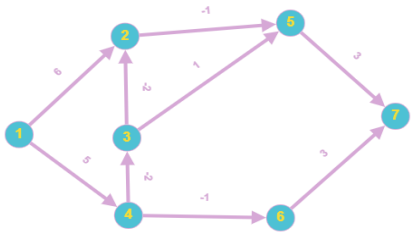
ML	Classification: Decision Tree Dataset: madfhantr.csv Dream Housing Finance company deals in all kinds of home loans. They have presence across all urban, semi urban and rural areas. Customer first applies for home loan and after that company validates the customer eligibility for loan. Company wants to automate the loan eligibility process (real time) based on customer detail provided while filling online application form. These details are Gender, Marital Status, Education, Number of Dependents, Income, Loan Amount, Credit History and others. To automate this process, they have provided a dataset to identify the customers segments that are eligible for loan amount so that they can specifically target these customers.
DAA	Write a program to implement Fractional knapsack using Greedy algorithm and also find the maximum profit Given items I= (I1,I2,I3,I4,I5), Weight w=(5,10,20,30,40) and Profit p=(30,20,100,90,160). Let us consider that the capacity of the knapsack *W* = **60. Find the maximum profit**
OR	
ADBMS	Create collection called CUSTOMER with following fields in documents- Cust_No, First_Name, Last_Name, Address, City, State, Pincode, B_Date, Status: the values for status must be in ('Married','Unmarried','Divorcee'). Implement following queries • Display all the documents where state is KARNATAKA. • Delete the document where PIN CODE is 576201. • Change the ADDRESS as "PICT,Trimurti chowk, Dhankawadi" AND Pin cde as 411041 where CUST_NO is 1003. • Display Total Number of Married, unmarried and Divorcee Customers • Sort and display the customer data, in the alphabetic order of city. • Retrieve records of Karnataka / Kerala customers who are Married ('M'). • Perform Create Index, get Index and drop index operation on collection. • Write a mapreduce/aggregation function to calculate total customer per City.

ML	Classification: Naïve Bayes Dataset: NaiveBayes.csv Use probabilistic approach to implement Classifier model. Evaluate the performance of the model.
DAA	Write a program to implement 0/1 knapsack using dynamic programming and also find the maximum profit. Number of objects n = 4, Knapsack Capacity M = 5, Weights (W1, W2, W3, W4) = (2, 3, 4, 5) and profits (P1, P2, P3, P4) = (3, 4, 5, 6).
OR	
ADBMS	Design the Employee Management System(Institute have different departments like Administrative, Account, Library, CSE,IT,ET,FE etc) each department have different employees with different attribute like empid, ename, city, educational background, salary, post , join date, leaving date if any, Skills etc. using MongoDB • List out the employees who are earning salary between 30000 and 45000. • List out the department name having at least four employees. • Find out no. of employees working in "IT" department. • Display the name of employee who get the maximum salary. • Display Name of Department who have maximum of employees. • Update Name of Department from 'IT' to "Information Technology". • Perform Create Index, get Index and drop index operation on collection. • Write a MapReduce/Aggregation function to display total number of employees per department. •

3

ML	Clustering: K-Means Dataset: Cities_r2.csv Apply Data pre-processing (Label Encoding , Data Transformation….) techniques if necessary. Apply K-Means clustering algorithms (based on total_graduates) to find the group of customers.
DAA	Write a program to implement Bellman-Ford Algorithm using Dynamic Programming and verify the time complexity 
OR	
ADBMS	Create Order Management System using MongoDB and Implement Following Statements • Retrieve all the documents from collection. • List name of Customer who purchased product “Mobile”. • Change the product quantity from 1 to 3 of product ” Laptop” of any order. • Using $exists, tell me how many customers belongs from Pune city. • Find the customer who purchased shoes and cloth product. • Find the top 3 buyers. • Display all the orders where total amount is >20000. • Perform Create Index, get Index and drop index operation on collection. • write a MapReduce or aggregation function which will return the Total Price per order

