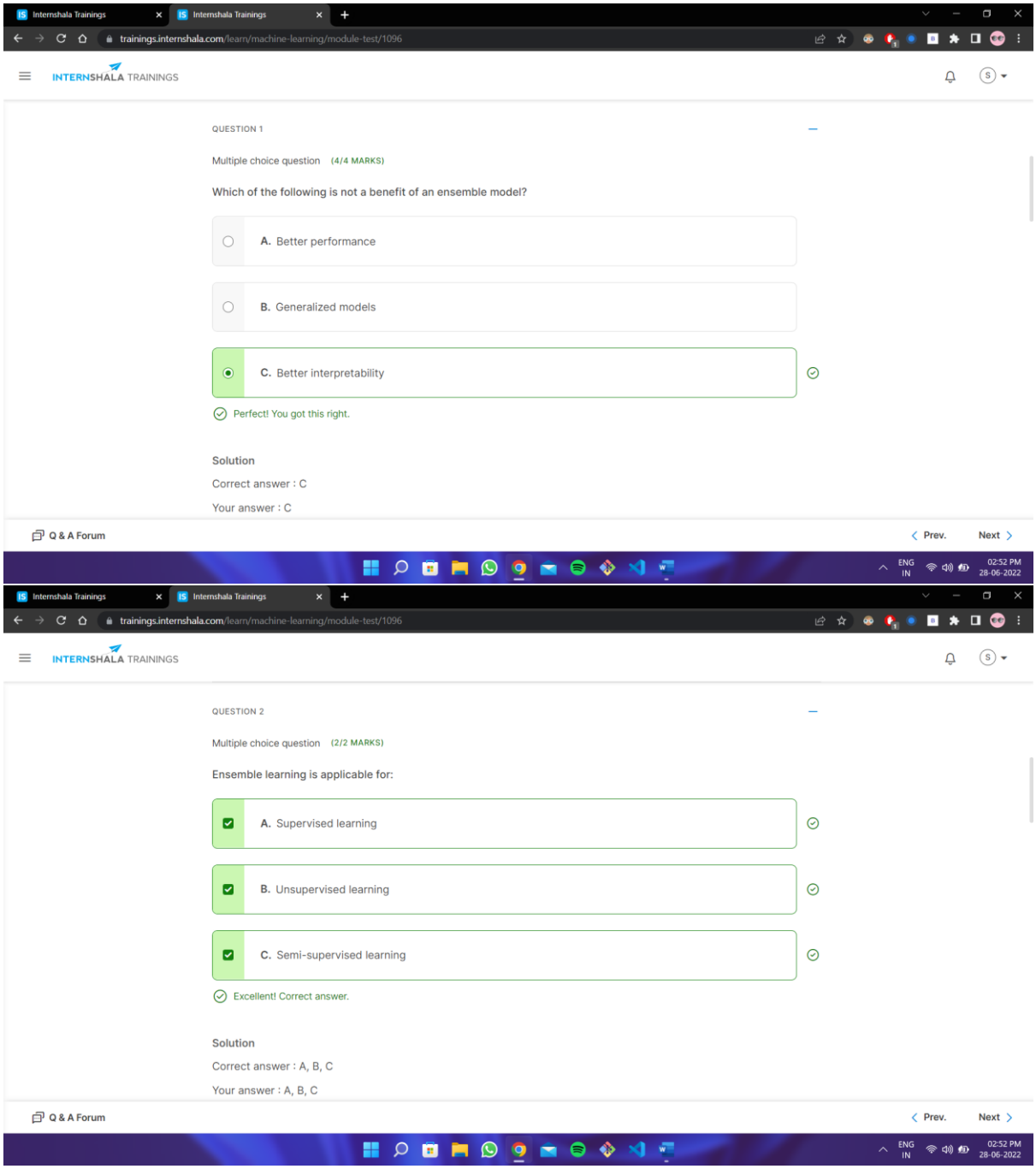
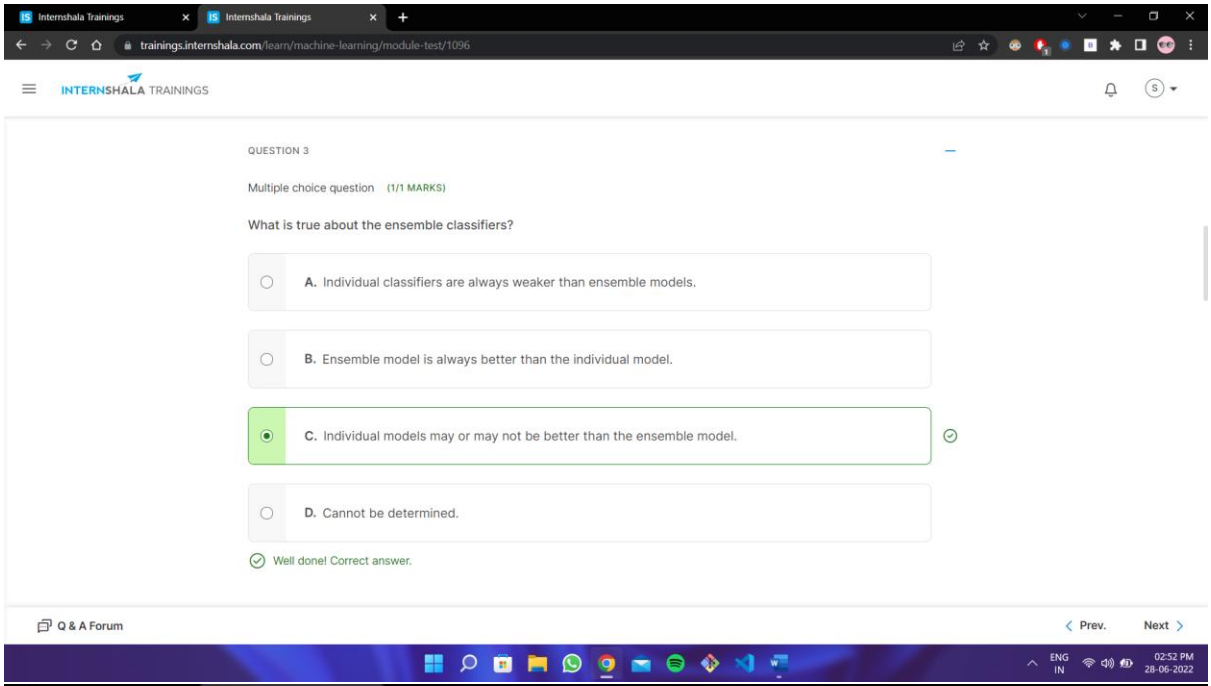
Ensemble Models and Clustering (Unsupervised Learning)

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QUESTION 3
Multiple choice question (1/1 MARKS)
What is true about the ensemble classifiers?
A. Individual classifiers are always weaker than ensemble models.
B. Ensemble model is always better than the individual model.
C. Individual models may or may not be better than the ensemble model.
D. Cannot be determined.
Well done! Correct answer.
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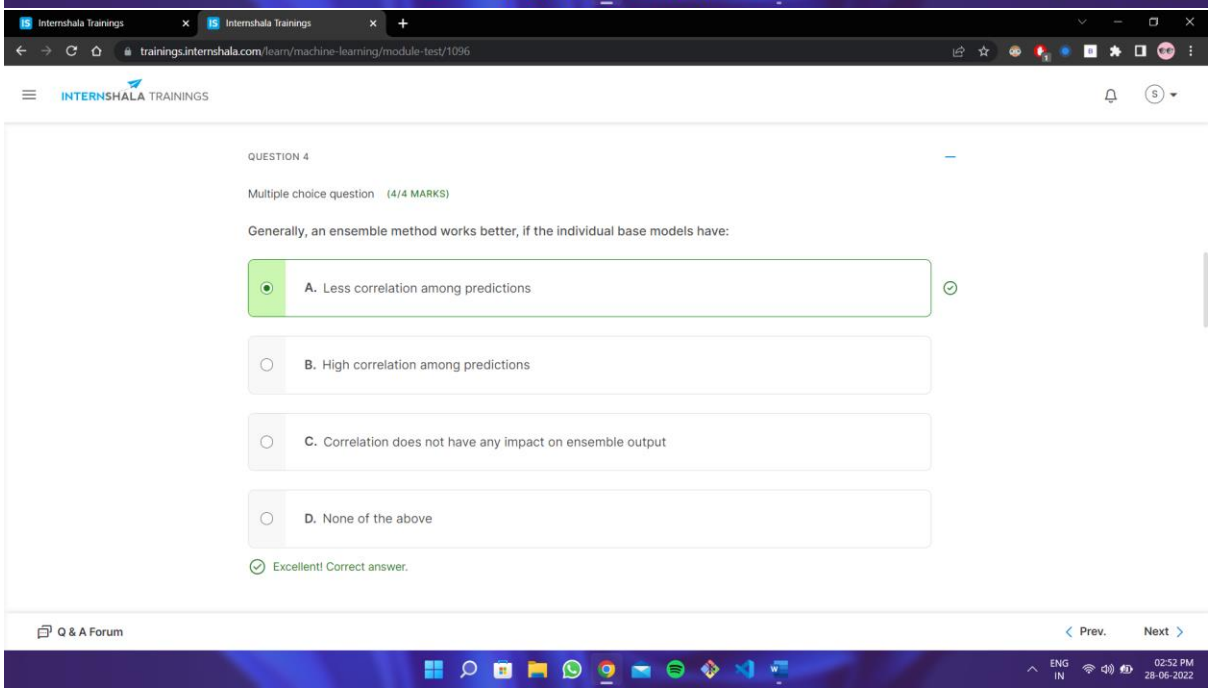
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QUESTION 4
Multiple choice question (4/4 MARKS)
Generally, an ensemble method works better, if the individual base models have:
A. Less correlation among predictions
B. High correlation among predictions
C. Correlation does not have any impact on ensemble output
D. None of the above
Excellent! Correct answer.
