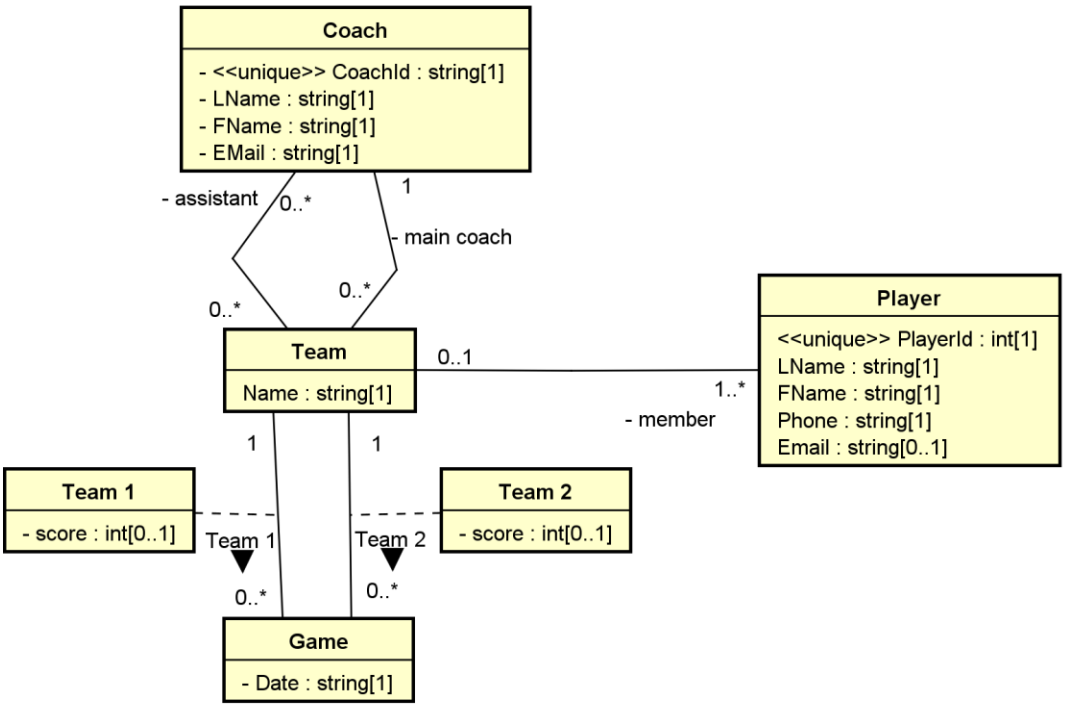
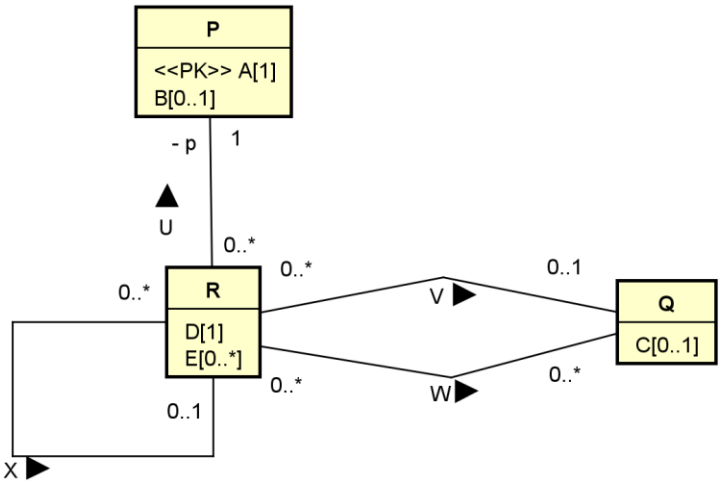
CSCI 4333 Design of Database Systems
Spring 2024
Suggested Solution to Section 1 Mid-Term Examination

(1) For example (types not needed):



(2) For example: for:



Relation	P(A, B)	**Relation**	Q(QID, C)
[CK] [1] A [FK] [Nullable] B [Non-nullable] A [Note]		[CK] [1] QID [FK] [Nullable] C [Non-nullable] QID [Note] QID is created as the surrogate primary key.	
Relation	R(RID, D, A, V_QID, X_RID)	**Relation**	W(WID, RID, QID)
[CK] [1] RID [FK] [1] A references P(A); [2] V_QID references Q(QID); [3] X_RID references R(RID) [Nullable] V_QID, X_RID [Non-nullable] RID, D, A [Note] RID is created as the surrogate primary key.		[CK] [1] WID, [2] RID, QID [FK] [1] RID references R(RID); [2] QID references Q(QID) [Nullable] [Non-nullable] WID, RID, QID [Note] WID is created as the surrogate primary key.	
Relation	RE(REID, RID, E)	**Relation**	
[CK] [1] REID, [2] RID, E [FK] [1[RID references R(RID) [Nullable] [Non-nullable] REID, RID, E [Note] REID is created as the surrogate primary key.		[CK] [FK] [Nullable] [Non-nullable] [Note]	

(3)

(a)	T	(b)	T	(c)	F	(d)	F	(e)	F
(f)	F	(g)	T	(h)	F	(i)	T	(j)	T
(k)	T	(l)	F	(m)	F				

(4)

(a)

```
SELECT DISTINCT s.lname, s.fname,
        d.deptName AS major, s.ach AS credits
FROM Student s INNER JOIN department d ON (s.major = d.deptCode)
   INNER JOIN faculty f ON (s.advisor = f.facId)
WHERE s.ach >= 30
AND f.deptCode = 'CSCI';
```

(b)

```
SELECT DISTINCT CONCAT(f.fname, ' ', f.lname) AS faculty,
        d.deptName AS department,
        f.`rank`
FROM faculty AS f INNER JOIN department AS d USING (deptCode)
        INNER JOIN class AS c USING (facId)
```

```
        INNER JOIN student AS s ON (s.advisor = f.facId)
WHERE d.schoolCode = 'CSE';
```

(c)

```
SELECT DISTINCT CONCAT(s.fname, ' ', s.lname) AS student
FROM student AS s INNER JOIN enroll AS e1 USING (stuId)
        INNER JOIN enroll AS e2 USING (stuId)
WHERE e1.grade = 'A'
AND e2.grade = 'A'
AND e1.classId <> e2.classId;
```