CSC134 Spring 2019 Name: _____
Quiz 1
100 points

1. (40 pts) In a local group of sports leagues, each team has a unique name and a unique mascot. Each team must belong to one league, but a league may have several teams. Players play for no more than one team, and players have a birthdate, a name, and a unique nickname shared by no other player. Draw the ER diagram.

2. (15 pts) An employee has attributes of FirstName, LastName, BirthDate, SSN, and EmployeeId. Which attribute(s) are keys? Why?

3. (15 pts) What does total participation in a relationship mean?

4. (15 pts) How do we recognize / draw derived attributes on an ER diagram?

5. (15 pts) What is the difference between a weak entity and a strong entity?

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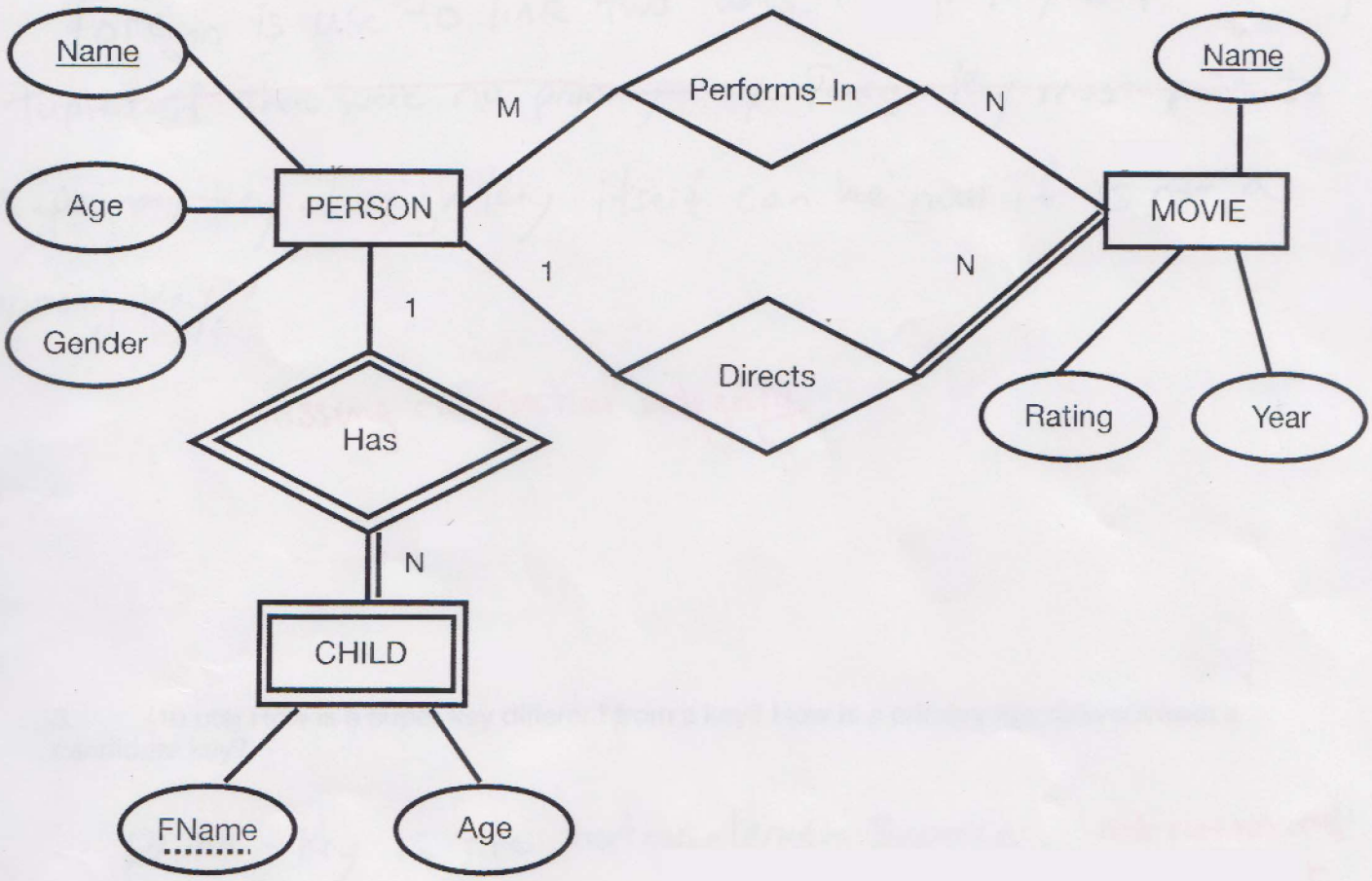
Quiz 2
100 points

1. (70 pts) Map the following ER diagram to a relational model:



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Quiz 2

2. (20 pts) Define foreign key and explain its use. What does referential integrity mean with respect to foreign keys?

3. (10 pts) How is a super key different from a key? How is a primary key different from a candidate key?

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Quiz 3
100 points

Part 1

1. (10 pts) What two things must hold for sets to be union compatible?

2. (10 pts) Relational algebra operations always return relations, which are sets of tuples. What are two major properties of sets?

Part 2

Using the supplied relational model, write relational algebra expressions that find the following data:

1. (40 pts) The first and last name of all employees who work more than 10 hours on a project located in 'Folsom'

2. (40 pts) The first and last name of all employees who manage a department but who do not work on the project named 'Unicorn'.

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Quiz 4
100 points

1) (25 pts) Give a valid order the tables could be created in that would not cause errors and would not require using ALTER TABLE to add all the constraints shown above.

2) (15 pts) What is the largest account balance we can store with a format of DECIMAL(5,2) ?

3) (30 pts) Write a valid SQL query that finds the name and social security number of all customers who have loans with a balance over $1000. Correct syntax must be used.

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4) (30 pts) Write a valid SQL query that finds the name and address of all banks that have accounts that have a type of 'savings' with a balance of less than $25. Correct syntax must be used.

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Quiz 4

Use the following schema to answer the quiz questions. You may use this page as scratch paper – you do not need to turn it in:

BANK(id, name, address)

LOAN(loan_num, balance, type, branch) foreign key (branch) references to BRANCH(branch_id)

CUSTOMER(ssn, name, address, phone)

CUSTOMER_LOAN(ssn, loan_num) foreign key (ssn) references to CUSTOMER(ssn), foreign key (loan_num) references to LOAN(loan_num)

BRANCH(bank_id, branch_id, name, address) foreign key (bank_id) references to BANK(id)

ACCOUNT(acct_num, branch, balance, type) foreign key (branch) references to BRANCH(branch_id)

CUSTOMER_ACCT(ssn, acct_num) foreign key (ssn) references to CUSTOMER(ssn), foreign key (acct_num) references to ACCOUNT (acct_num)

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Quiz 5
100 points

1. (40 pts) Given F = { A → {B, C}, {A, B} → {D, F}, D → E, F → G }, calculate {A, B}$^+$.

   Show your steps for full credit.

2. (10 pts) In problem 1, would {A, B} be a candidate for a primary key? Why or why not?

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3. (20 pts) Given the following tables:

TABLE1

A1	B1
1	Egg
2	Milk
3	Butter

TABLE2

A2	B2
1	Red
2	Yellow

What is the output of the following query (include column headers in output):

```
SELECT * FROM TABLE1 LEFT OUTER JOIN TABLE2 ON A1 = A2;
```

4. (30 pts) What question would be answered with the following query (i.e. give a plain English description of what this query returns):

```
SELECT grade_level, COUNT(*), AVG(gpa)
FROM STUDENT
GROUP BY grade_level;
```