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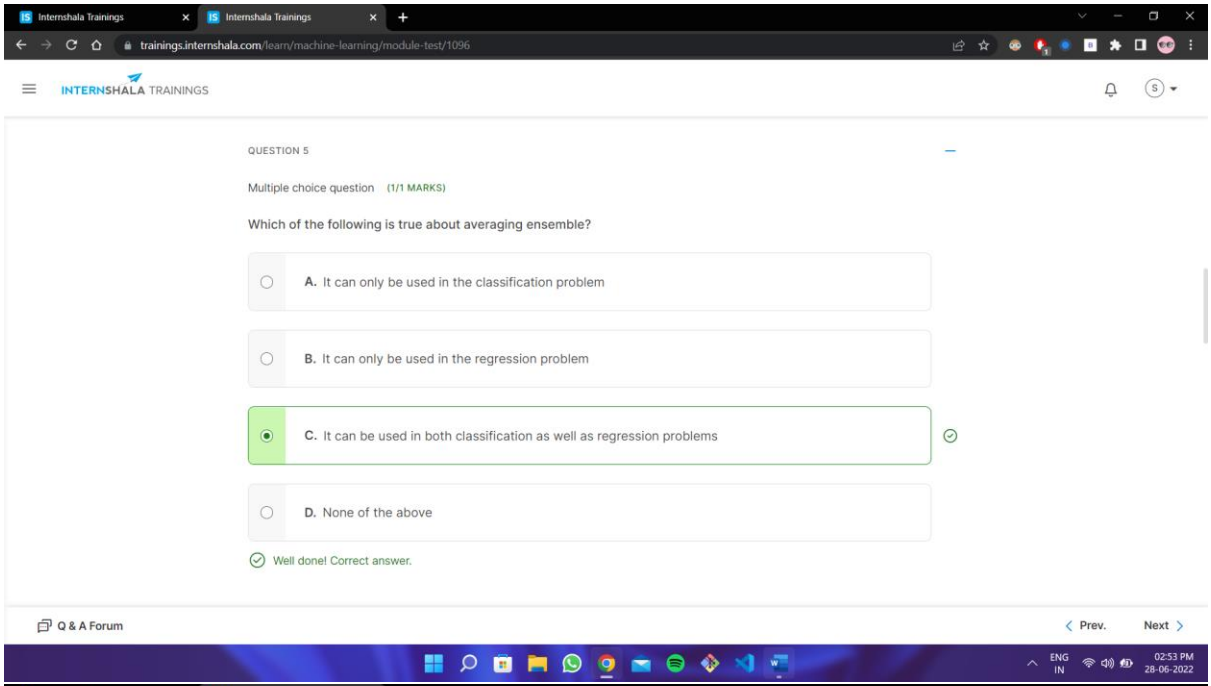
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QUESTION 5
Multiple choice question (1/1 MARKS)
Which of the following is true about averaging ensemble?
A. It can only be used in the classification problem
B. It can only be used in the regression problem
C. It can be used in both classification as well as regression problems
D. None of the above
Well done! Correct answer.
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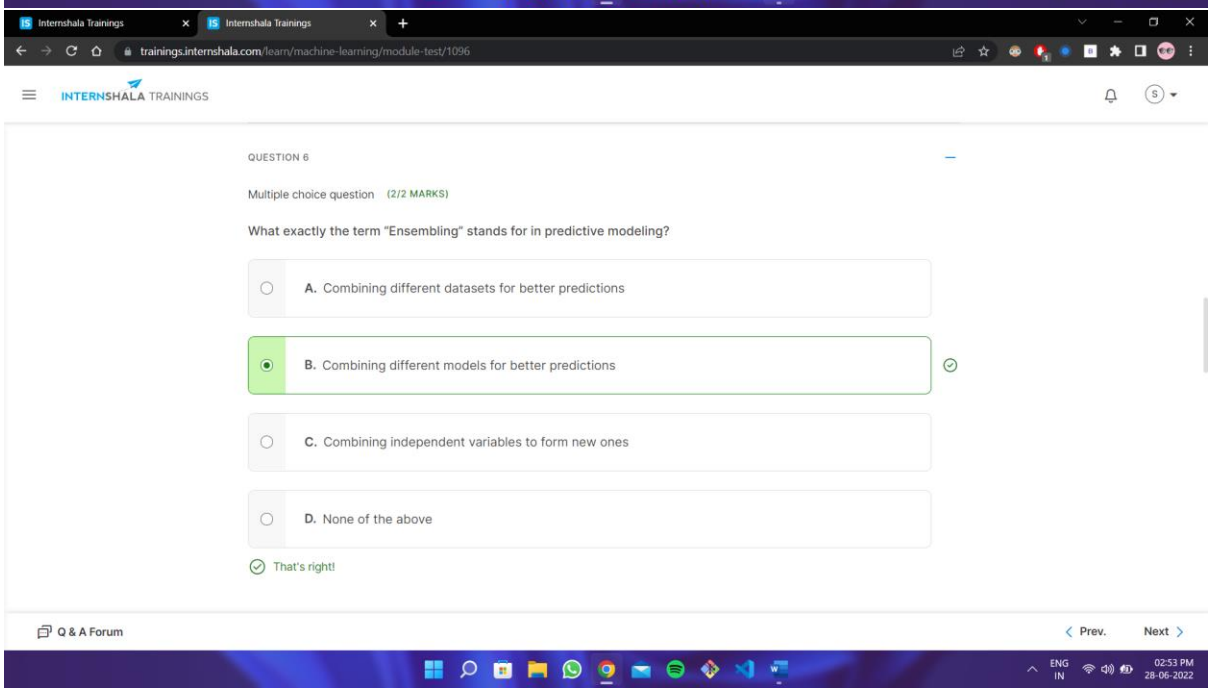
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QUESTION 6
Multiple choice question (2/2 MARKS)
What exactly the term "Ensembling" stands for in predictive modeling?
A. Combining different datasets for better predictions
B. Combining different models for better predictions
C. Combining independent variables to form new ones
D. None of the above
That's right!
