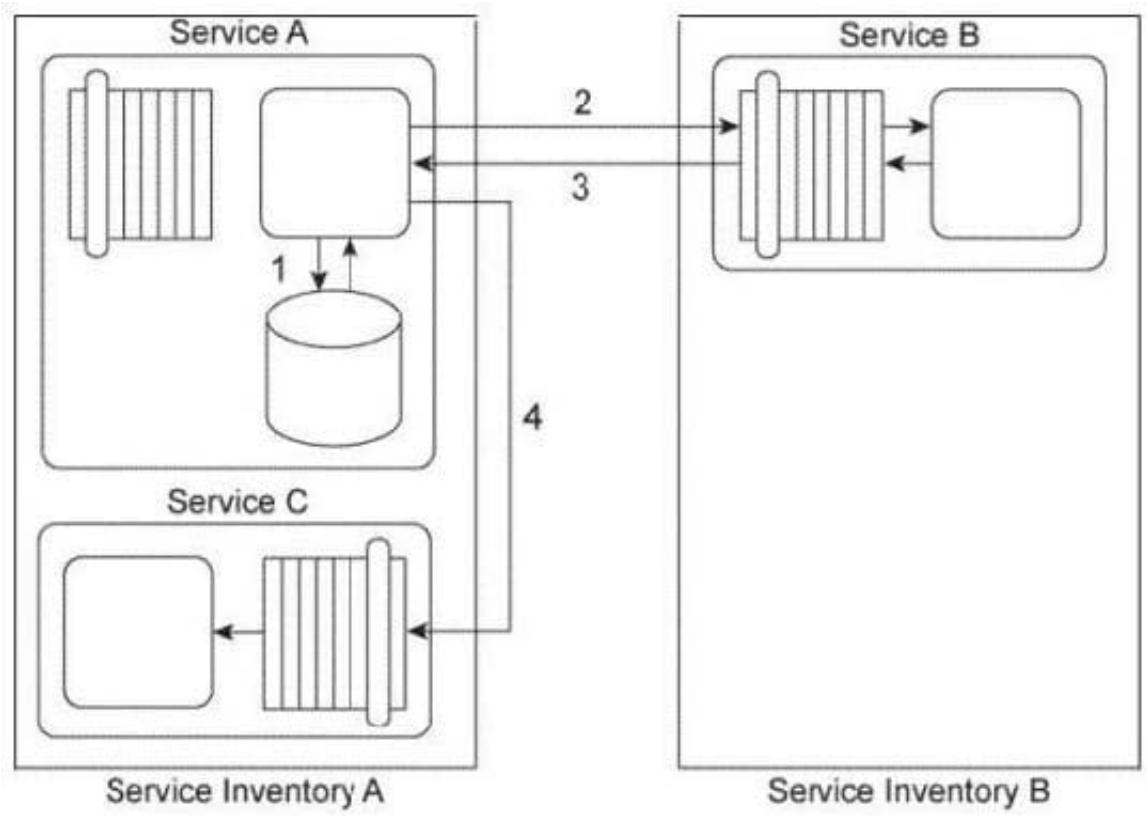
QUESTION 1

Service A is a task service that sends Service B a message (2) requesting that Service B return data back to Service A in a response message (3). Depending on the response received. Service A may be required to send a message to Service C (4) for which it requires no response. Before it contacts Service B, Service A must first retrieve a list of code values from its own database (1) and then place this data into its own memory. If it turns out that it must send a message to Service C, then Service A must combine the data it receives from Service B with the data from the code value list in order to create the message it sends to Service C. If Service A is not required to invoke Service C, it can complete its task by discarding the code values.

Service A and Service C reside in Service Inventory A. Service B resides in Service Inventory B.



You are told that the services in Service Inventory A are all SOAP-based Web services designed to exchange SOAP 1.1 messages and the services in Service Inventory B are SOAP-based Web services designed to exchange SOAP 1.2 messages. Therefore, Service A and Service B cannot currently communicate. Furthermore, you are told that Service B needs to access a shared database in order to retrieve the data required by Service A. The response time of the database can sometimes be lengthy, which would cause Service A to consume too much resources while it is waiting and keeping the code values in memory. How can this service composition architecture be changed to avoid these problems?