ML	Clustering: Hierarchical Dataset: Cities_r2.csv Apply Data pre-processing (Label Encoding , Data Transformation….) techniques if necessary. Apply Hierarchical clusteringalgorithms (based on effective_literacy_rate_total column) to find the group of customers.
DAA	Write a recursive program to find the solution of placing n queens on the chessboard so that no two queens attack each other using Backtracking
OR	
ADBMS	Design the Employee Management System(Institute have different departments like Administarative, Account, Library, CSE,IT,ET, FE etc) each department have different employees with different attribute like empid, ename, city, educational background, salary, post , join_date, leaving date if any, Skills etc. using MongoDB Implement following statements. • List all the employee from institute. • List the employee details that are from Baroda or Ahmedabad and working in CSE department. • List of the empid, ename, department number and skill of employee whose join date is 20th of any month. • Calculate total experience of employee. Consider the today's date. • List the name of employee whose name staring with 's' or 'm' character who are working in FE department and having "Programming" skill. • Count the no of employee working in ETC department of Pune Location. • Calculate department wise total salary and display only those departments which pay maximum salary. • Perform Create Index, get Index and drop index operation on collection. • Using Mapreduce/aggregation Display total no of employees from each department.

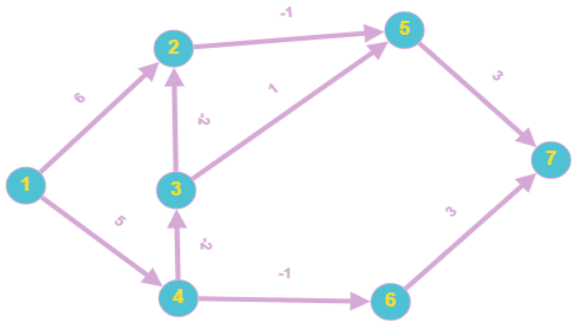
5

ML	Clustering: K-Means Dataset: Cities_r2.csv Apply Data pre-processing (Label Encoding , Data Transformation….) techniques if necessary. Apply K-Means clustering algorithms (based on effective_literacy_rate_total column) to find the group of customers.
DAA	Write a program to find sum of subset using backtracking approach. M = 35 and i) w = {5, 7, 10, 12, 15, 18, 20} ii) w = {20, 18, 15, 12, 10, 7, 5} iii) w = {15, 7, 20, 5, 18, 10, 12} Are there any discernible differences in the computing time ?
OR	
ADBMS	Create Order Management System using MongoDB and Implement Following Statements • Display all documents in a collection • List the customer in ascending order of their names. • Display all the orders which placed before April 2022 • Display Name of Customer who purchased order whose price is more than 25000. • Display all orders that contain product "PenDrive" • Update Order_date of Any order Purchased by Customer "ABC". • List all documents with orders that contain products whose quantity is less than 10. • Display the Mob No of customers who have highest Buying Total. • Perform Create Index, get Index and drop index operation on collection. • Using MapReduce/Aggregation display total order per customer.

6

ML	Clustering: Hierarchical Dataset : hitters.csv Apply Data pre-processing (Label Encoding , Data Transformation….) techniques if necessary. Apply Hierarchical clustering algorithms (based on CRuns column) to find the group of players.
DAA	Write a program to find sum of subset using backtracking approach. M = 35 and i) w = {5, 7, 10, 12, 15, 18, 20} ii) w = {20, 18, 15, 12, 10, 7, 5} iii) w = {15, 7, 20, 5, 18, 10, 12} Are there any discernible differences in the computing time ?
OR	
ADBMS	Design the Student Management System(Institute have different departments like CSE,IT,ET,FE etc) each department have different employees with different attribute like student_id, student_name, address, birthdate, CGPA, fee, current_year(FE/SE/TE/BE) , join_date, Skills etc. using MongoDB Implement following statements. • Display the count of total no students from institute. • Display all the Students in seniority level (based on CGPA) • List the student details that are from Baroda or Ahmedabad and in CSE department. • List of the studentid, studentname, department number and skill of student whose birth date is 20th of any month. • Calculate age of each student. Consider the today's date. • List the name of student whose name staring with 's' or 'm' character who are in computer department and having typing skill. • Count the no of student in IT department of Pune. • Arrange the student name in alphabetic order whose age between 18 to 20 and in ETC department. • Perform Create Index, get Index and drop index operation on collection. • Write mapreduce or aggregation function to Display total no of students from each department

