12. Is K sensitive to outliers?

K-Means clustering algorithm is most sensitive to outliers as it uses the mean of cluster data points to find the cluster center.The K-means clustering algorithm is sensitive to outliers, because a mean is easily influenced by extreme values. K-medoids clustering is a variant of K-means that is more robust to noises and outliers.

13. Why is K means better?

One of the most basic and often used unsupervised machine learning techniques is K-means clustering. To put it another way, the K-means algorithm finds k centroids and then assigns each data point to the closest cluster while keeping the cluster centers as small as feasible.

Advantages of k-means
Relatively simple to implement.
Scales to large data sets.
Guarantees convergence.
Can warm-start the positions of centroids.
Easily adapts to new examples.
Generalizes to clusters of different shapes and sizes, such as elliptical clusters.

14. Is K means a deterministic algorithm

One of the significant drawbacks of K-Means is its non-deterministic nature. K-Means starts with a random set of data points as initial centroids. The basic k-means clustering is based on a non-deterministic algorithm. This means that running the algorithm several times on the same data, could give different results. However, to ensure consistent results, FCS Express performs k-means clustering using a deterministic method.

Q1 to Q11 have only one correct answer. Choose the correct option to answer your question.

1. Movie Recommendation systems are an example of:
i) Classification
ii) Clustering
iii) Regression Options
a) 2 Only
b) 1 and 2
c) 1 and 3
d) 2 and 3

Ans.- a

2. Sentiment Analysis is an example of:
i) Regression
ii) Classification
iii) Clustering
iv) Reinforcement Options:
a)1 Only
b) 1 and 2
c) 1 and 3
d) 1, 2 and 4

Ans.- d

3. Can decision trees be used for performing clustering?
a) True
b) False

Ans- a

4. Which of the following is the most appropriate strategy for data cleaning before performing clustering analysis, given less than desirable number of data points:
i) Capping and flooring of variables
ii) Removal of outliers Options: a) 1 only
b) 2 only
c) 1 and 2
d) None of the above

Ans- a

5. What is the minimum no. of variables/ features required to perform clustering?
a) 0
b) 1
c) 2
d) 3

Ans- b

6. For two runs of K-Mean clustering is it expected to get same clustering results?
a) Yes
b) No

Ans- b

7. Is it possible that Assignment of observations to clusters does not change between successive iterations in K-Means?
a) Yes
b) No
c) Can't say
d) None of these

Ans- a

8. Which of the following can act as possible termination conditions in K-Means?
i) For a fixed number of iterations.
ii) Assignment of observations to clusters does not change between iterations. Except for cases witha bad local minimum.
iii) Centroids do not change between successive iterations.
iv) Terminate when RSS falls below a threshold. Options: a) 1, 3 and 4
b) 1, 2 and 3
c) 1, 2 and 4
d) All of the above

9. Which of the following algorithms is most sensitive to outliers?
a) K-means clustering algorithm
b) K-medians clustering algorithm
c) K-modes clustering algorithm
d) K-medoids clustering algorithm

Ans- a

10. How can Clustering (Unsupervised Learning) be used to improve the accuracy of Linear Regression model (Supervised Learning): i) Creating different models for different cluster groups.
ii) Creating an input feature for cluster ids as an ordinal variable.
iii) Creating an input feature for cluster centroids as a continuous variable. iv) Creating an input feature for cluster size as a continuous variable. Options:
a) 1 only
b) 2 only
c) 3 and 4

d) All of the above

Ans- d

11. What could be the possible reason(s) for producing two different dendrograms using agglomerative
clustering algorithms for the same dataset?
a) Proximity function used
b) of data points used
c) of variables used
d) All of the above

WORKSHEET-2(SQL)

Q1 to Q13 have only one correct answer. Choose the correct option to answer your question.

1. Which of the following constraint requires that there should not be duplicate entries?
A) No Duplicity B) Different
C) Null D) Unique

Ans. D

2. Which of the following constraint allows null values in a column?
A) Primary key B) Empty Value
C) Null D) None of them

Ans. C

3. Which of the following statements are true regarding Primary Key?
A) Each entry in the primary key uniquely identifies each entry or row in the table
B) There can be duplicate values in a primary key column
C) There can be null values in Primary key
D) None of the above.