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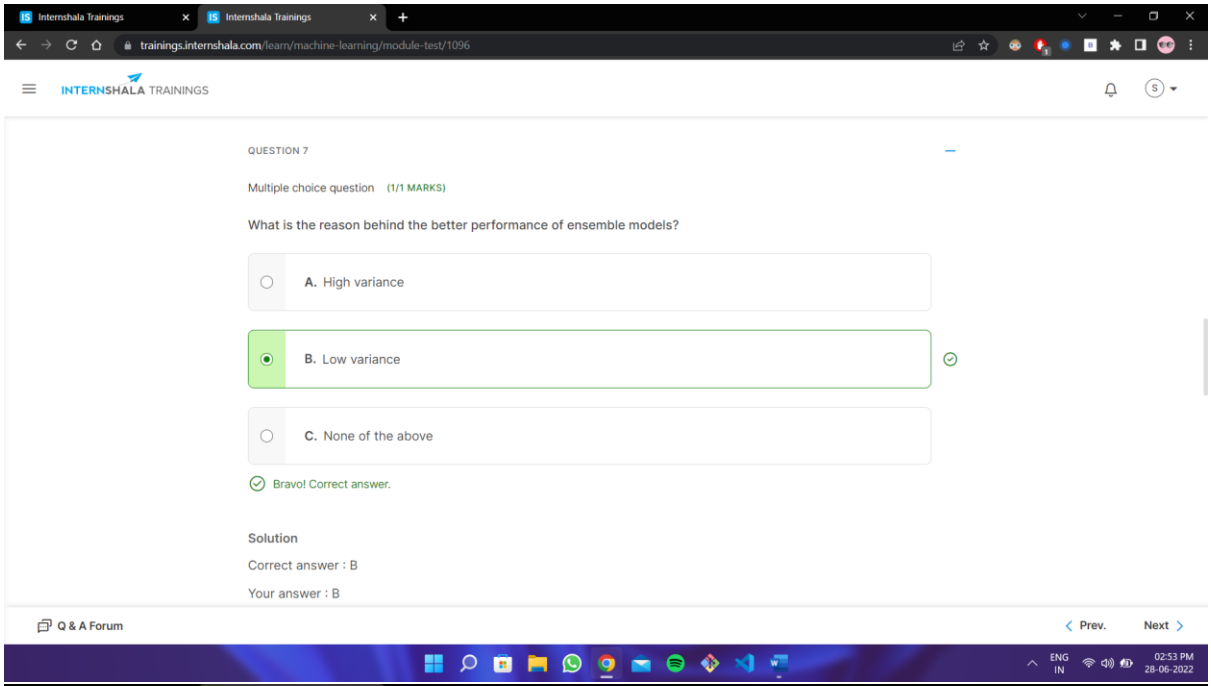
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QUESTION 7
Multiple choice question (1/1 MARKS)
What is the reason behind the better performance of ensemble models?
A. High variance
B. Low variance
C. None of the above
Bravo! Correct answer.
Solution
Correct answer : B
Your answer : B
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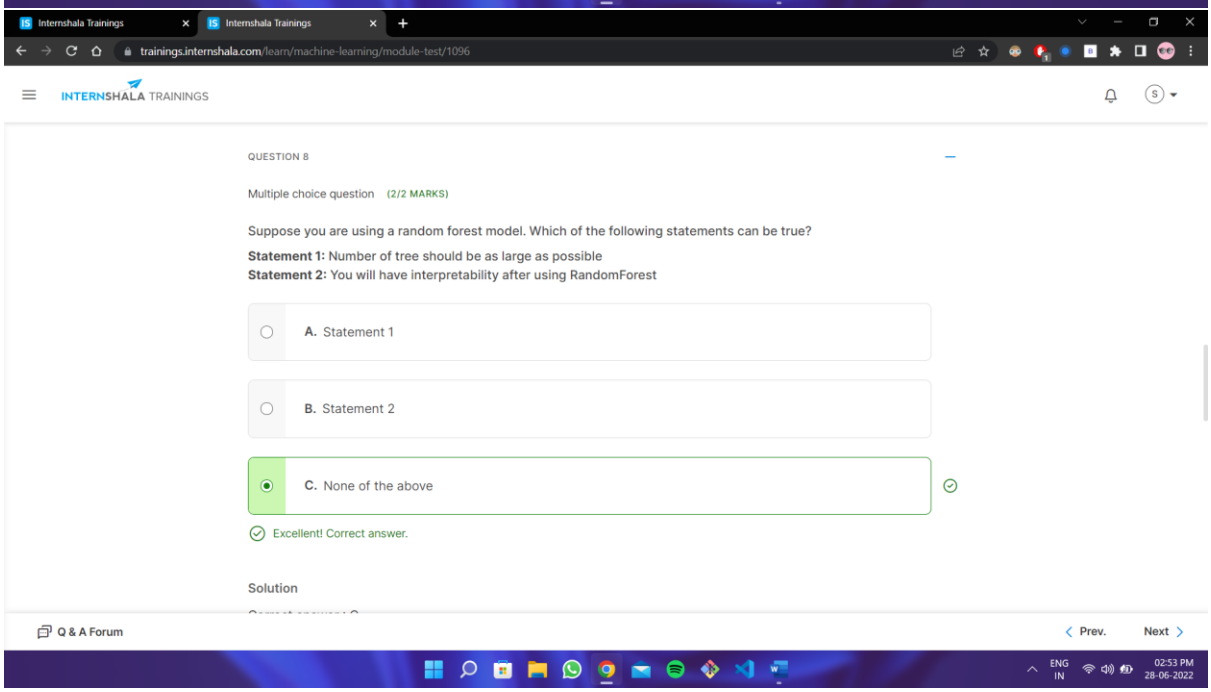
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QUESTION 8
Multiple choice question (2/2 MARKS)
Suppose you are using a random forest model. Which of the following statements can be true?
Statement 1: Number of tree should be as large as possible
Statement 2: You will have interpretability after using RandomForest
A. Statement 1
B. Statement 2
C. None of the above
Excellent! Correct answer.
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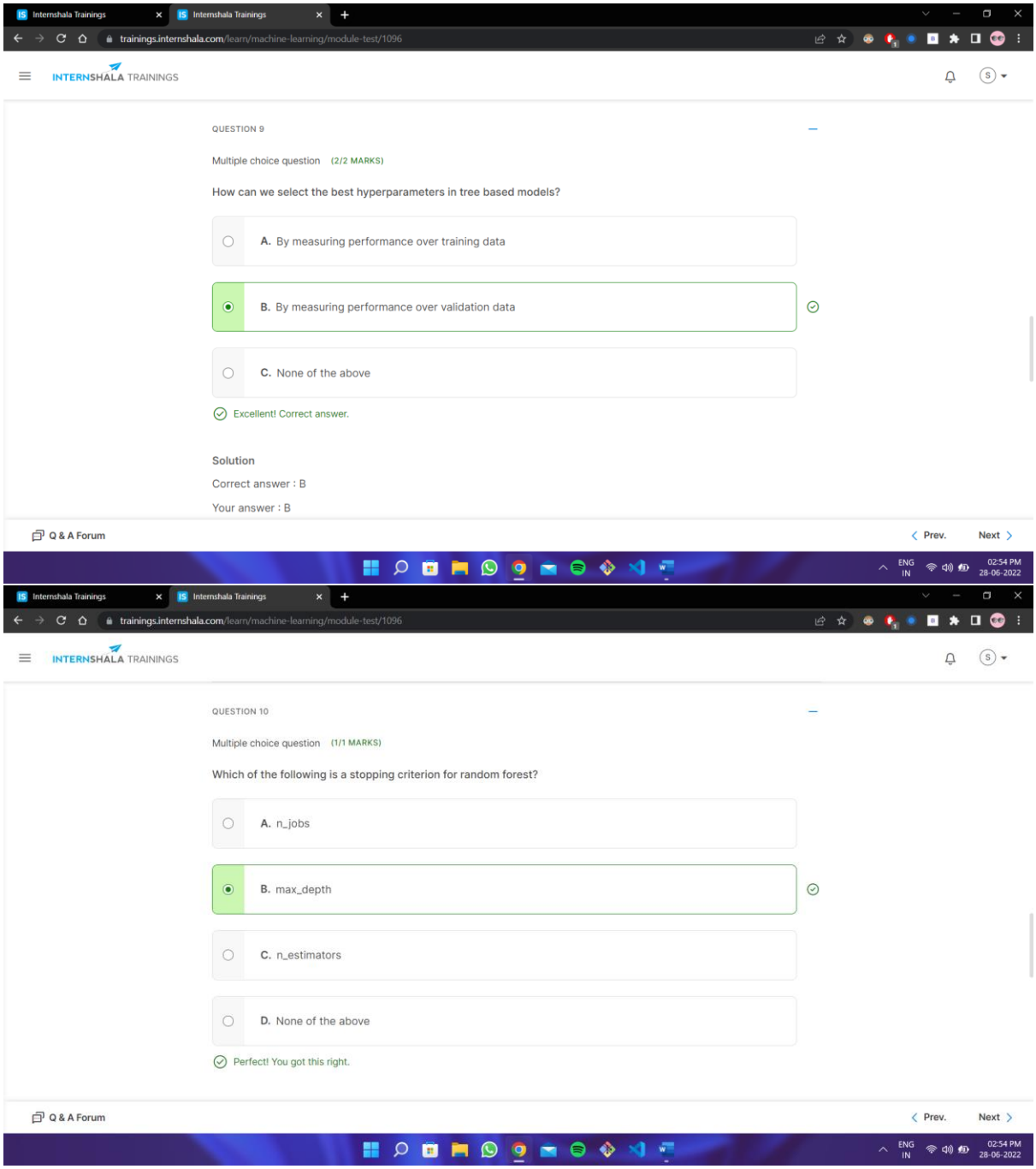
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QUESTION 9
Multiple choice question (2/2 MARKS)
How can we select the best hyperparameters in tree based models?
