INS_Test_Run

Finish test

Organic Computing

1 point

Not answered

Mark each of these statements about *Organic Computing (OC)* as *false* or *true*.

Unanswered	Right	Wrong	
☑	☐	☐	The subsystems of an OC system possess sensors and actuators.
☑	☐	☐	*Organic Computing* aims for the creation of centrally coordinated subsystems.
☑	☐	☐	*Organic Computing* is inspired by nature.
☑	☐	☐	OC system autonomously choose between design time and runtime decisions.

Submit answer | Next question

INS_Test_Run

Finish test

Piecewise Aggregate Approximation

1.5 point

Not answered

Conduct a PAA with 6 segments for the point sequence below. Enter the approximated numerical value for each segments:

segment 1 _____

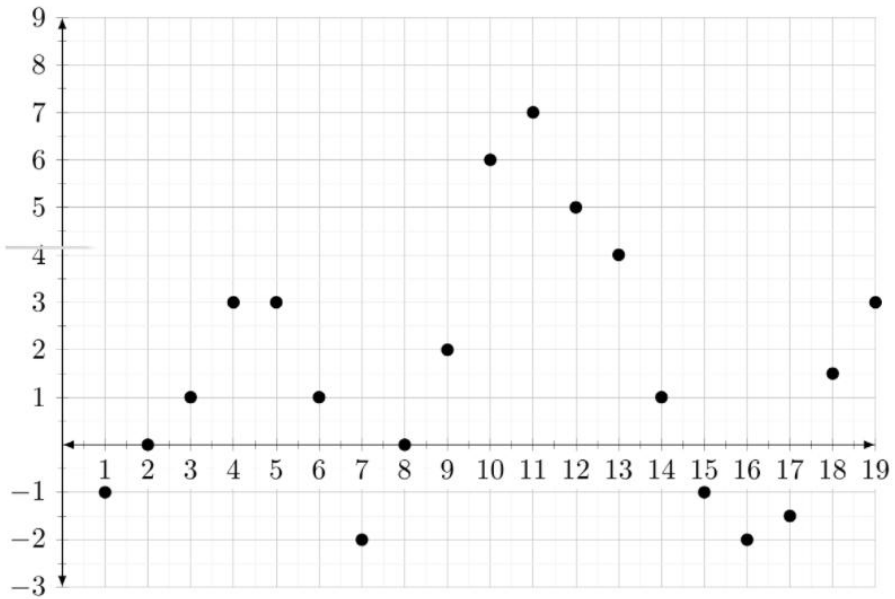
segment 2 _____

segment 3 _____

segment 4 _____

segment 5 _____

segment 6 _____



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Finish test

Entropy Formula — 1 point — Not answered

According to the lecture, how is Shannon's entropy for a data volume D defined, given d classes and their probabilites.

- $E(D) = \frac{1}{d} \sum_{i=1}^{d} p_i \log_2 p_i$
- $E(D) = -\sum_{i=1}^{d} p_i \ln p_i$
- $E(D) = \sum_{i=1}^{d} p_i \ln p_i$
- $E(D) = -\sum_{i=1}^{d} p_i \log_2 p_i$

Submit answer | Next question

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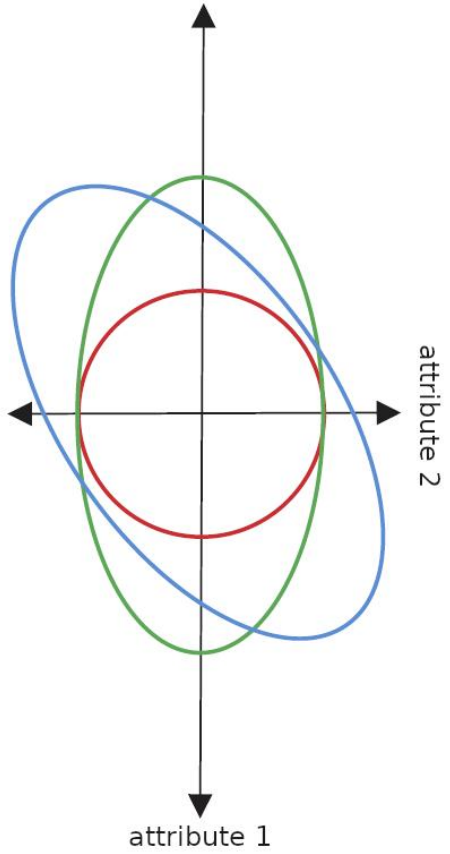
Similarity Measurement

1.5 point

Not answered

The points represented by the coloured ellipses are of equal distance to the origin according to a norm. Match each norm to its respective colour.



