

**M.Sc DEGREE (CSS) EXAMINATION, MARCH 2026****Fourth Semester**

MSC Data Analytics

ELECTIVE - ST900403 - DATA SCIENCE PRACTICAL

2020 Admission Onwards

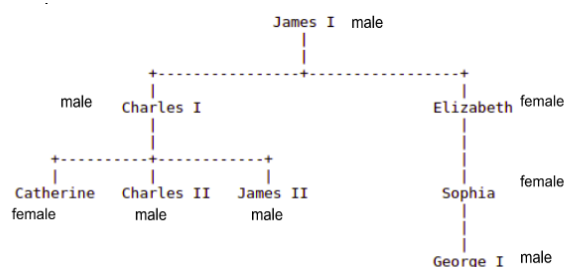
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Time: 3 Hours

Weightage: 30

(Answer any **THREE** questions. Each question carries a weight of **10**)

- Write a program in Prolog to implement simple facts and Queries for the following statements and find answers to the queries. Facts: (1) burger is a food; (2) sandwich is a food; (3) pizza is a food; (4) sandwich is a lunch; (5) pizza is a dinner; (6) ram likes mango; (7) seema is a girl; (8) rose is red; (9) john owns gold; (10) priya can cook; (11) rohit can cook; (12) mary can cook. Rules: (1) Every food is a meal or Anything is a meal if it is a food; (2) Priya likes Mary if she can cook; (3) Priya likes Rohit if he can cook. Queries: (1) Is pizza a food? (2) Which food is meal and lunch? (3) Is a sandwich a dinner? (4) Is seema a girl? (5) Is Meera a girl? (6) What Ram likes? (7) Does Ram like bananas? (8) Who owns gold? (9) Does Mary like Rohit? (10) Who all can cook? (11) Does john own something?
- Use Prolog to represent the given family relationship tree and answer the queries. Also write the rules for the relationships:
(1) Mother; (2) Father; (3) Sister; (4) Brother; (5) Grandparent; (6) Grandmother; (7) Grandfather; (8) Uncle; (9) Aunt; (10) Grandson; (11) Wife.
Queries: (1) Was George I the parent of Charles I? (2) Who was Charles I's parent? (3) Who were the children of Charles I? (4) Is James 1 the father of Elizabeth? (5) Who is the grandson of James 1? (6) Is there any aunt in the family? (7) List all Aunt relations? (8) Who is the sister of Charles 1? (9) Who is the grandmother of George 1? (10) List all grandparent relationships?





3. Implement a Prolog program to find the maximum of three numbers.
4. Consider a representation of sets as lists. Define the following predicates: 1) `subset(L,K)`, which holds iff L is a subset of K. 2) `union(L,K,M)`, which holds iff M is the union of L and K. 3) `intersection(L,K,M)`, which holds iff M is the intersection of L and K. Note: A Set is a Collection that cannot contain duplicate elements.
5. Compare the survival curves for the two treatments using Kaplan – Meier survival curves and using Log Rank Test.
Treatment A : 6,6,6,7,10,13,16,22,23,6+,9+,10+,11+,17+,19+,20+,25+,32+,32+,34+,35+
Treatment B : 1,1,2,2,3,4,4,5,5,8,8,8,8,11,11,12,12,15,17,22,23
6. Import the library of 'survival' and analyze the dataset 'lung' using cox proportional hazard model.