A. By measuring performance over training data
B. By measuring performance over validation data
C. None of the above
Excellent! Correct answer.
Solution
Correct answer : B
Your answer : B
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QUESTION 10
Multiple choice question (1/1 MARKS)
Which of the following is a stopping criterion for random forest?
A. n_jobs
B. max_depth
C. n_estimators
D. None of the above
Perfect! You got this right.
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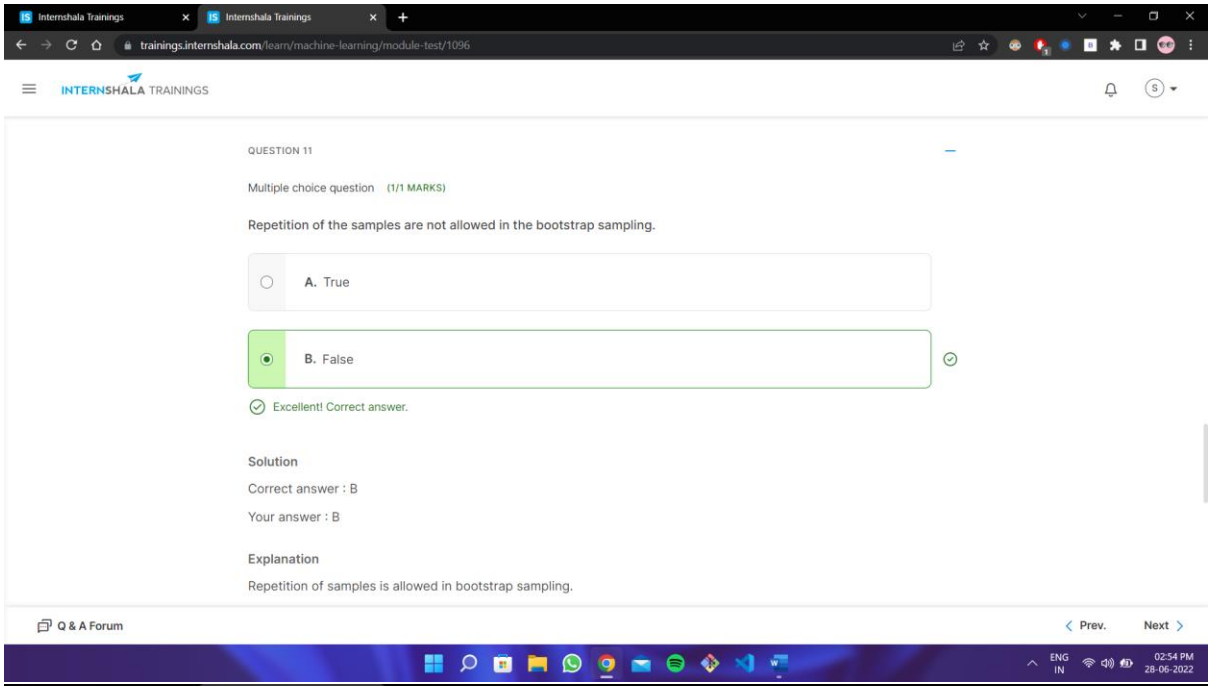
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QUESTION 11
Multiple choice question (1/1 MARKS)
Repetition of the samples are not allowed in the bootstrap sampling.
A. True
B. False
Excellent! Correct answer.
Solution
Correct answer : B
Your answer : B
Explanation
Repetition of samples is allowed in bootstrap sampling.
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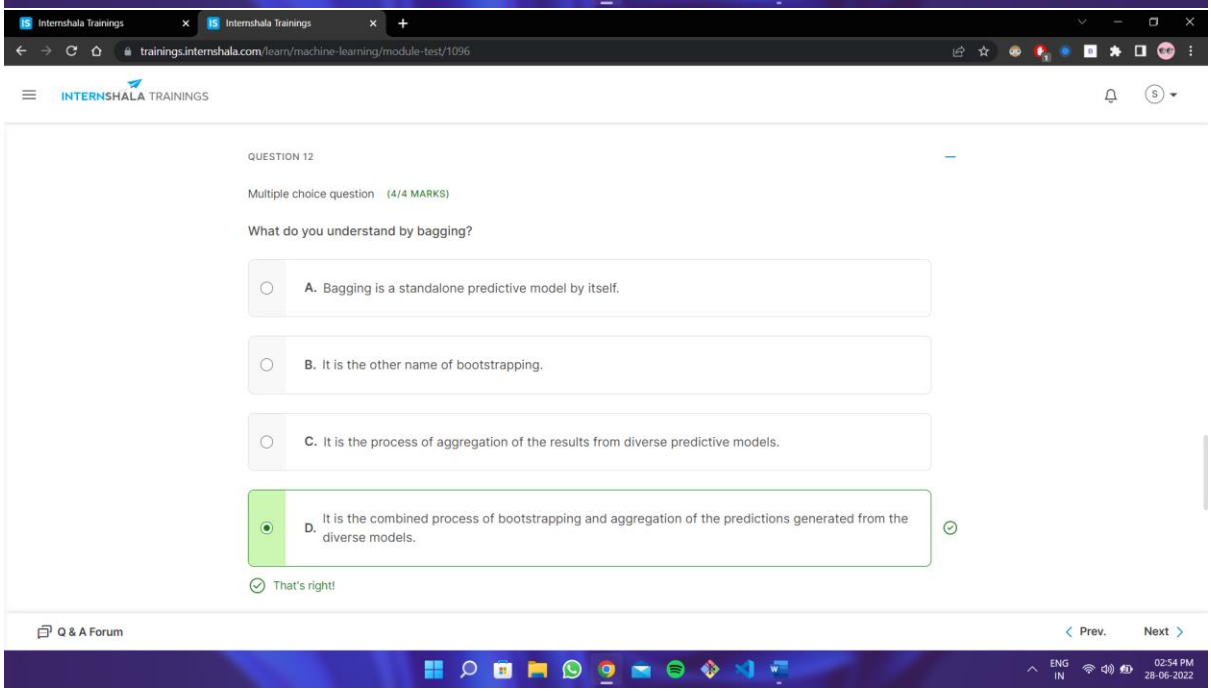
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QUESTION 12
Multiple choice question (4/4 MARKS)
What do you understand by bagging?
A. Bagging is a standalone predictive model by itself.
B. It is the other name of bootstrapping.
C. It is the process of aggregation of the results from diverse predictive models.
D. It is the combined process of bootstrapping and aggregation of the predictions generated from the diverse models.
That's right!
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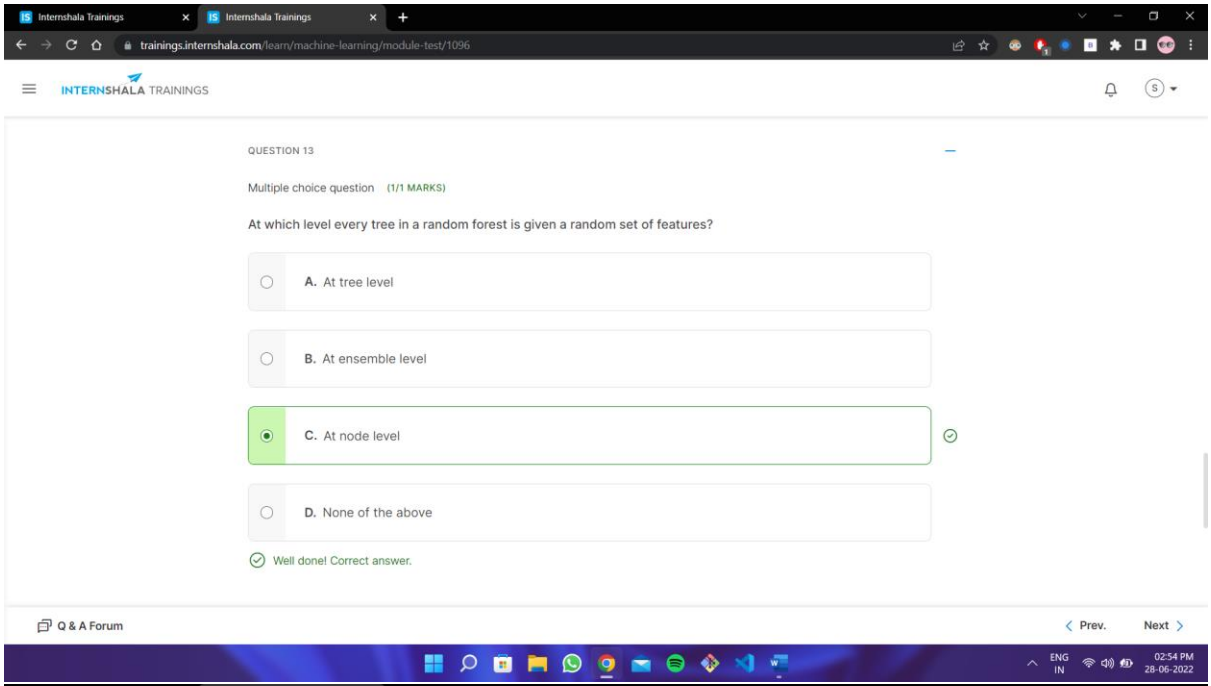
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QUESTION 13
Multiple choice question (1/1 MARKS)
At which level every tree in a random forest is given a random set of features?