ML	Clustering: K-Means Dataset : Social_Network_Ads.csv Apply Data pre-processing (Label Encoding , Data Transformation….) techniques if necessary. Apply K-Means clustering algorithms (based on EstimatedSalary column) to find the group of users.
DAA	Write a recursive program to find the solution of placing n queens on the chessboard so that no two queens attack each other using Backtracking
OR	
ADBMS	Create Order Management System using MongoDB and Implement Following Statements • Retrieve all the documents from collection. • List the customer in ascending order of their age. • Display total No of Orders. • Display the Mob No of customers who have purchased product “Shoes”. • Display how many customers are there in customer collection. • Display Total No product purchased in order_id:2. • Add Another product with quantity 2 in order_id:3 of customer “ABC”. • Perform Create Index, get Index and drop index operation on collection. • write a MapReduce/aggregate function which will return the Total order per Customer.

ML	Clustering: Hierarchical Dataset : 50_Startups.csv Apply Data pre-processing (Label Encoding , Data Transformation….) techniques if necessary. Apply Hierarchical clustering algorithms (based on PROFIT column) to find the group of start-ups.
DAA	Write a program to implement Bellman-Ford Algorithm using Dynamic Programming and verify the time complexity 
OR	
ADBMS	Create Order Management System using MongoDB and Implement Following Statements • Retrieve all the documents from collection. • List the customer in ascending order of their age. • Display total No of Orders. • Display the Mob No of customers who have purchased product “Shoes”. • Display how many customers are there in customer collection. • Display Total No product purchased in order_id:2. • Add Another product with quantity 2 in order_id:3 of customer “ABC”. • Perform Create Index, get Index and drop index operation on collection. • write a MapReduce/aggregate function which will return the Total order per Customer. •

ML	Regression: Simple Linear Dataset : diabetes.csv Apply Data pre-processing (Label Encoding , Data Transformation….) techniques if necessary. Use any one feature of the dataset to train and test the regression model. Also calculate coefficients, residual sum of squares and the coefficient of determination
DAA	Write a program to implement 0/1 knapsack using dynamic programming and also find the maximum profit Number of objects n = 4, Knapsack Capacity M = 5, Weights (W1, W2, W3, W4) = (2, 3, 4, 5) and profits (P1, P2, P3, P4) = (3, 4, 5, 6).
OR	
ADBMS	Design the Student Management System(Institute have different departments like CSE,IT,ET,FE etc) each department have different employees with different attribute like student_id, student_name, address, birthdate, CGPA, fee, current_year(FE/SE/TE/BE) , join_date, Skills etc. using MongoDB Implement following statements. • Display the count of total no students from institute. • Display all the Students in seniority level(based on CGPA) • List the student details that are from Baroda or Ahmedabad and in CSE department. • List of the studentid, studentname, department number and skill of student whose birth date is 20th of any month. • Calculate age of each student. Consider the today's date. • List the name of student whose name staring with 's' or 'm' character who are in computer department and having typing skill. • Count the no of student in IT department of Pune. • Arrange the student name in alphabetic order whose age between 18 to 20 and in ETC department. • Perform Create Index, get Index and drop index operation on collection. • Write mapreduce or aggregation function to Display total no of students from each department.

10

ML	Regression: Simple Linear Dataset: 1.01. Simple linear regression Apply Data pre-processing (Label Encoding , Data Transformation….) techniques if necessary. Explore the relationship between students SAT score and GPA using linear regression model. Also display the regression results and plot the regression line.
DAA	Write a program to implement Fractional knapsack using Greedy algorithm and also find the maximum profit Given items I= (I1,I2,I3,I4,I5), Weight w=(5,10,20,30,40) and Profit p=(30,20,100,90,160). Let us consider that the capacity of the knapsack *W* = **60. Find the maximum profit**
OR	
ADBMS	Create Order Management System using MongoDB and Implement Following Statements • Display all documents in a collection • List the customer in ascending order of their names. • Display all the orders which placed before April 2022 • Display Name of Customer who purchased order whose price is more than 25000. • Display all orders that contain product "PenDrive" • Update Order_date of Any order Purchased by Customer “ABC”. • List all documents with orders that contain products whose quantity is less than 10. • Display the Mob No of customers who have highest Buying Total. • Perform Create Index, get Index and drop index operation on collection. • Using MapReduce/Aggregation display total order per customer