Mahalanobis Norm

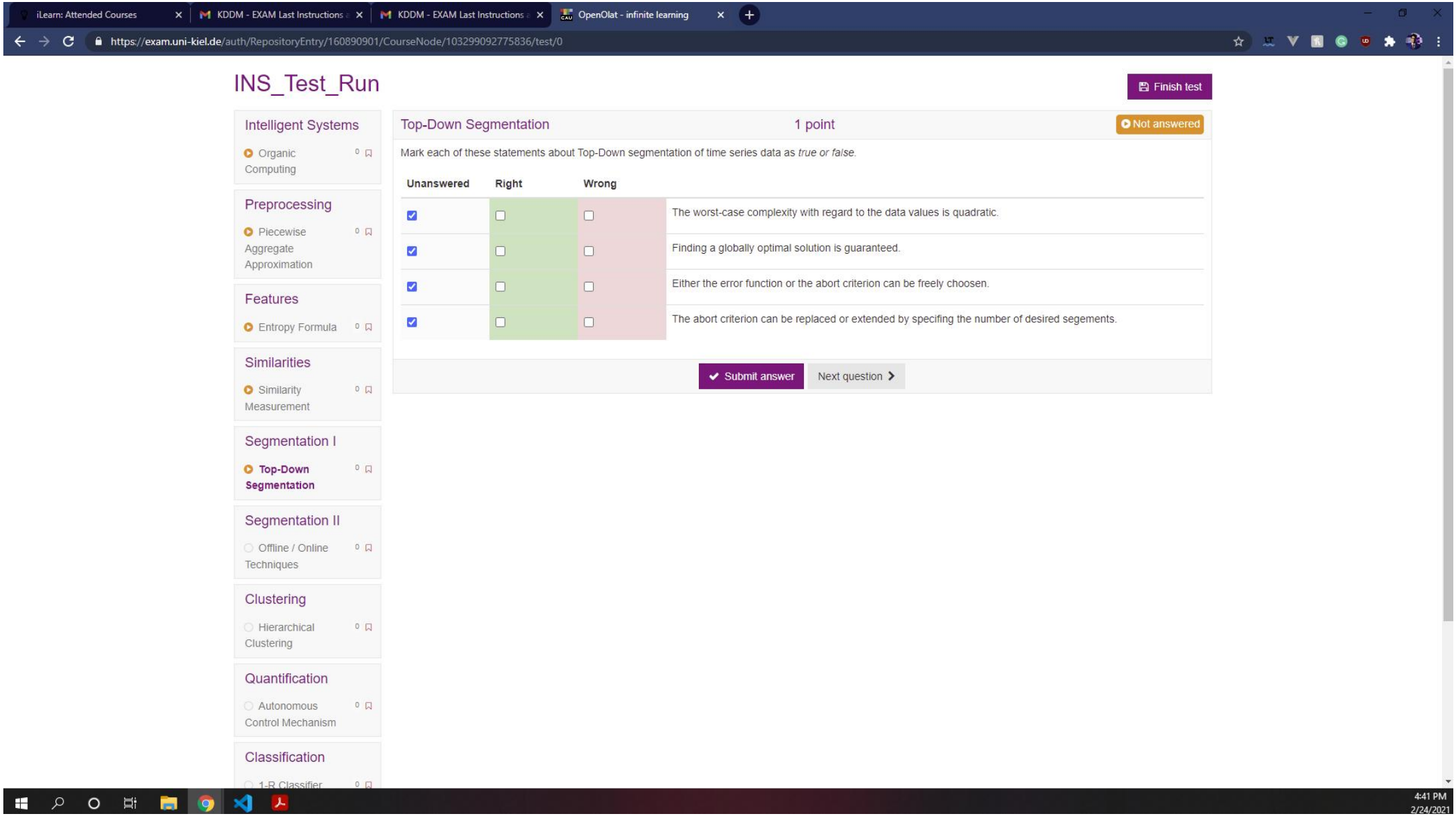
Diagonal Norm

Euclidian Norm

blue

green

red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Segmentation II
Offline / Online Techniques
Clustering
Hierarchical Clustering
Quantification
Autonomous Control Mechanism
Classification
1-R Classifier
Top-Down Segmentation
1 point
Not answered
Mark each of these statements about Top-Down segmentation of time series data as true or false.
Unanswered
Right
Wrong
The worst-case complexity with regard to the data values is quadratic.
Finding a globally optimal solution is guaranteed.
Either the error function or the abort criterion can be freely choosen.
The abort criterion can be replaced or extended by specifing the number of desired segements.
Submit answer