A. At tree level
B. At ensemble level
C. At node level
D. None of the above
Well done! Correct answer.
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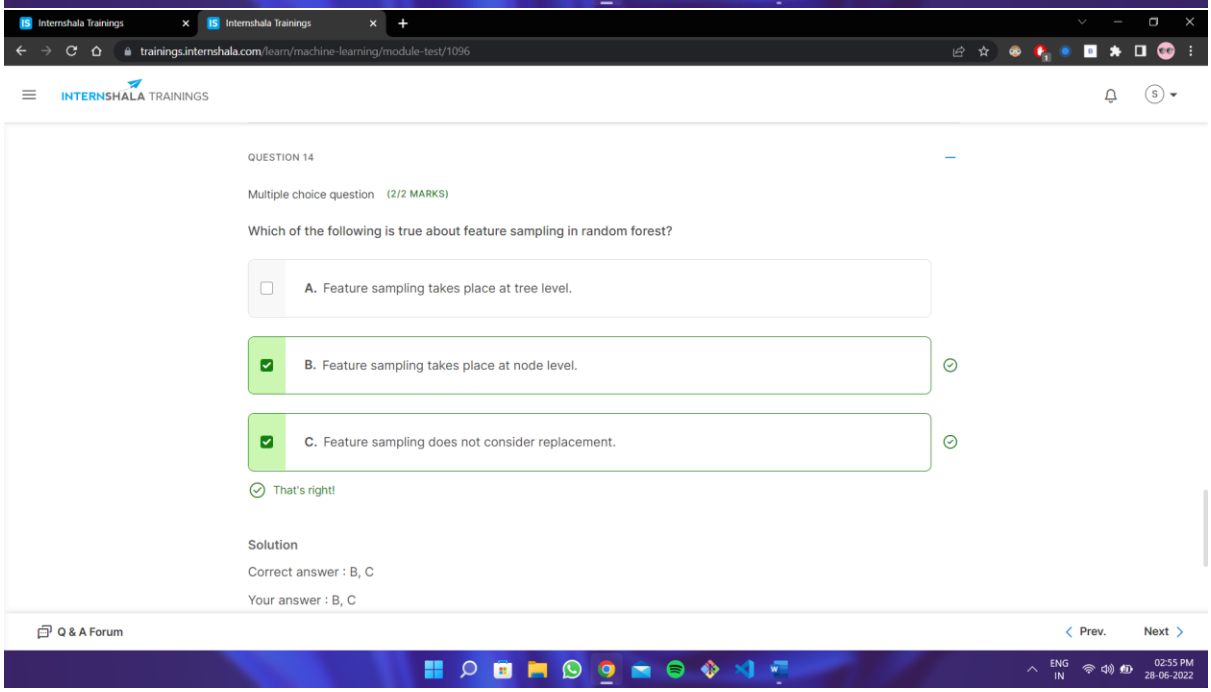
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QUESTION 14
Multiple choice question (2/2 MARKS)
Which of the following is true about feature sampling in random forest?
A. Feature sampling takes place at tree level.
B. Feature sampling takes place at node level.
C. Feature sampling does not consider replacement.
That's right!
Solution
Correct answer : B, C
Your answer : B, C
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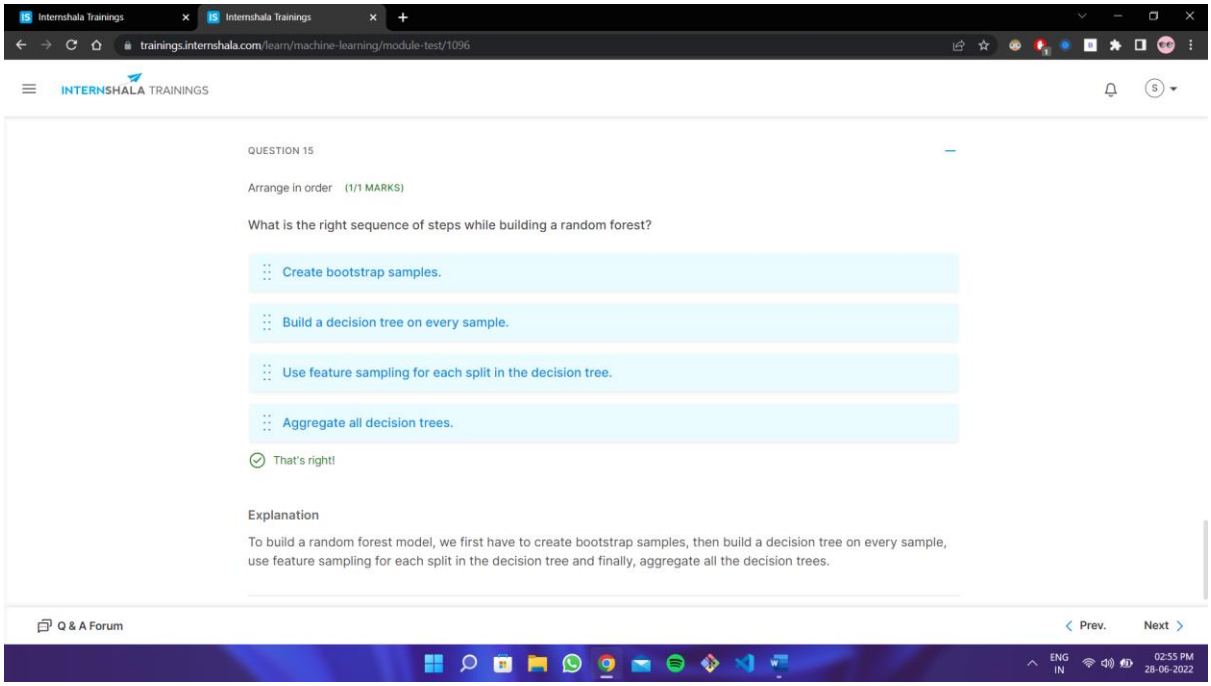
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QUESTION 15
Arrange in order (1/1 MARKS)
What is the right sequence of steps while building a random forest?
Create bootstrap samples.
Build a decision tree on every sample.
Use feature sampling for each split in the decision tree.
Aggregate all decision trees.
That's right!
Explanation
To build a random forest model, we first have to create bootstrap samples, then build a decision tree on every sample, use feature sampling for each split in the decision tree and finally, aggregate all the decision trees.
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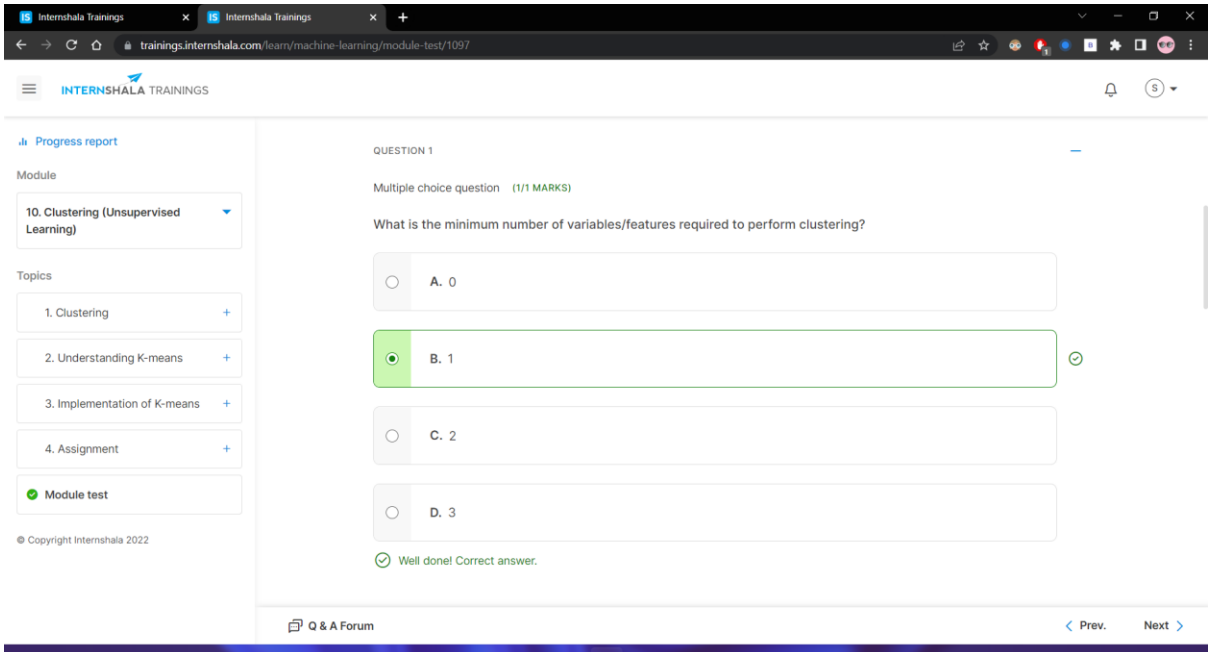
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Progress report
Module
10. Clustering (Unsupervised Learning)
Topics
1. Clustering
2. Understanding K-means
3. Implementation of K-means
4. Assignment
Module test
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QUESTION 1
Multiple choice question (1/1 MARKS)
What is the minimum number of variables/features required to perform clustering?