ML	Clustering: K-Means We have given a collection of 8 points. P1=[0.1,0.6] P2=[0.15,0.71] P3=[0.08,0.9] P4=[0.16, 0.85] P5=[0.2,0.3] P6=[0.25,0.5] P7=[0.24,0.1] P8=[0.3,0.2]. Perform the k-mean clustering with initial centroids as m1=P1 =Cluster#1=C1 and m2=P8=cluster#2=C2. Answer the following 1] Which cluster does P6 belongs to? 2] What is the population of a cluster around m2? 3] What is the updated value of m1 and m2?
DAA	Write a program to implement Fractional knapsack using Greedy algorithm and also find the maximum profit Given items I= (I1,I2,I3,I4,I5), Weight w=(5,10,20,30,40) and Profit p=(30,20,100,90,160). Let us consider that the capacity of the knapsack *W* = **60. Find the maximum profit**
OR	
ADBMS	Design the Employee Management System(Institute have different departments like Administarative, Account, Library, CSE,IT,ET, FE etc) each department have different employees with different attribute like empid, ename, city, educational background, salary, post , join_date, leaving date if any, Skills etc. using MongoDB Implement following statements. • List all the employee from institute. • List the employee details that are from Baroda or Ahmedabad and working in CSE department. • List of the empid, ename, department number and skill of employee whose join date is 20th of any month. • Calculate total experience of employee. Consider the today's date. • List the name of employee whose name staring with 's' or 'm' character who are working in FE department and having "Programming" skill. • Count the no of employee working in ETC department of Pune Location. • Calculate department wise total salary and display only those departments which pay maximum salary. • Perform Create Index, get Index and drop index operation on collection. • Using Mapreduce/aggregation Display total no of employees from each department.

12

ML	Regression: Simple Linear Dataset: advertising.csv Apply Data pre-processing (Label Encoding , Data Transformation….) techniques if necessary. Explore whether TV advertising spending can predict the number of sales for the product. Also display the regression results and plot the regression line.
DAA	Write a program to implement Fractional knapsack using Greedy algorithm and also find the maximum profit Given items I= (I1,I2,I3,I4,I5), Weight w=(5,10,20,30,40) and Profit p=(30,20,100,90,160). Let us consider that the capacity of the knapsack *W* = **60. Find the maximum profit**
OR	
ADBMS	Create Order Management System using MongoDB and Implement Following Statements • Retrieve all the documents from collection. • List name of Customer who purchased product “Mobile”. • Change the product quantity from 1 to 3 of product ”Laptop” of any order. • Using $exists, tell me how many customers belongs from Pune city. • Find the customer who purchased shoes and cloth product. • Find the top 3 buyers. • Display all the orders where total amount is >20000. • Perform Create Index, get Index and drop index operation on collection. • write a MapReduce or aggregation function which will return the Total Price per order.

13

<table>
<tr><td></td><td></td></tr>
<tr><td>ML</td><td>Regression: Simple Linear
Dataset: advertising.csv
Apply Data pre-processing (Label Encoding , Data Transformation….) techniques if necessary.
Explore whether Radio advertising spending can predict the number of sales for the product. Also display the regression results and plot the regression line.</td></tr>
<tr><td>DAA</td><td>Write a program to implement 0/1 knapsack using dynamic programming and also find the maximum profit

Consider no. of objects n = 4, given capacity M = 8

<table>
<tr><td>Items</td><td>l</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>Value</td><td>l5</td><td>l0</td><td>9</td><td>5</td></tr>
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<tr><td colspan="2">OR</td></tr>
<tr><td>ADBMS</td><td>Design the Employee Management System(Institute have different departments like Administrative, Account, Library, CSE,IT,ET,FE etc) each department have different employees with different attribute like empid, ename, city, educational background, salary, post , join date, leaving date if any, Skills etc. using MongoDB

List out the employees who are earning salary between 30000 and 45000.
List out the department name having at least four employees.
Find out no. of employees working in “IT” department.
Display the name of employee who get the maximum salary.
Display Name of Department who have maximum of employees.
Update Name of Department from ‘IT’ to “Information Technology”.
Perform Create Index, get Index and drop index operation on collection.
Write a MapReduce/Aggregation function to display total number of employees per department.

