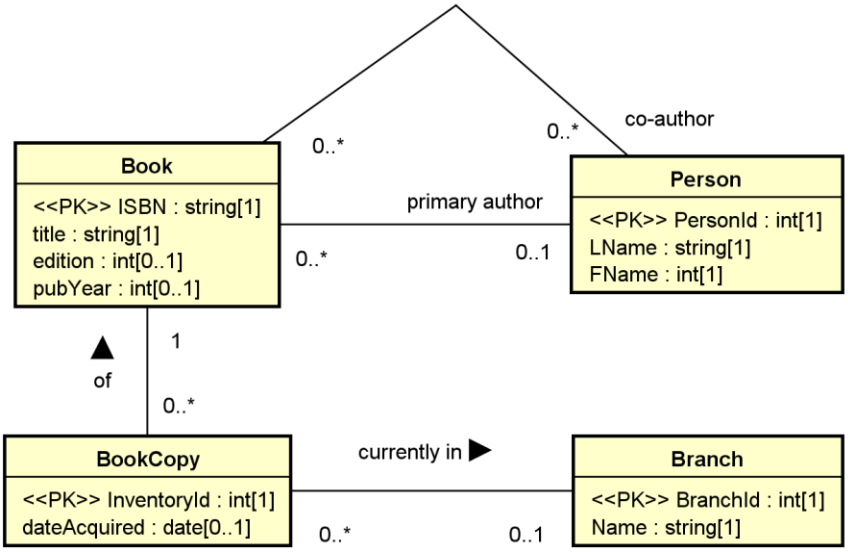
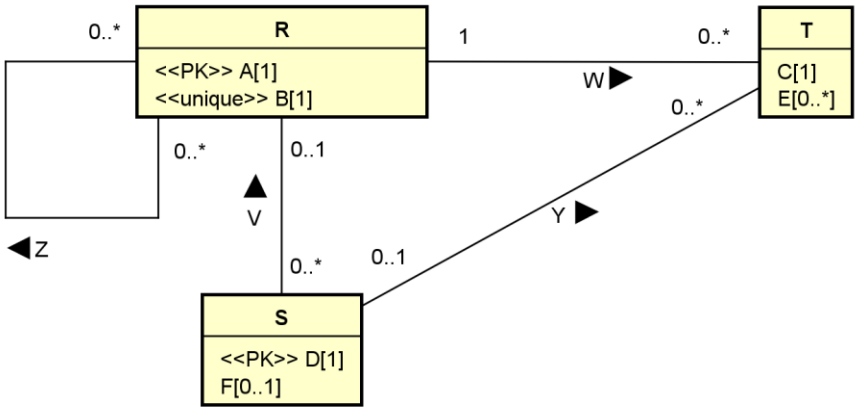
DASC 5333 Database Systems for Data Science
Spring 2025
Suggested Solution Mid-Term Examination

(1) For example (types not needed):



(2) For:



Relation	R(A, B)	**Relation**	S(D, F, A)
[CK] (1) A, (2) B [FK] [Nullable] [Non-nullable] A, B [Note]		[CK] (1) D [FK] (1) A references R(A) [Nullable] A, F [Non-nullable] D [Note]	

Relation T(T_Id, C, D, A)	**Relation** Z(Z_Id, A_1, A_2)
[CK] (1) T_Id [FK] (1) D references S(D), (2) A references R(A) [Nullable] D [Non-nullable] T_Id, C, A [Note] (1) T_Id is created as the surrogate primary key.	[CK] (1) Z_Id, (2) A_1, A_2 [FK] (1) A_1 references R(A), (2) A_2 references R(A) [Nullable] [Non-nullable] Z_Id, A_1, A_2 [Note] (1) Z_Id is created as the surrogate primary key.
Relation TE(TE_Id, T_Id, E)	**Relation**
[CK] (1) TE_Id, (2) T_Id, E [FK] (1) T_Id references T(T_Id) [Nullable] [Non-nullable] TE_Id, T_Id, E [Note] (1)TSE_Id is created as the surrogate primary key.	[CK] [FK] [Nullable] [Non-nullable] [Note]

(3)

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

(4)

(a)

```
SELECT DISTINCT CONCAT(s.fname, ' ', s.lname) AS student,
   e.classId, e.grade
FROM student AS s INNER JOIN enroll AS e ON (s.stuId = e.stuId)
WHERE s.minor = 'CINF';
```

(b)

```
SELECT DISTINCT s.stuId, CONCAT(s.fname, ' ', s.lname) AS student
FROM student AS s INNER JOIN enroll AS e1 ON (s.stuId = e1.stuId)
        INNER JOIN enroll AS e2 ON (s.stuId = e2.stuId)
WHERE e1.grade = 'B+'
AND e2.grade = 'D';
```

(c)

```
SELECT DISTINCT CONCAT(s.fname, ' ', s.lname) AS student,
        d.deptName as major
```

```
FROM student AS s INNER JOIN enroll AS e ON (s.stuId = e.stuId)
        INNER JOIN department AS d ON (s.major = d.deptCode)
        INNER JOIN class AS c ON (e.classId = c.classId)
        INNER JOIN faculty AS f ON (c.facId = f.facId)
WHERE  f.deptCode = 'CINF';
```