A. 0
B. 1
C. 2
D. 3
Well done! Correct answer.
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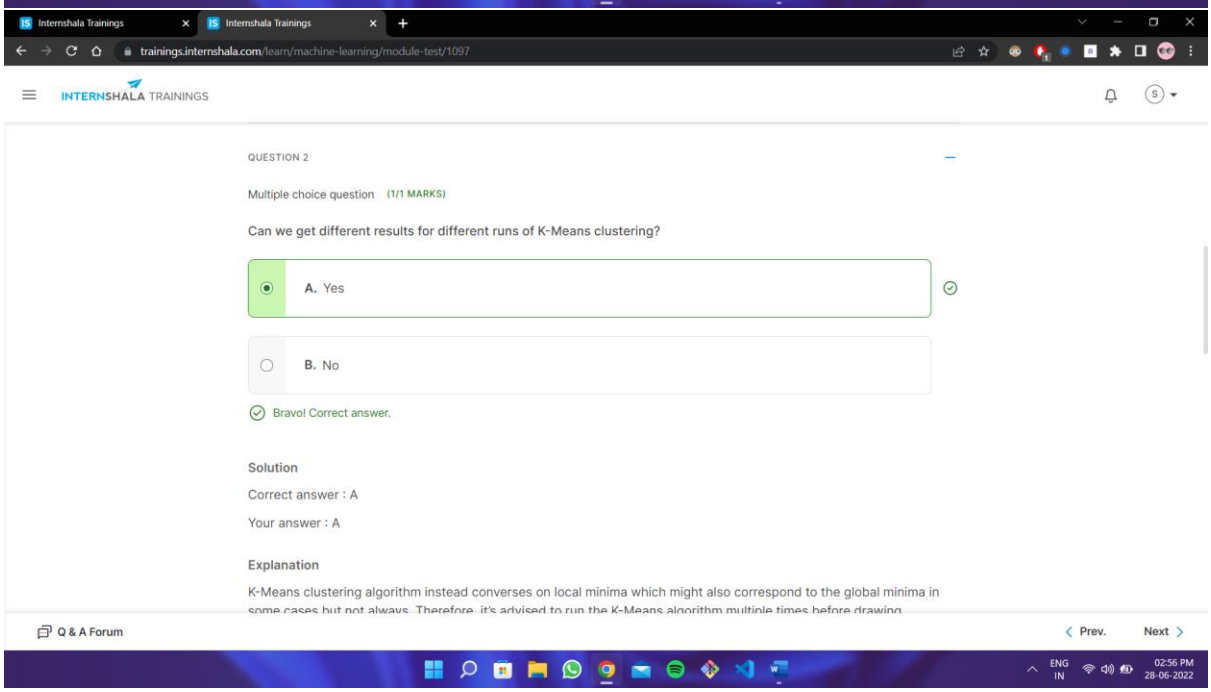
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QUESTION 2
Multiple choice question (1/1 MARKS)
Can we get different results for different runs of K-Means clustering?
A. Yes
B. No
Bravo! Correct answer.
Solution
Correct answer : A
Your answer : A
Explanation
K-Means clustering algorithm instead converses on local minima which might also correspond to the global minima in some cases but not always. Therefore, it's advised to run the K-Means algorithm multiple times before drawing
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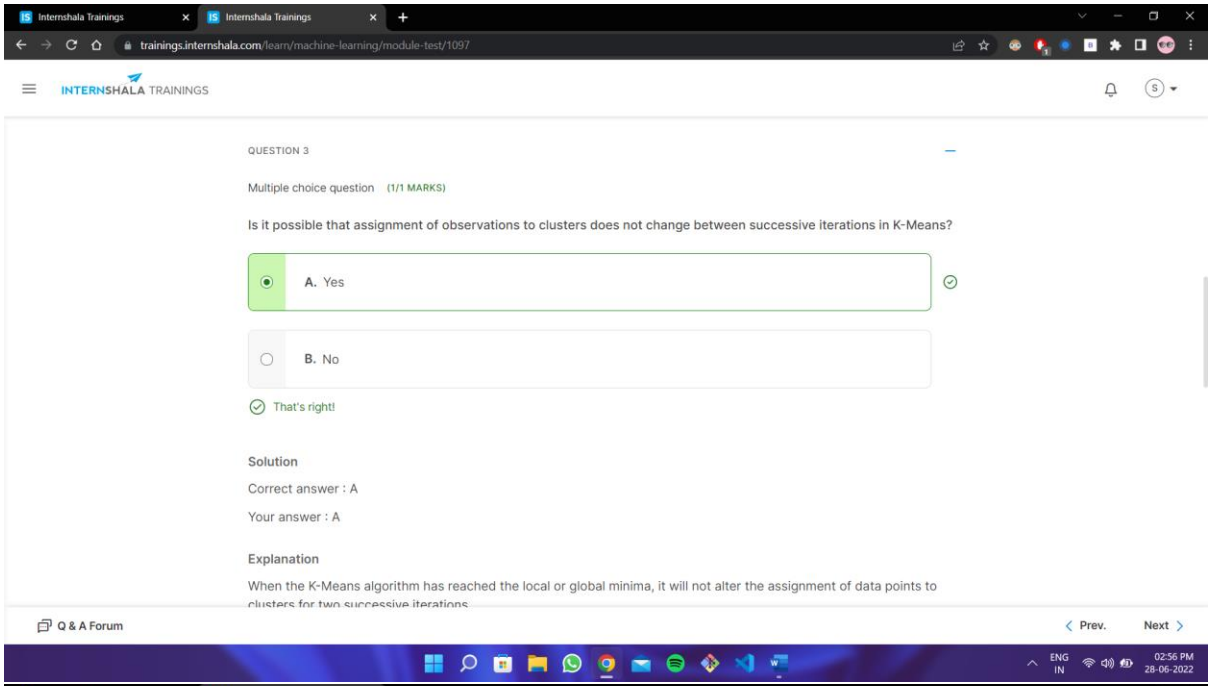
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QUESTION 3
Multiple choice question (1/1 MARKS)
Is it possible that assignment of observations to clusters does not change between successive iterations in K-Means?
A. Yes
B. No
That's right!
