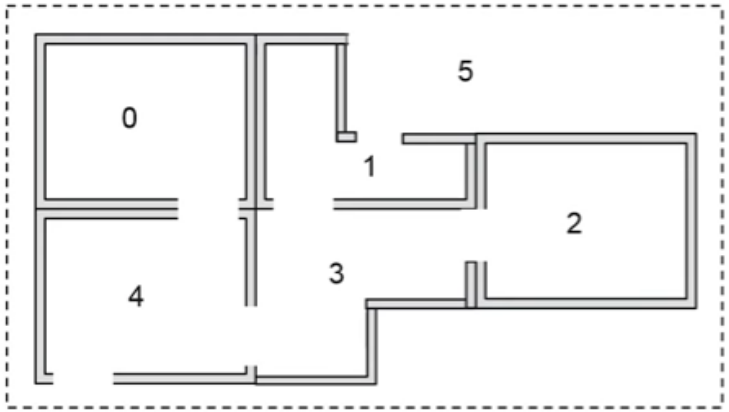
II Semester ME (Big Data Analytics)

Machine Learning for Big Data (BDA 5251)

End Semester Lab Exam – Batch-1

Q. No.	Question	Marks BTL-CO-PO
1	Implement the Q-learning algorithm to *demonstrate* the best possible moves for the following scenarios from figure-1: [Use the learning rate = 0.5]. a) Move from room 4 to room 5 b) Move from room 3 to room 5 via room 4 c) Move from room 2 to room 5 via room 3 d) Move from room 1 to room 5 e) Move from room 0 to room 5 via room 1 f) Move from 2 to room 5 via room 1  Figure-1: Q learning scenario	10 marks- [3-1-3]

<table>
<tr>
<td>2</td>
<td>In the past six months, a large European bank with numerous branches in France, Germany, and Spain observed that customers were leaving. The bank has opted to implement an artificial neural network classification model in order to predict the likelihood of clients leaving the bank in the near future with a prediction accuracy of 60% and handle the concerns in advance. Implement an artificial neural network model for this purpose using the bank data set.

(a) Train the model with a batch size of 10 and epoch 50 for the following test data size. Experiment the performance of the model using the parameters given in the table.

<table>
<tr><th>Test data size</th><th>Accuracy</th><th>Precision</th><th>Recall</th><th>F1 score</th><th>You comment on the result</th></tr>
<tr><td>15%</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>20%</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>25%</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>30%</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

(b) Repeat the process with batch size of 10 and epoch 100. Evaluate the results and recommend the bank to take the decision.</td>
<td>10 marks-
[4-2-4]

10 marks -
[5-4-5]</td>
</tr>
<tr>
<td>3</td>
<td>Compare the performance in finding the optimal number of clusters for the iris dataset.
https://archive.ics.uci.edu/ml/machine-learning-databases/iris/iris.data

a. Elbow method.
b. Silhouette method.
c. Gap statistic method.</td>
<td>10 marks -
[4-3-4]</td>
</tr>
<tr>
<td>4</td>
<td>Viva</td>
<td>10 marks
[3-1-3; 4-2-4; 5-4-5; 4-3-4]</td>
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