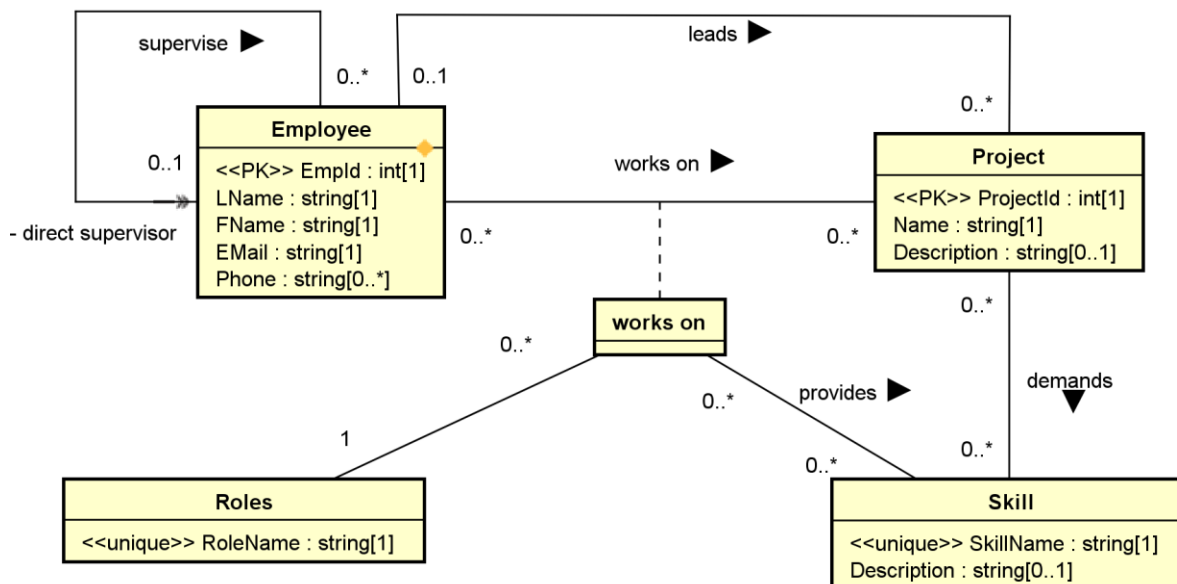


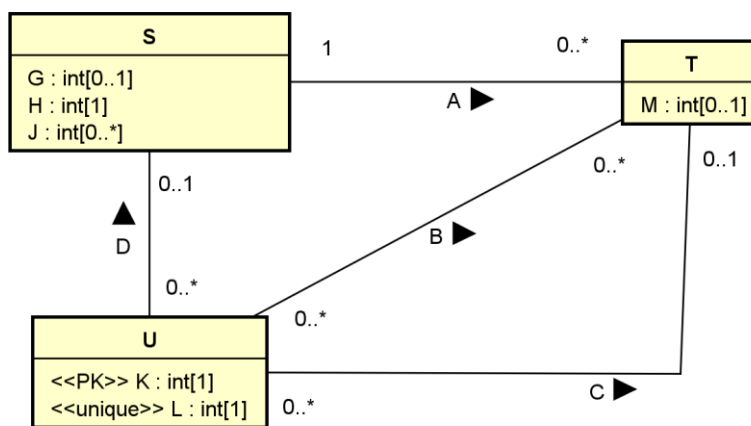
CSCI 4333 Design of Database Systems Fall 2024

Suggested Solution to Section 1 Mid-Term Examination

(1) For example (types not needed):



(2) For example: for:



Relation	S(<u>Sid</u> , G, H)	Relation	T(<u>TId</u> , M, Sid)
[CK] [1] Sid		[CK] [1] TId	
[FK]		[FK] [1] Sid references S(Sid)	
[Nullable] G		[Nullable] M	
[Non-nullable] Sid, H		[Non-nullable] TId, Sid	
[Note] Sid is created as the surrogate primary		[Note] TId is created as the surrogate primary	

key.		key.	
Relation	U(<u>K</u> , L, SId, TId)	Relation	SJ(<u>SJId</u> , SId, J)
[CK] [1] K, [2] L [FK] [1] SId references S(SId), [2] TId references T(TId) [Nullable] SId, TId [Non-nullable] K, L [Note]		[CK] [1] SJId, [2] SId, J [FK] [1] SId references S(SId) [Nullable] [Non-nullable] SJId, SId, J [Note] SJId is created as the surrogate primary key.	
Relation	B(<u>BId</u> , K, TId)	Relation	
[CK] [1] BId, [2] K, TId [FK] [1] K references U(K), [2] TId references T(TId) [Nullable] [Non-nullable] BId, K, TId [Note] BId is created as the surrogate primary key.		[CK] [FK] [Nullable] [Non-nullable] [Note]	

(3)

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

(4)

(a)

```
SELECT DISTINCT s.stuld,
    CONCAT(fname, ' ', s.lname) AS student, e.classId, e.grade
FROM student s INNER JOIN enroll e ON (s.stuld = e.stuld)
    INNER JOIN class c ON (e.classId = c.classId)
WHERE c.facId = 1012;
```

(b)

```
SELECT DISTINCT d.deptName AS department,
    s.schoolName AS school
FROM department d INNER JOIN school s ON (d.schoolCode = s.schoolCode)
    INNER JOIN faculty f1 ON (f1.deptCode = d.deptCode)
    INNER JOIN faculty f2 ON (f2.deptCode = d.deptCode)
WHERE f1.`rank` = 'Assistant Professor'
AND f2.`rank` = 'Associate Professor';
```

(c)

```
SELECT DISTINCT CONCAT(co.rubric, ' ', co.number, ': ', co.title) AS course
```

```
FROM course co INNER JOIN class c1 ON (co.courseId = c1.courseId)
    INNER JOIN class c2 on (co.courseId = c2.courseId)
WHERE c1.facId = 1011
AND co.courseId NOT IN (SELECT DISTINCT courseId FROM class WHERE facId = 1012);
```