Solution
Correct answer : A
Your answer : A
Explanation
When the K-Means algorithm has reached the local or global minima, it will not alter the assignment of data points to clusters for two successive iterations
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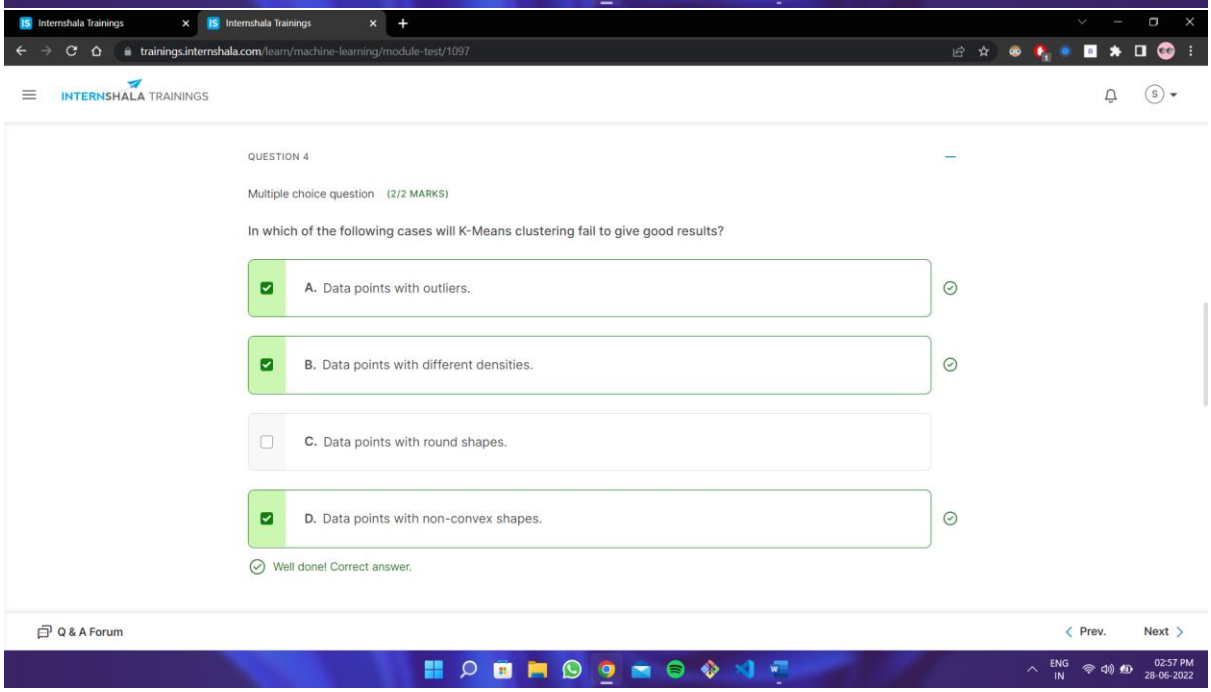
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QUESTION 4
Multiple choice question (2/2 MARKS)
In which of the following cases will K-Means clustering fail to give good results?
A. Data points with outliers.
B. Data points with different densities.
C. Data points with round shapes.
D. Data points with non-convex shapes.
Well done! Correct answer.
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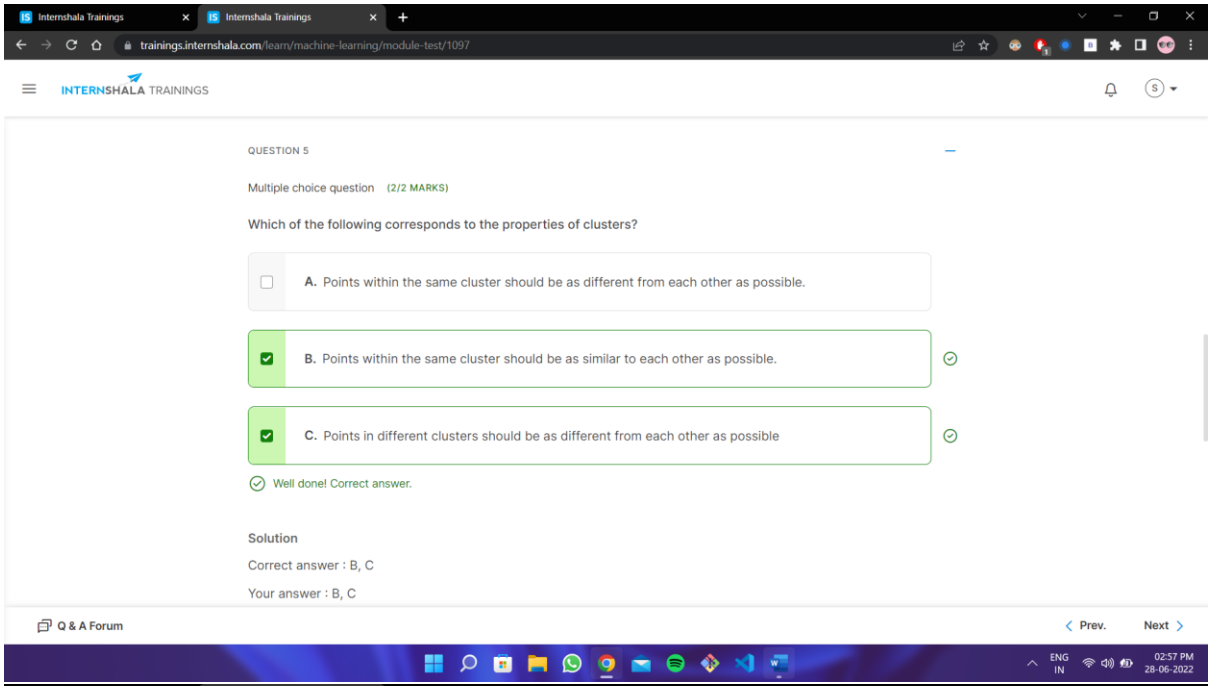
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QUESTION 5
Multiple choice question (2/2 MARKS)
Which of the following corresponds to the properties of clusters?
A. Points within the same cluster should be as different from each other as possible.
B. Points within the same cluster should be as similar to each other as possible.
C. Points in different clusters should be as different from each other as possible
Well done! Correct answer.
Solution
Correct answer : B, C
Your answer : B, C
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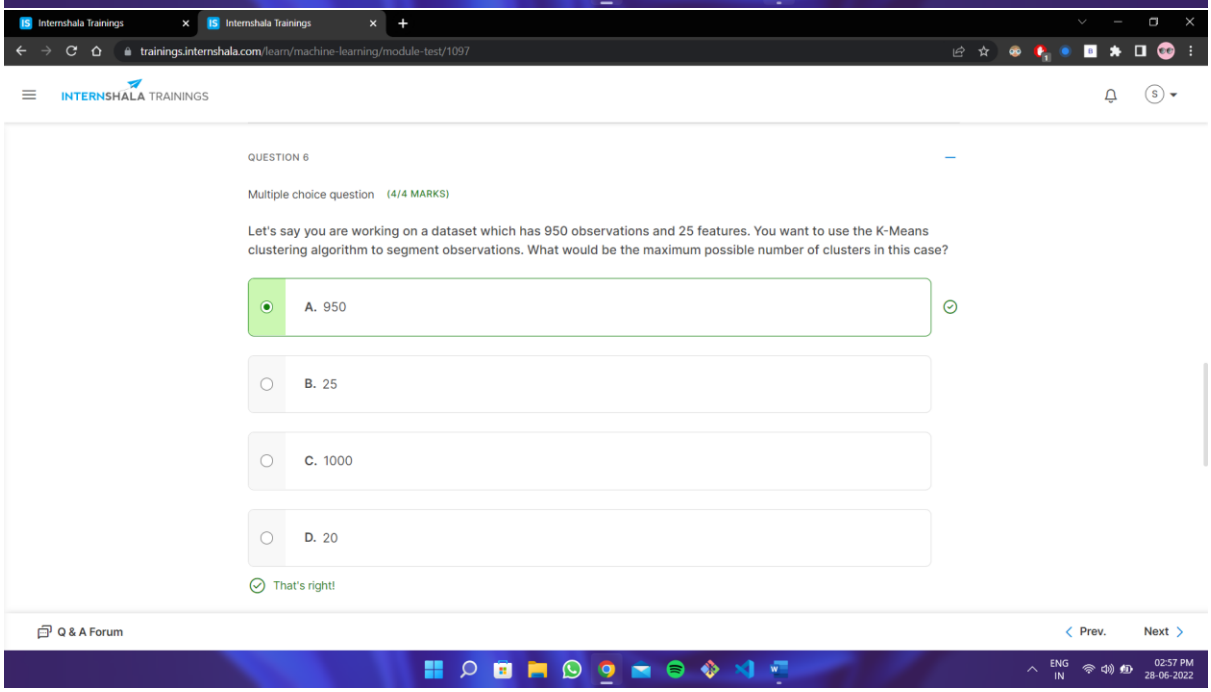
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QUESTION 6
Multiple choice question (4/4 MARKS)
Let's say you are working on a dataset which has 950 observations and 25 features. You want to use the K-Means clustering algorithm to segment observations. What would be the maximum possible number of clusters in this case?
A. 950
B. 25
C. 1000
D. 20
That's right!