</td></tr>
</table>

ML	Regression: Simple Linear Dataset: advertising.csv Apply Data pre-processing (Label Encoding , Data Transformation….) techniques if necessary. Explore whether Newspaper advertising spending can predict the number of sales for the product. Also display the regression results and plot the regression line.
DAA	Write a recursive program to find the solution of placing n queens on the chessboard so that no two queens attack each other using Backtracking
OR	
ADBMS	Create collection called CUSTOMER with following fields in documents-Cust_No, First_Name, Last_Name, Address, City, State, Pincode, B_Date, Status: the values for status must be in ('Married','Unmarried','Divorcee'). Implement following queries • Display all the documents where state is KARNATAKA. • Delete the document where PIN CODE is 576201. • Change the ADDRESS as "PICT,Trimurti chowk, Dhankawadi" AND Pin cde as 411041 where CUST_NO is 1003. • Display Total Number of Married, unmarried and Divorcee Customers • Sort and display the customer data, in the alphabetic order of city. • Retrieve records of Karnataka / Kerala customers who are Married ('M'). • Perform Create Index, get Index and drop index operation on collection. • Write a mapreduce/aggregation function to calculate total customer per City.

15

ML	Market Basket Analysis: Apriori Algorithm Dataset: Order1.csv The dataset has 38765 rows of the purchase orders of people from the grocery stores. These orders can be analysed, and association rules can be generated using Market Basket Analysis by algorithms like Apriori Algorithm. Follow following Steps: a. Data Pre-processing b. Generate the list of transactions fromthe dataset c. Train Apriori on the dataset d. Visualize the list of datasets
DAA	Write a program to find sum of subset using backtracking approach M = 35 and i) w = {5, 7, 10, 12, 15, 18, 20} ii) w = {20, 18, 15, 12, 10, 7, 5} iii) w = {15, 7, 20, 5, 18, 10, 12} Are there any discernible differences in the computing time ?
OR	
ADBMS	Create collection called CUSTOMER with following fields in documents-Cust_No, First_Name, Last_Name, Address, City, State, Pincode, B_Date, Status: the values for status must be in ('Married','Unmarried','Divorcee'). Implement following queries • Display all the documents where state is KARNATAKA. • Delete the document where PIN CODE is 576201. • Change the ADDRESS as "PICT,Trimurti chowk, Dhankawadi" AND Pin cde as 411041 where CUST_NO is 1003. • Display Total Number of Married, unmarried and Divorcee Customers • Sort and display the customer data, in the alphabetic order of city. • Retrieve records of Karnataka / Kerala customers who are Married ('M'). • Perform Create Index, get Index and drop index operation on collection. • Write a mapreduce/aggregation function to calculate total customer per City.