A. The Protocol Bridging pattern can be applied by establishing an intermediate processing layer between Service A and Service B that can convert SOAP 1.1 messages to SOAP 1.2 messages and vice versa. The Service Data Replication pattern can be applied to Service B so that it is given a dedicated database with its own copy of the data it needs to access. The Service Normalization pattern can then be applied to ensure that the data within the replicated database is normalized with the shared database it is receiving replicated data from.

B. The Protocol Bridging pattern can be applied by establishing an intermediate processing layer between Service A and Service B that can convert SOAP 1.1 messages to SOAP 1.2 messages and vice versa. The Service Statelessness

principle can be applied with the help of the State Repository pattern so that Service A can write the code value data to a state database while it is waiting for Service B to respond.

C. The Protocol Bridging pattern can be applied by establishing an intermediate processing layer between Service A and Service B that can convert SOAP 1.1 messages to SOAP 1.2 messages and vice versa. The Intermediate Routing pattern can be applied to dynamically determine whether Service A should send a message to Service C. The Service Autonomy principle can be applied to Service A to further increase its behavioral predictability by reducing the amount of memory it is required to consume.

D. None of the above.

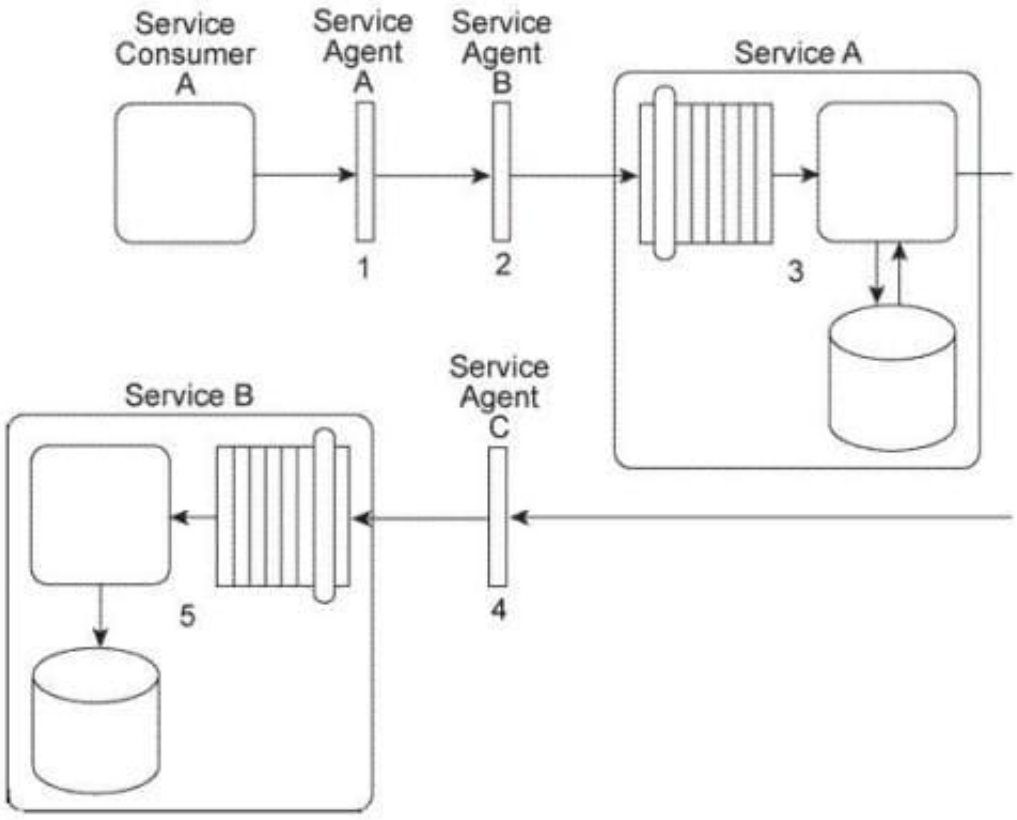
Correct Answer: B

QUESTION 2

Service Consumer A sends a message to Service A. Before the message arrives with Service A, it is intercepted by Service Agent A (1). which checks the message for compliance to Policy A that is required by Service A. If the message fails compliance, Service Agent A will not allow it to proceed and will instead write the message contents to a log. If the message does comply to the policy, it continues to be transmitted toward Service A, but before it arrives it is intercepted by Service Agent B (2), which validates the security credentials in the message header. If the security credential validation fails, the message is rejected and a runtime exception is raised. If the security credentials are validated, the message is sent to Service A.