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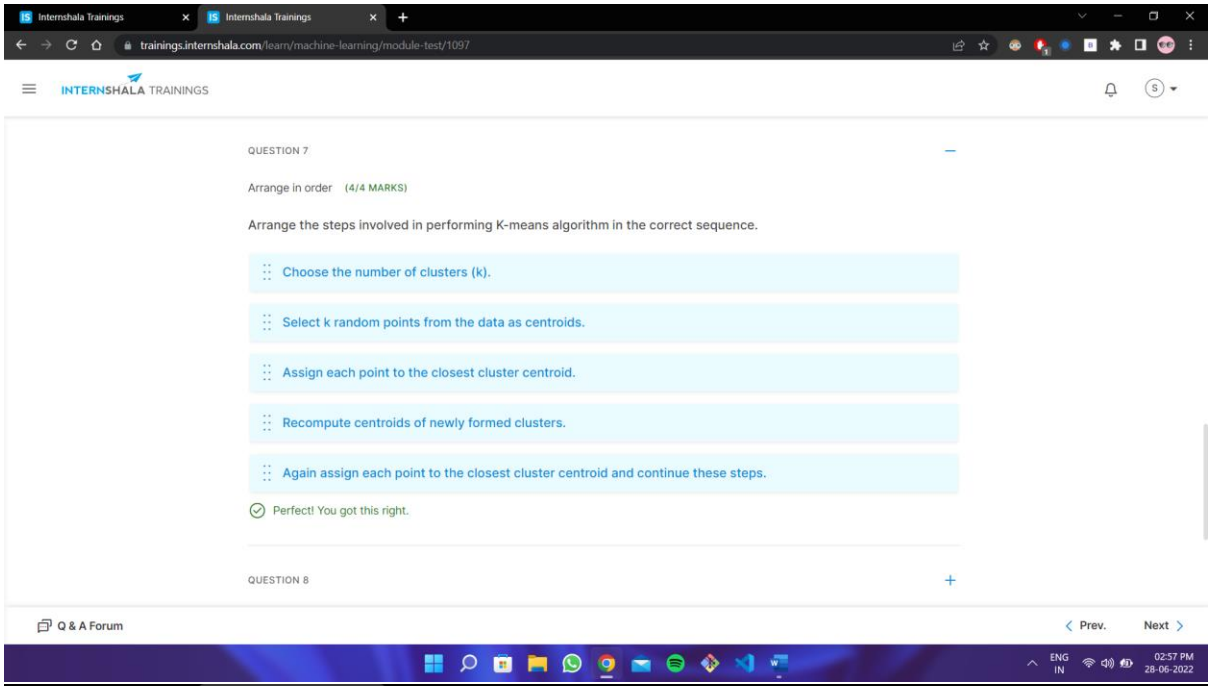
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QUESTION 7
Arrange in order (4/4 MARKS)
Arrange the steps involved in performing K-means algorithm in the correct sequence.
Choose the number of clusters (k).
Select k random points from the data as centroids.
Assign each point to the closest cluster centroid.
Recompute centroids of newly formed clusters.
Again assign each point to the closest cluster centroid and continue these steps.
Perfect! You got this right.
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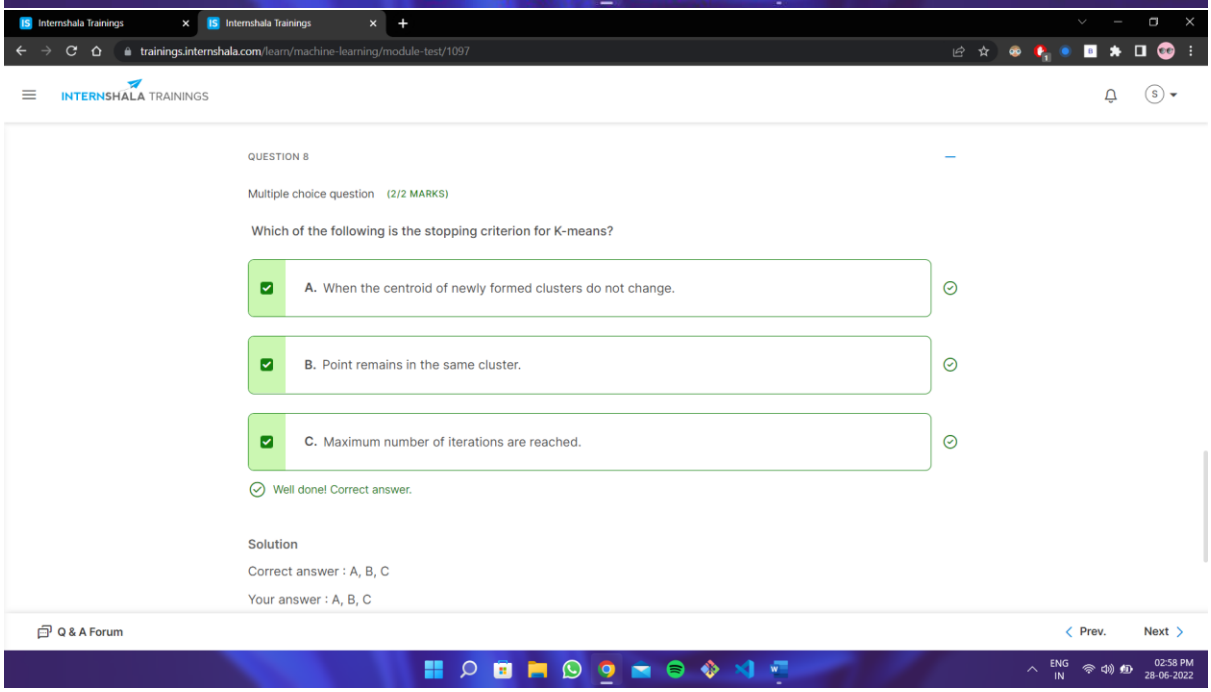
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QUESTION 8
Multiple choice question (2/2 MARKS)
Which of the following is the stopping criterion for K-means?
A. When the centroid of newly formed clusters do not change.
B. Point remains in the same cluster.
C. Maximum number of iterations are reached.
Well done! Correct answer.
Solution
Correct answer : A, B, C
Your answer : A, B, C
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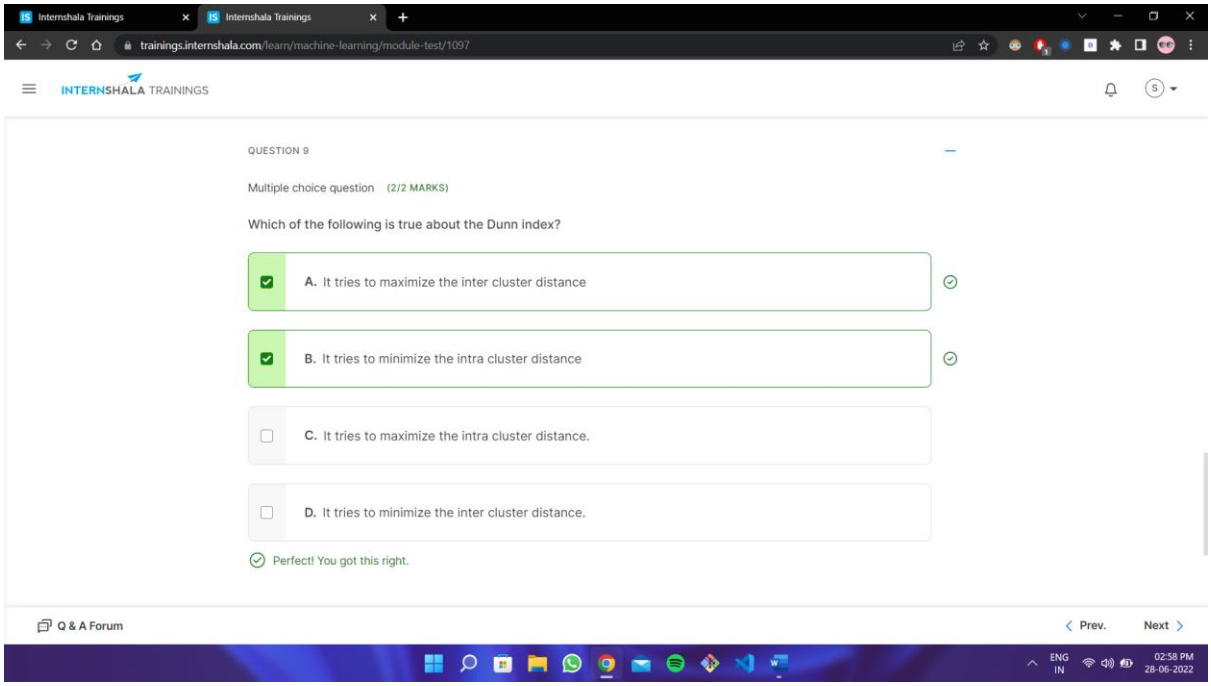
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QUESTION 9
Multiple choice question (2/2 MARKS)
Which of the following is true about the Dunn index?
A. It tries to maximize the inter cluster distance
B. It tries to minimize the intra cluster distance
C. It tries to maximize the intra cluster distance.
D. It tries to minimize the inter cluster distance.
Perfect! You got this right.
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