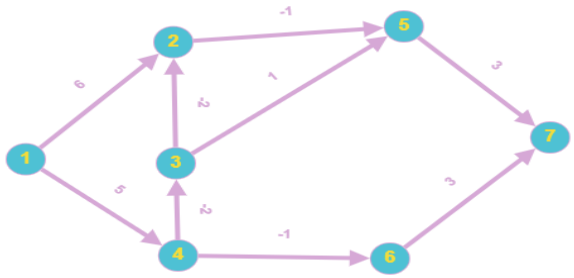
16

ML	Market Basket Analysis: Apriori Algorithm Dataset: Order2.csv This dataset comprises the list of transactions of a retail company over the period of one week. It contains a total of 7501 transaction records where each record consists of the list of items sold in one transaction. Using this record of transactions and items in each transaction, find the association rules between items. There is no header in the dataset and the first row contains the first transaction, so mentioned header = None here while loading dataset. Follow following steps: a. Data Pre-processing b. Generate the list of transactions from the dataset c. Train Apriori algorithm on the dataset d. Visualize the list of rules
DAA	Write a program to solve the travelling salesman problem and to print the path and the cost using LC Branch and Bound. A B C D A 0 4 2 1 B 4 0 13 9 C 2 13 0 8 D 1 9 8 0
OR	
ADBMS	Design the Employee Management System(Institute have different departments like Administrative, Account, Library, CSE,IT,ET,FE etc) each department have different employees with different attribute like empid, ename, city, educational background, salary, post , join date, leaving date if any, Skills etc. using MongoDB • List out the employees who are earning salary between 30000 and 45000. • List out the department name having at least four employees. • Find out no. of employees working in "IT" department. • Display the name of employee who get the maximum salary. • Display Name of Department who have maximum of employees. • Update Name of Department from 'IT' to "Information Technology". • Perform Create Index, get Index and drop index operation on collection. • Write a MapReduce/Aggregation function to display total number of employees per department.

17

ML	Market Basket Analysis: Apriori Algorithm Dataset: Order3.csv The dataset has 20507 rows and 5 columns of the purchase orders of people from the bakery. These orders can be analysed, and association rules can be generated using Market Basket Analysis by algorithms like Apriori Algorithm. Follow following steps: a. Data Pre-processing b. Generate the list of transactions from the dataset c. Train Apriori algorithm on the dataset d. Visualize the list of rules
DAA	Write a recursive program to find the solution of placing n queens on the chessboard so that no two queens attack each other using Backtracking
OR	
ADBMS	Create Order Management System using MongoDB and Implement Following Statements • Retrieve all the documents from collection. • List name of Customer who purchased product “Mobile”. • Change the product quantity from 1 to 3 of product ”Laptop” of any order. • Using $exists, tell me how many customers belongs from Pune city. • Find the customer who purchased shoes and cloth product. • Find the top 3 buyers. • Display all the orders where total amount is >20000. • Perform Create Index, get Index and drop index operation on collection. • write a MapReduce or aggregation function which will return the Total Price per order.

18

ML	Classification: Naïve Bayes Dataset: pima- indians-diabetes.csv Use probabilistic approach to implement Classifier model. Evaluate the performance of the model.
DAA	Write a program to implement Bellman-Ford Algorithm using Dynamic programming and verify the time complexity 
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19

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Dataset: Social_Network_Ads.csv

Use probabilistic approach to implement Classifier model. Evaluate the performance of the model.</td></tr>
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Consider no. of objects n = 4, given capacity M = 8

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Display all documents in a collection
List the customer in ascending order of their names.
Display all the orders which placed before April 2022
Display Name of Customer who purchased order whose price is more than 25000.
Display all orders that contain product "PenDrive"
Update Order_date of Any order Purchased by Customer “ABC”.
List all documents with orders that contain products whose quantity is less than 10.
Display the Mob No of customers who have highest Buying Total.
Perform Create Index, get Index and drop index operation on collection.
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Implement following statements.

Display the count of total no students from institute.
Display all the Students in seniority level(based on CGPA)
List the student details that are from Baroda or Ahmedabad and in CSE department.
List of the studentid, studentname, department number and skill of student whose birth date is 20th of any month.
Calculate age of each student. Consider the today’s date.
List the name of student whose name staring with ‘s’ or ‘m’ character who are in computer department and having typing skill.
Count the no of student in IT department of Pune.
Arrange the student name in alphabetic order whose age between 18 to 20 and in ETC department.
Perform Create Index, get Index and drop index operation on collection.
Write mapreduce or aggregation function to Display total no of students from each department.

</td></tr>
</table>

21

ML	Classification: Decision Tree Dataset: pima-indians-diabetes.csv Create & evaluate the decision tree. Test the decision tree for any random sample.
DAA	Write a program to implement Fractional knapsack using Greedy algorithm and also find the maximum profit Given items I= (I1,I2,I3,I4,I5), Weight w=(5,10,20,30,40) and Profit p=(30,20,100,90,160). Let us consider that the capacity of the knapsack *W* = **60. Find the maximum profit**
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