Next question
4:41 PM
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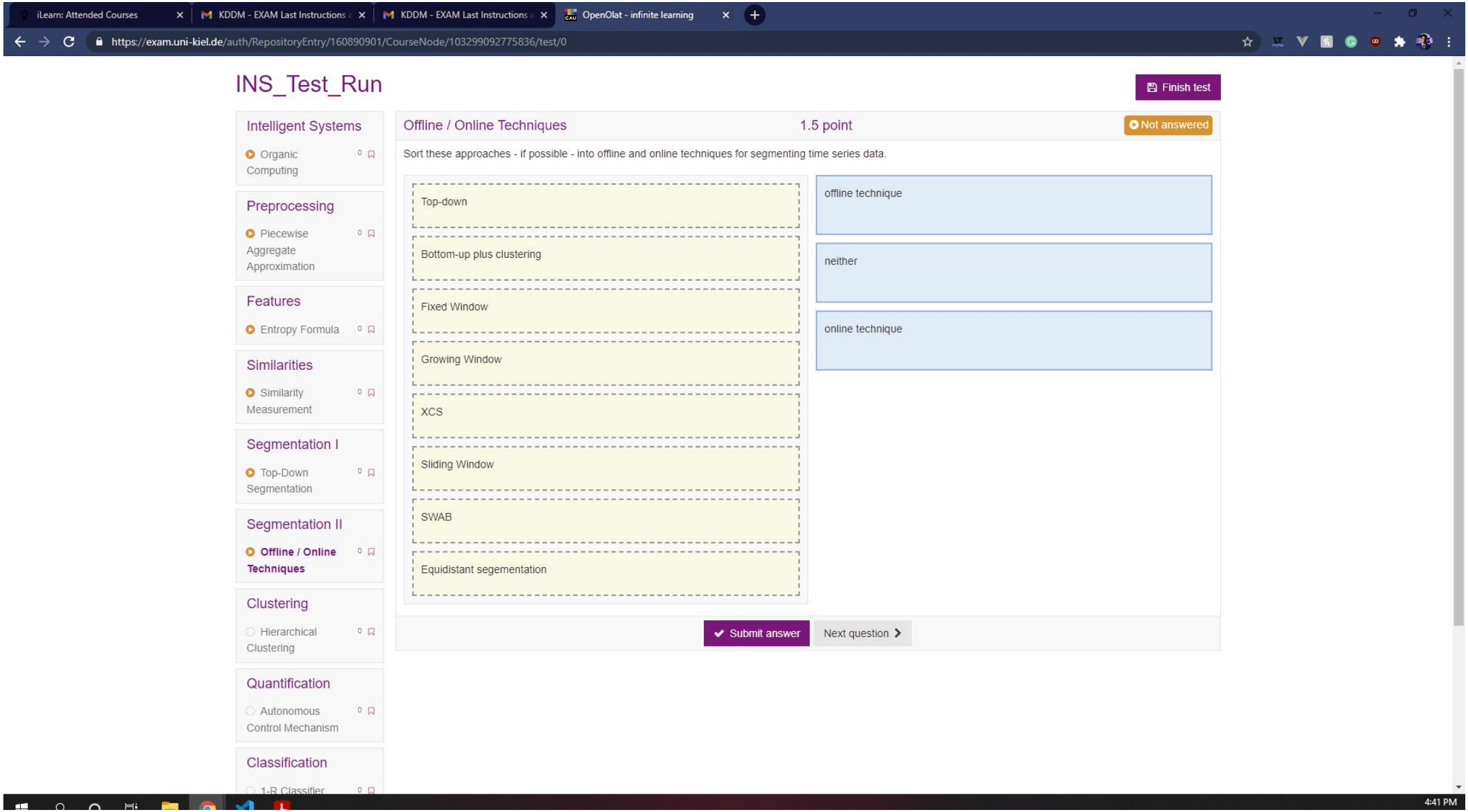
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Quantification
Autonomous Control Mechanism 0
Classification
1-R Classifier 0
Offline / Online Techniques
1.5 point
Not answered
Sort these approaches - if possible - into offline and online techniques for segmenting time series data.
Top-down
Bottom-up plus clustering
Fixed Window
Growing Window
XCS
Sliding Window
SWAB
Equidistant segementation
offline technique
neither
online technique
Submit answer
Next question
4:41 PM

INS_Test_Run

Finish test

Hierarchical Clustering

1 point

Not answered

Match the criteria for cluster similarity with the clustering process where they are used.