Upon receiving the message, Service A retrieves a data value from a database and populates the message header with this data value (3) prior to forwarding the message to Service B. Before the message arrives at Service B. it is intercepted by Service Agent C (4) which checks the message for compliance with two policies: Policy B and Policy C. Policy B is identical to Policy A that was checked by Service Agent

A. To check for compliance to Policy C. Service Agent C uses the data value added by Service A. If the message complies with both of the policies, it is forwarded to Service B (5), which stores the message contents in its own database.



You are told that Policy B and Policy C have changed. Also, in order to carry out the compliance check of Policy C, Service Agent C will now require a new data value from the Service B database. How can this service composition architecture be changed to fulfill these new requirements?

A. The Policy Centralization pattern can be applied so that only one service agent is used to enforce Policy A and Policy B. Service A is redesigned to first query Service B for the value required by Service Agent C to check the compliance of the updated Policy C. If the compliance check is successful, the message is sent to Service B .

B. The Policy Centralization pattern can be applied so that only one service agent is used to enforce Policy A and Policy B. Service Consumer A is redesigned to first query Service B for the value required by Service Agent C. This way, Service Consumer A can include this value in the message header prior to sending the message to Service A .

C. The Policy Centralization pattern can be applied so that only one service agent is used to enforce Policy A and Policy B. The policy enforcement logic for Policy C is removed from Service Agent C and instead embedded within the logic of Service B . This way, Service B can itself retrieve the value required to check compliance with Policy C. If the message received is not in compliance, Service B will reject it.

D. None of the above.

Correct Answer: D

QUESTION 3

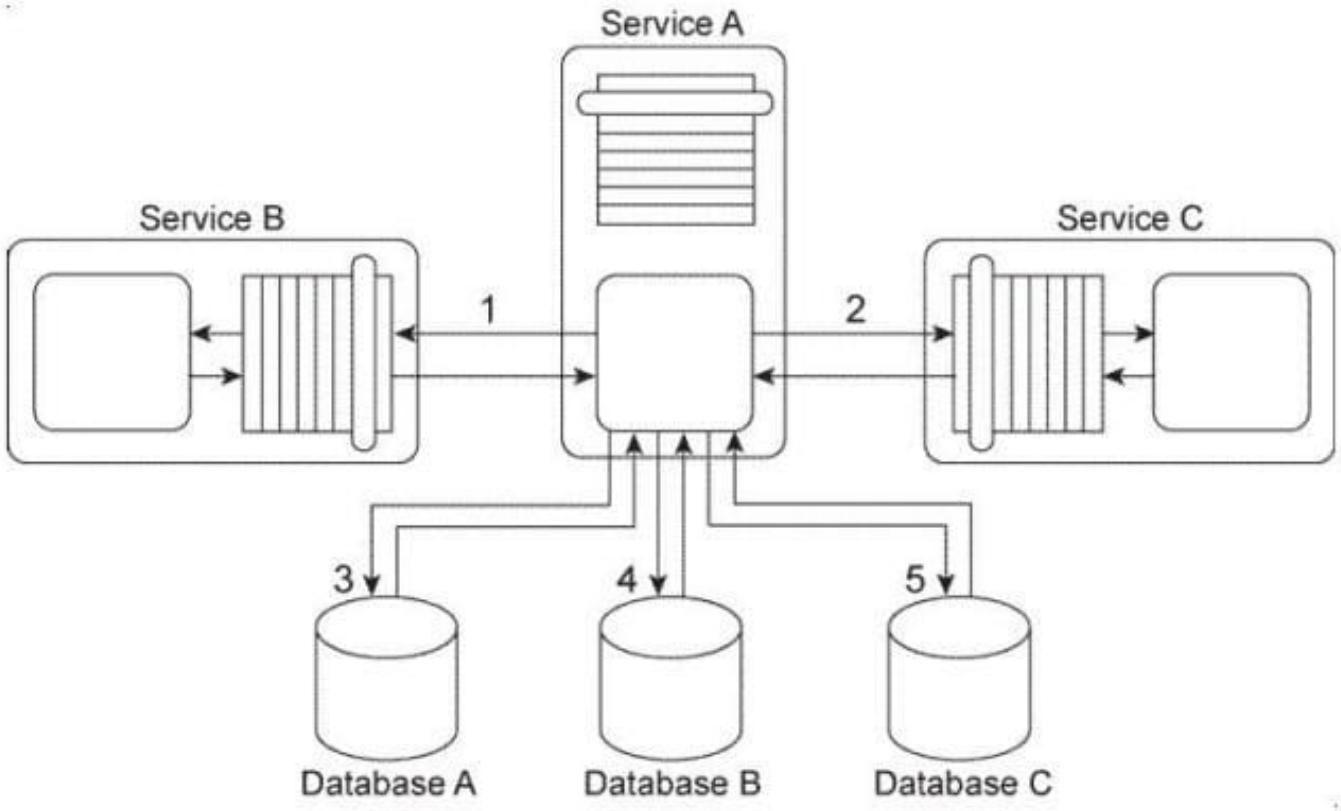
Service A is an entity service that provides a set of generic and reusable service capabilities. In order to carry out the functionality of any one of its service capabilities, Service A is required to compose Service B