Ans. A

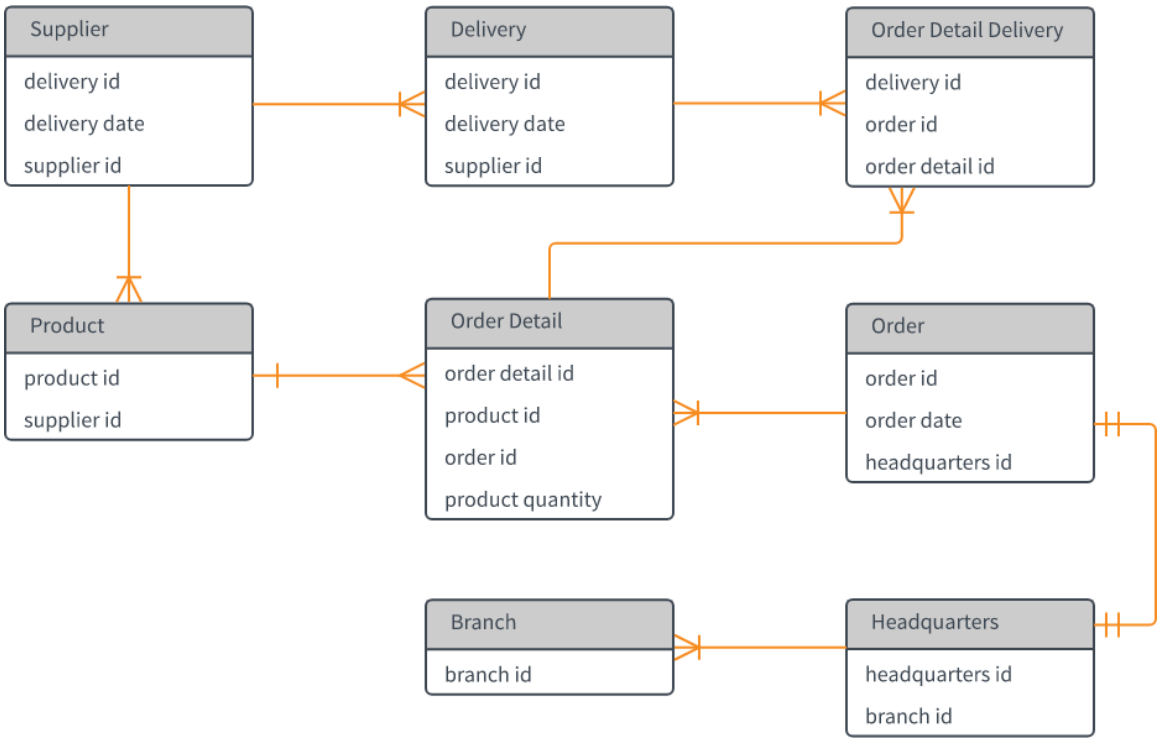
4. Which of the following statements are true regarding Unique Key?
A) There should not be any duplicate entries
B) Null values are not allowed
C) Multiple columns can make a single unique key together
D) All of the above

Ans. A

5. Which of the following is/are example of referential constraint?
A) Not Null B) Foreign Key
C) Referential key D) All of them

Ans. B

For Questions 6-13 refer to the below diagram and answer the questions:



6. How many foreign keys are there in the Supplier table?
A) 0 B) 3
C) 2 D) 1

Ans. A

7. The type of relationship between Supplier table and Product table is:
A) one to many B) many to one
C) one to one D) many to many

Ans. C

8. The type of relationship between Order table and Headquarter table is:
A) one to many B) many to one
C) one to one D) many to many

Ans. C

9. Which of the following is a foreign key in Delivery table?
A) delivery id B) supplier id
C) delivery date D) None of them

Ans. A

10. The number of foreign keys in order details is:
A) 0 B) 1
C) 3 D) 2

Ans. D

11. The type of relationship between Order Detail table and Product table is:
A) one to many B) many to one
C) one to one D) many to many

Ans. C

12. DDL statements perform operation on which of the following database objects?
A) Rows of table B) Columns of table
C) Table D) None of them

Ans. C

13. Which of the following statement is used to enter rows in a table?
A) Insert in to B) Update
C) Enter into D) Set Row

Ans. A

Q14 and Q15 have one or more correct answer. Choose all the correct option to answer your question.

14. Which of the following is/are entity constraints in SQL?
A) Duplicate B) Unique
C) Primary Key D) Null

Ans. B,C,D

15. Which of the following statements is an example of semantic Constraint?
A) A blood group can contain one of the following values - A, B, AB and O.
B) A blood group can only contain characters
C) A blood group cannot have null values
D) Two or more donors can have same blood group

Ans. A,B

WORKSHEET-2(STATISTICS)

1. What represent a population parameter?
A) SD
B) mean
C) both
D) none

Ans. C

2. What will be median of following set of scores (18,6,12,10,15)?
A) 14
B) 18
C) 12
D) 10

Ans. C

3. What is standard deviation?
A) An approximate indicator of how number vary from the mean
B) A measure of variability
C) The square root of the variance
D) All of the above

Ans. D

4. The intervals should be _____ in a grouped frequency distribution
A) Exhaustive
B) Mutually exclusive
C) Both of these
D) None

Ans. C

5. What is the goal of descriptive statistics?
A) Monitoring and manipulating a specific data
B) Summarizing and explaining a specific set of data
C) Analyzing and interpreting a set of data
D) All of these

Ans. D

6. A set of data organized in a participant by variables format is called
A) Data junk
B) Data set
C) Data view
D) Data dodging

Ans. B

7. In multiple regression,_____ independent variables are used
A) 2 or more
B) 2
C) 1
D) 1 or more

Ans. A

8. Which of the following is used when you want to visually examine the relationship between 2 quantitative variables?
A) Line graph
B) Scatterplot
C) Bar graph
D) Pie graph

Ans. B

9. Two or more groups means are compared by using
A) analysis
B) Data analysis
C) Varied Variance analysis
D) Analysis of variance

Ans. D

10. _____is a raw score which has been transformed into standard deviation units?
A) Z-score
B) t-score
C) e-score
D) SDU score

Ans. A

11. _____is the value calculated when you want the arithmetic average?
A) Median
B) mode
C) mean
D) All

Ans. C

12. Find the mean of these set of number (4,6,7,9,2000000)?
A) 4
B) 7
C) 7.5
D) 400005.2

Ans. D

13. _____ is a measure of central tendency that takes into account the magnitude of scores?

A) Range
B) Mode
C) Median
D) Mean

Ans. D

14. _____ focuses on describing or explaining data whereas _____involves going beyond immediate data and making inferences
A) Descriptive and inferences
B) Mutually exclusive and mutually exhaustive properties
C) Positive skew and negative skew
D) Central tendency

Ans. A

15. What is the formula for range?
A) H+L
B) L-H
C) LXH
D) H-L

Ans. D