	Complete Linkage	Single Linkage	Average Linkage
$\max_{x_n \in C_i, c_l \in C_j} \|x_k - x_l\|$	☐	☐	☐
$\frac{1}{\|C_i\| \cdot \|C_j\|} \cdot \sum_{x_k \in C_i, x_l \in C_j} \|x_k - x_l\|$	☐	☐	☐
$\min_{x_n \in C_i, c_l \in C_j} \|x_k - x_l\|$	☐	☐	☐

Submit answer | Next question

INS_Test_Run

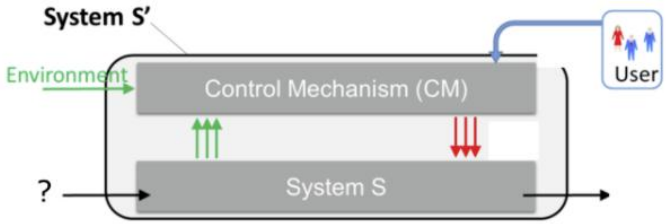
Finish test

Autonomous Control Mechanism

1 point

Not answered

Select the correct replacement for the question mark.



- x
- c_{corr}
- y
- c_{int}

Submit answer | Next question

1. ***Specify the best rules regardings errors for each attribute. Check "tie breaker" if the rule's error rate is inconclusive.***
2. ***Then use the last column to specify the best attribute(s) for prediction.***

Rule	If ...	... then play golf?			Attribute	Best Attribute?
1.	sunny	☐ yes	☐ no	☐ tie breaker	**Outook**	☐
2.	overcast	☐ yes	☐ no	☐ tie breaker		
3.	rainy	☐ yes	☐ no	☐ tie breaker		
4.	hot	☐ yes	☐ no	☐ tie breaker	**Temp**	☐
5.	mild	☐ yes	☐ no	☐ tie breaker		
6.	cool	☐ yes	☐ no	☐ tie breaker		
7.	high	☐ yes	☐ no	☐ tie breaker	**Humidity**	☐
8.	normal	☐ yes	☐ no	☐ tie breaker		
9.	false	☐ yes	☐ no	☐ tie breaker	**Windy**	☐
10.	true	☐ yes	☐ no	☐ tie breaker		