(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.

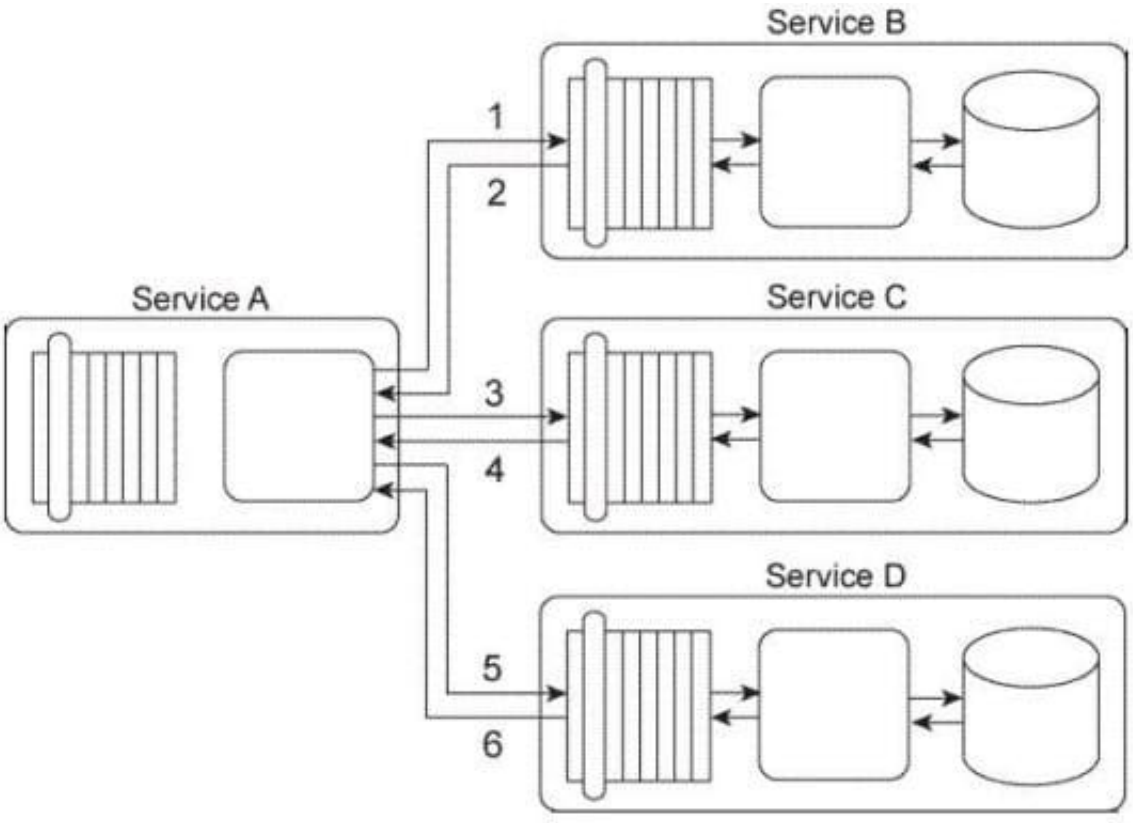
D. None of the above.

