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QUESTION 1

The CustomerOrder entity will include information on all customer orders. Applying database normalization rules, which set of attributes will need to be normalized to avoid redundancies?

1.

CustomerId

2.

CustomerPhone

3.

OrderId

4.

OrderDate

5.

ProductName

6.

ProductQuantity

7.

OrderTotal

A. CustomerPhone

B. ProductName

C. ProductName ProductQuantity

D. OrderId ProductName

E. CustomerId OrderDate

Correct Answer: B

Database normalization is the process of organizing the data in a database to reduce redundancy and improve integrity, consistency, and performance1. Database normalization rules are based on the concept of normal forms, which are levels of database design that meet certain criteria2. One of the most common normal forms is the third normal form (3NF), which states that a table should not have any transitive dependencies, meaning that a non-key attribute should not depend on another non-key attribute3. In the CustomerOrder entity, the set of attributes that will need to be normalized to avoid redundancies are ProductName and ProductQuantity, as they are non-key attributes that depend on another non-key attribute, OrderId. This means that the same product information may be repeated for different orders, which could lead to data inconsistency, duplication, or update anomalies. To normalize this set of attributes, a separate table should be created for the OrderDetails entity, which would have OrderId, ProductName, and ProductQuantity as its attributes, and OrderId and ProductName as its composite primary key.

The other sets of attributes do not need to be normalized to avoid redundancies, as they do not violate the 3NF. CustomerPhone and ProductName are non-key attributes that depend on the primary key, CustomerId and OrderId respectively, which is allowed by the 3NF. OrderId and ProductName are part of the composite primary key of the OrderDetails entity, which is also allowed by the 3NF. CustomerId and OrderDate are both primary keys of the Customer and Order entities respectively, which are also allowed by the 3NF.

QUESTION 2

An analyst is using a Data Flow Diagram (DFD) to depict the flow of data across a data security company. Which of the following is true about DFDs?

A. Can be categorized as Logical or Physical

B. Can illustrate a sequence of activities

C. Provide similar information as process flows

D. Are used to model data attributes

Correct Answer: A

A Data Flow Diagram (DFD) is a technique that shows the flow of data among processes, data stores, and external entities in a system. DFDs can be categorized as logical or physical, depending on the level of detail and abstraction. A logical DFD focuses on the business functions and data flows, without specifying the implementation details. A physical DFD shows the actual componentsand mechanisms that are involved in the data flow, such as hardware, software, files, and network connections.

QUESTION 3

An insurance company would like to develop a range of insurance products for different types of customers. The analytics team is asked to conduct some research and share their insights with senior management. Which technique would be useful to divide the customer base into groups?

A. Linear regression

B. Survey sampling

C. Factor analysis

D. K-means clustering

Correct Answer: D

K-means clustering is a technique that partitions a set of data points into a predefined number of clusters, based on their similarity or distance. This technique can be useful to divide the customer base into groups that have similar characteristics, preferences, or behaviors, and then design insurance products that cater to each group\\'s needs and expectations. K-means clustering can also help identify outliers or anomalies in the customer data that may require further investigation or attention.

References: Guide to Business Data Analytics, page 58-59; CBDA lueprint, page 7; [Introduction to Business Data Analytics: A Practitioner View], page 17.

QUESTION 4

A grocery store chain has requested help in determining how customer preferences are changing with regards to home delivery. An analytics team has completed researching the number of online orders received requesting home delivery versus in-store pickup. The business analyst has selected a model to enable a quick comparison between curbside pick-up, in-store pickup, and home delivery for the last 3 years.Which model has the business analyst chosen?

A. Pie chart

B. Funnel chart

C. Scatter plot

D. Bar chart

Correct Answer: D

A bar chart is a graphical representation of data that uses rectangular bars of different heights or lengths to show the values of one or more variables1. A bar chart is suitable for comparing the number of online orders received requesting different types of delivery options for the last 3 years, as it can show the frequency or proportion of each category across time. A bar chart can also help identify trends, patterns, or outliers in the data2.

A pie chart is a circular chart that shows the relative sizes of data points in a whole by using different-sized and colored slices3. A pie chart is not suitable for comparing the number of online orders received requesting different types of delivery options for the last 3 years, as it can only show the distribution of one variable at a time, and it does not show the changes over time. A pie chart can also be misleading or confusing if there are too many categories or if the slices are too similar in size4.

A funnel chart is a type of chart that shows the stages of a process and the amount of data that passes through each stage5. A funnel chart is not suitable for comparing the number of online orders received requesting different types of delivery options for the last 3 years, as it does not show the categories of delivery options, but rather the progression of customers through a sales or marketing funnel. A funnel chart can help visualize the conversion rates, drop-off rates, or bottlenecks in a process6.

A scatter plot is a type of chart that shows the relationship between two numerical variables by using dots to represent the values of each pair of data points. A scatter plot is not suitable for comparing the number of online orders received requesting different types of delivery options for the last 3 years, as it does not show the categories of delivery options, but rather the correlation or association between two continuous variables. A scatter plot can help identify the direction, strength, and shape of the relationship, as well as any outliers or clusters in the data.

QUESTION 5

To gain traction on online sales, a retailer initiated a marketing campaign using banner ads. The company has requested their analytics team to evaluate the performance of the campaign. During the presentation, the analyst confirmed that the campaign did bring in a large number of net new customers to the website and met the target sales conversion rate. They also noted that there was a high number of repeat visitors not completing a sale. What decision would help the retailer improve sales conversion rates for repeat visitors?

A. Increase investment in banner ads

B. Incentivize customers to subscribe to promotional notifications

C. Add additional new products to attract customers

D. Ensure the sales checkout process is streamlined

Correct Answer: D

According to the Business Data Analytics: A Decision-Making Paradigm1, one of the key steps in the analytics process is to communicate insights and recommendations to stakeholders. The analyst should present the findings in a clear and concise manner, and provide actionable suggestions to improve the business outcomes. In this case, the analyst has identified that repeat visitors are not completing a sale, which indicates a possible issue with the sales checkout process. Therefore, the analyst should recommend the retailer to streamline the sales checkout process, which could reduce friction, increase customer satisfaction, and boost sales conversion rates for repeat visitors. References: Business Data Analytics: A Decision-Making Paradigm