✔ Submit answer Next question ›

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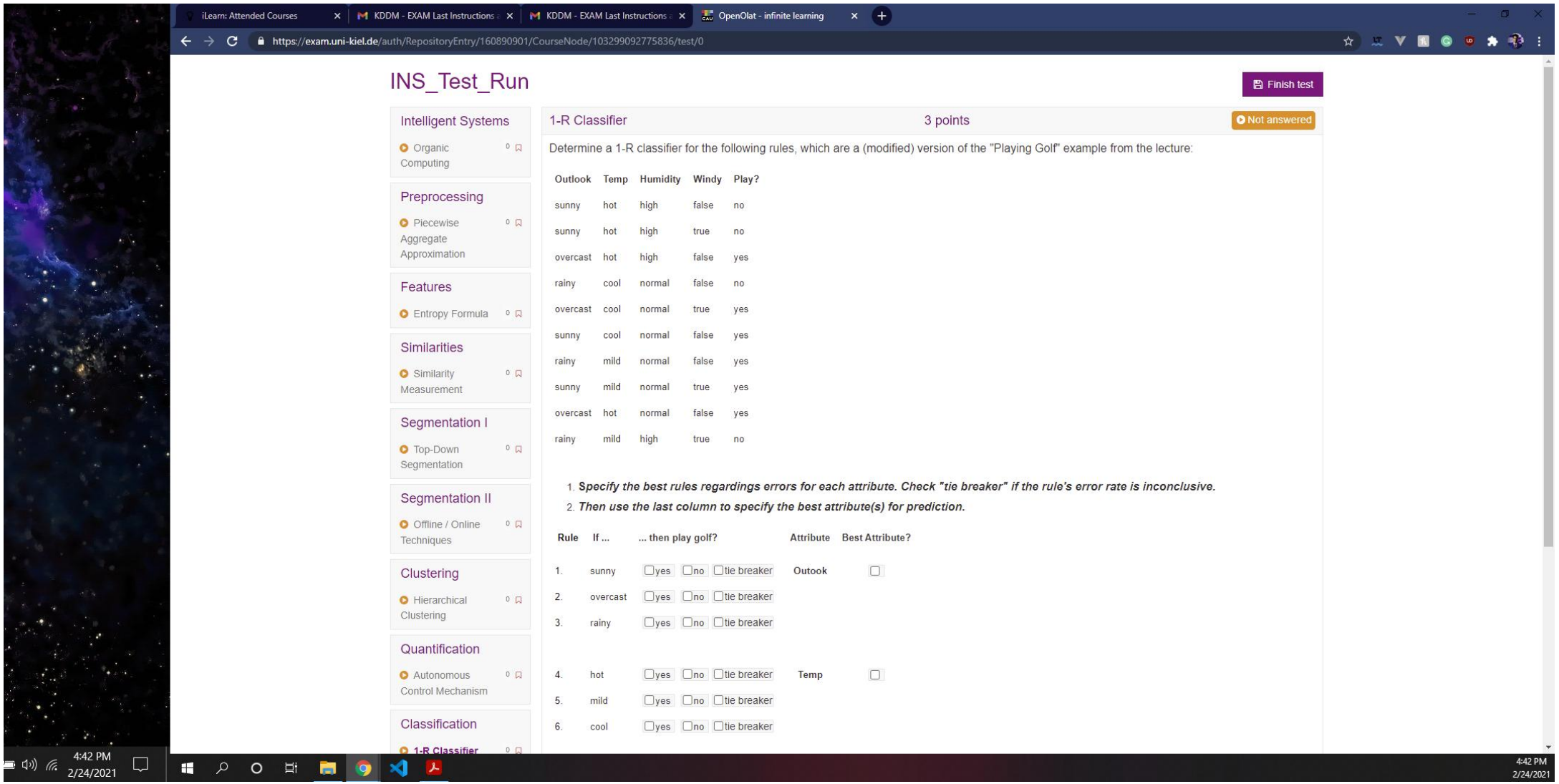
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Classification
1-R Classifier
1-R Classifier
3 points
Not answered
Determine a 1-R classifier for the following rules, which are a (modified) version of the "Playing Golf" example from the lecture:
Outlook Temp Humidity Windy Play?
sunny hot high false no
sunny hot high true no
overcast hot high false yes
rainy cool normal false no
overcast cool normal true yes
sunny cool normal false yes
rainy mild normal false yes
sunny mild normal true yes
overcast hot normal false yes
rainy mild high true no
1. Specify the best rules regardings errors for each attribute. Check "tie breaker" if the rule's error rate is inconclusive.
2. Then use the last column to specify the best attribute(s) for prediction.
Rule If ... ... then play golf? Attribute Best Attribute?
1. sunny yes no tie breaker Outook
2. overcast yes no tie breaker
3. rainy yes no tie breaker
4. hot yes no tie breaker Temp
5. mild yes no tie breaker
6. cool yes no tie breaker
4:42 PM
2/24/2021
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Notes for 1-R Classifier

Not answered

Here you can leave notes about your calculations for the 1-R Classifier, like e. g. the error rates for the rules 1 to 10 or for the final 4 attributes.

This is **absolutly optional.** The notes will only be taken into account in case of an incorrect answer ("checking the boxes") to maintain the possibility obtain at least some points.

Notes on your calculations (e. g. error rates).

Submit answer | Next question

Extended Classifier System (XCS)

1.5 point

Not answered

For a given an Extended Classifier System (XCS) as proposed by Wilson in 1995:

Order steps for a single iteration through the main loop.

Drag unused items from here...

- The XCS scans for matching classifiers to build a match set.
- The action set consists of all matching classifiers that call for action α.
- The action is carried out in the environment.
- The prediction array is constructed to find the most promising action α
- The rewards is used to update the action set.
- A payoff and reward for action α is delivered.
- At each timestep, the XCS retrieves a situation description from the observer.

Drop and order your selected items here...

Submit answer