Correct Answer: C

QUESTION 4

Service A is a task service that is required to carry out a series of updates to a set of databases in order to complete a task. To perform the database updates Service A must interact with three other services, each of which provides standardized data access capabilities.

Service A sends its first update request message to Service B (1), which then responds with a message containing a success or failure code (2). Service A then sends its second update request message to Service C (3), which also responds with a message containing a success or failure code (4). Finally, Service A sends a request message to Service D (5), which responds with its own message containing a success or failure code (6).



You\\'ve been asked to change this service composition architecture in order to fulfill a set of new requirements: First, if the database update performed by Service B fails, then it must be logged by Service

A. Secondly, if the database update performed by Service C fails, then a notification e-mail must be sent out to a human administrator. Third, if the database update performed by either Service C or Service D fails, then both of these updates must be reversed so that the respective databases are restored back to their original states. What steps can be taken to fulfill these requirements?

A. Service A is updated to perform a logging routine when Service A receives a response message from Service B containing a failure code. Service A is further updated to send an e-mail notification to a human administrator if Service

A receives a response message from Service C containing a failure code. The Atomic Service Transaction pattern is applied so that Services A, C, and D are encompassed in the scope of a transaction that will guarantee that if the database updates performed by either Service C or Service D fails, then both updates will be rolled back.

B. The Compensating Service Transaction pattern is applied to Service B so that it invokes exception handling logic that logs failed database updates before responding with a failure code back to Service

A . Similarly, the Compensating Service Transaction pattern is applied to Service C so that it issues an e-mail notification to a human administrator when a database update fails. The Atomic Service Transaction pattern is applied so that Services A, C, and D are encompassed in the scope of a transaction that will guarantee that if the database updates performed by either Service C or Service D fails, then both updates will be rolled back. The Service Autonomy principle is further applied to Service A to ensure that it remains consistently available to carry out this sequence of actions.

C. The Atomic Service Transaction pattern is applied so that Services A, C, and D are encompassed in the scope of a transaction that will guarantee that if the database updates performed by either Service C or Service D fails, then both updates will be rolled back. The Compensating Service Transaction pattern is then applied to all services so that the scope of the compensating transaction includes the scope of the atomic transaction. The compensating exception logic that is added to Service D automatically invokes Service B to log the failure condition and Service C to issue the e-mail notification to the human administrator. This way, it is guaranteed that the compensating logic is always executed together with the atomic transaction logic.

