

Name:

CWID:

EXAM INSTRUCTIONS

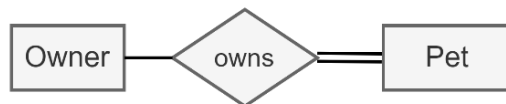
Answer ALL questions [100 pts].

Time allowed: 2 hours.

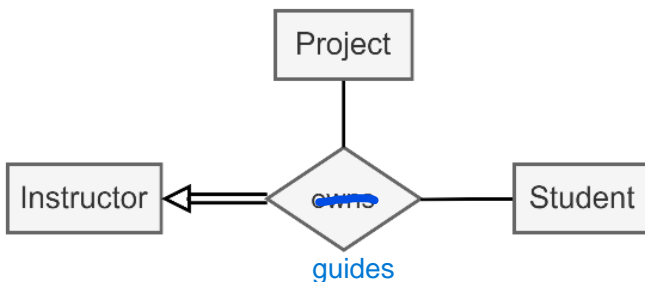
Part I (20 points)

1. Explain the meaning of these Entity-Relationship Diagrams (ERDs) in your own words [5 pts each].

a.



b.



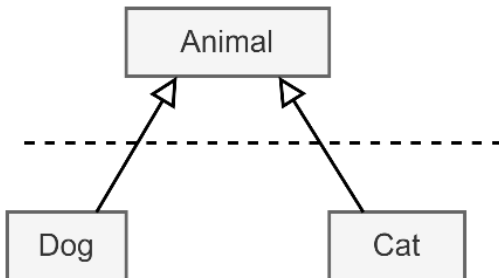
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c.



d.



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Part II (30 points)

1. Create an ERD for a car dealership using **CHEN notation**. The dealership sells both new and used cars, and it operates a service facility. Base your design on the following business rules:
 - A salesperson may sell many cars, but each car is sold by only one salesperson.
 - A customer may buy many cars, but each car is bought by a customer.
 - Each salesperson writes a single invoice for each car he or she sells.
 - A customer gets an invoice for each car he or she buys.
 - One customer may come in just to have his or her car serviced; that is, a customer need not buy a car to be classified as a customer.
 - When a customer takes at least one car in for repair or service, a service ticket is written for many cars.
 - The car dealership maintains a service history for each of the cars serviced. The service records are referenced by the car's serial number.
 - Each car brought in for service can be worked on by many mechanics, and each mechanic may work on many cars.
 - A car that is serviced may or may not need parts (e.g., adjusting a carburetor or cleaning a fuel injector nozzle does not require providing new parts).

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Final Exam Spring 2024
CS425: Database Organization, IIT.edu

[Draw Entity Relationship Diagram (ERD) here]

CWID:

[Write the relation schemas here, in the format below]

Student (StudentID, Name, BirthDate, etc);

This image shows a single page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, leaving small margins at the top and bottom. There are no vertical margin lines, text, or other markings on the page.

Part III (25 points)

2. Use the College dataset in the table below to answer the following questions.

Course ID	Course Title	Date	Fee	StaffNo	Employee Name	Room No	Telephone	Grade	Paid
CS102	ALG	02/24	300	229	Ben	R014	20404	A	Yes
CS102	ALG	02/24	300	312	Thomas	R024	30220		No
CS102	ALG	02/24	300	435	Mary	R024	30220	B	Yes
CS103	SQL	05/24	225	112	David	R014	20404	C	No
CS103	SQL	05/24	225	235	John	R118	10888	A	Yes
CS103	SQL	05/24	225	245	Cotton	R223	10270		Yes
CS104	FDs	10/24	450	129	Adam	R024	30220		No
CS105	NFs	12/24	500	445	Peter	R330	70200	A	Yes