D. None of the above.

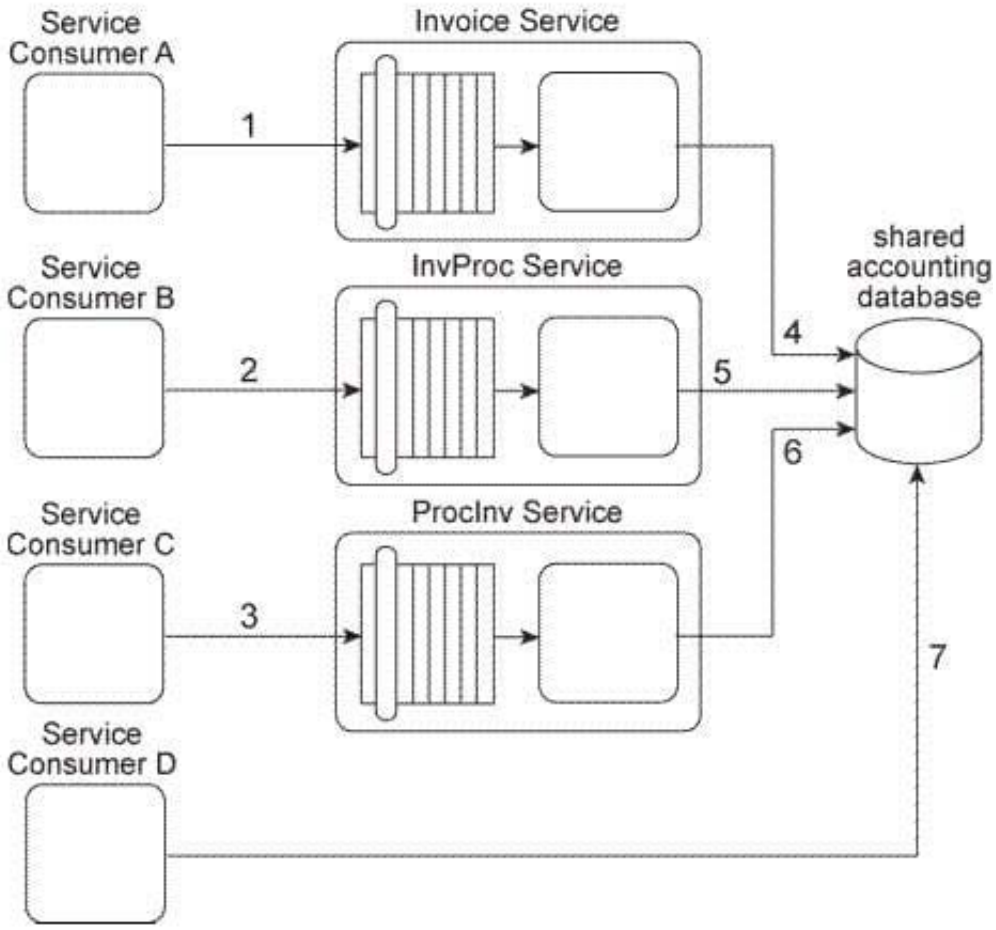
Correct Answer: A

QUESTION 5

Our service inventory contains the following three services that provide invoice-related data access capabilities: Invoice, InvProc, and Proclnv. These services were created at different times by different project teams and were not required to comply to any design standards. Therefore each of these services has a different data model for representing invoice data.

Currently each of these three services has one service consumer: Service Consumer A accesses the Invoice service(1). Service Consumer B (2) accesses the InvProc service, and Service Consumer C (3) accesses the Proclnv service. Each service consumer invokes a data access capability of an invoice-related service, requiring that service to interact with the shared accounting database that is used by all invoice-related services (4, 5, 6).

Additionally, Service Consumer D was designed to access invoice data from the shared accounting database directly (7), (Within the context of this architecture. Service Consumer D is labeled as a service consumer because it is accessing a resource that is related to the illustrated service architectures.)



Assuming that the Invoice service, InvProc service, and ProcInv service are part of the same service inventory, what steps would be required to fully apply the Official Endpoint pattern?

A. One of the invoice-related services needs to be chosen as the official service providing invoice data access capabilities. Service Consumers A, B, and C then need to be redesigned to only access the chosen invoice-related service. Because Service Consumer D does not rely on an invoice-related service, it is not affected by the Official Endpoint pattern and can continue to access the accounting database directly. The Service Abstraction principle can be further applied to hide the existence of the shared accounting database and other implementation details from current and future service consumers.

B. One of the invoice-related services needs to be chosen as the official service providing invoice data access capabilities. Service Consumers A, B, and C then need to be redesigned to only access the chosen invoice-related service. Service Consumer D also needs to be redesigned to not access the shared accounting database directly, but to also perform its data access by interacting with the official invoice-related service. The Service Abstraction principle can be further applied to hide the existence of the shared accounting database and other implementation details from current and future service consumers.

C. Because Service Consumers A, B, and C are already carrying out their data access via published contracts, they are not affected by the Official Endpoint pattern. Service Consumer D needs to be redesigned to not access the shared accounting database directly, but to perform its data access by interacting with the official invoice-related service. The Service Abstraction principle can be further applied to hide the existence of the shared accounting database and other implementation details from current and future service consumers.

D. None of the above.

Correct Answer: B

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