

**FAST – National University of Computer and Emerging Sciences, Lahore**  
**Fundamentals of Database Systems CS213 – Spring 2015**  
**Midterm 2 Solution**

**Time allowed: 1 hour**

**Date: 2-May-2015**

**Total Marks: 22**

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**Question 1: [Marks : 4+5=9]**

- a) Consider the following database state and discuss all integrity constraints violated by each operation, if any

Department(Name is the key)

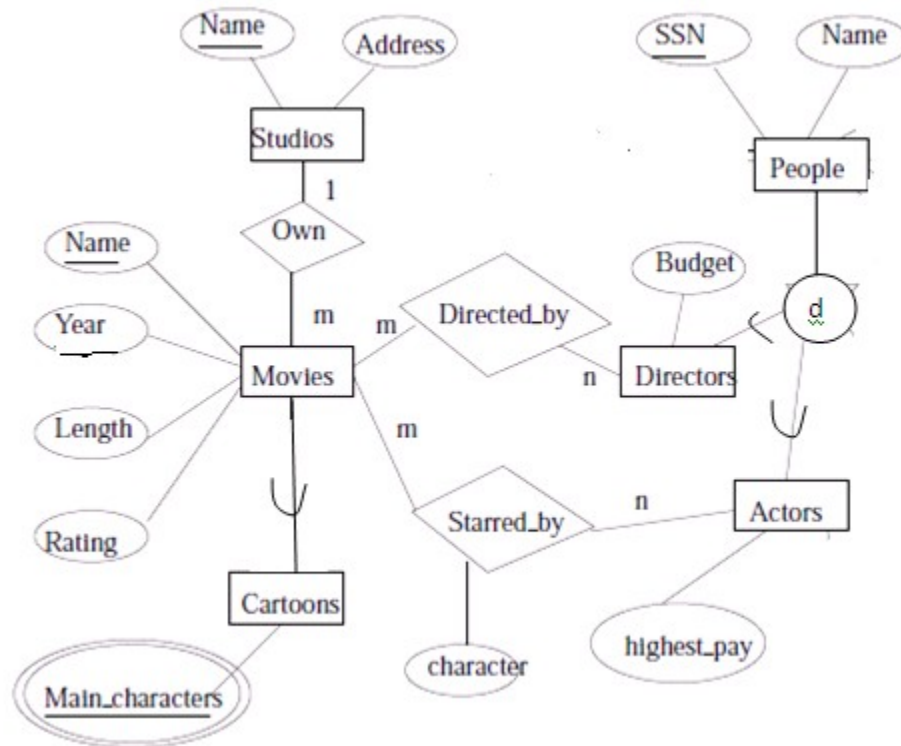
Name	Block
CS	A-1
Management	A-2
Engineering	A-3

Student(RollNum is the key) Department\_Name is foreign key

FirstName	LastName	RollNum	Department_Name
Imtiaz	Umar	20	CS
Aftab	Ahmad	21	Engineering

- I. Insert <Mechanical,A-4> into Department  
Successful
- II. Insert <Aftab, Ahmad, null, Civil> into Student  
Entity Integrity Constraint violated
- III. Update RollNum to 21 where FirstName is Imtiaz in Student  
Key constraint violated
- IV. Delete row where Department is Engineering  
Referential integrity constraint violated.

b) Give the relational model corresponding to the following EER diagram



## Question 2: [Marks: 2+2+3+3+3=13]

Consider the following relational model and write SQL queries to answer the following questions:

Supplier

<u>Supplier_id</u>	sname	status	city
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Part

<u>Part_id</u>	pname	color	city
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Shipment

<u>Supplier_id</u>	<u>Project_id</u>	<u>Part_id</u>	quantity
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Project

<u>Project_id</u>	prohname	city
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- a) Give a unique and ordered list of names of suppliers who supply some red colored part to project "projX".

Select distinct s.sname

From supplier s inner join shipment sh on sh.supplier\_id=s.supplier\_id inner join part p on sh.part\_id=p.part\_id inner join project pr on pr.project\_id=sh.project\_id

Where p.color='red' and pr.prohname='projX'

Order by s.sname

- b) Get the ids of suppliers who supply both part with part\_id 6 and part with part\_id 11.

Select supplier\_id

From shipment where part\_id=6

Intersect

Select supplier\_id

From shipment where part\_id=11

- c) Get names of suppliers who have supplied the same total quantity of part\_id 7 as the supplier with supplier id 36 but have a status lower than that of supplier with id 36.

Select s.sname

From supplier s, shipment sh

Where s.supplier\_id=sh.supplier\_id and sh.part\_id=7

and s.status<(select status from supplier where supplier\_id=36)

Group by s.sname

Having sum(sh.quantity)=(select sum(quantity) from shipment where supplier\_id=36 and part\_id=7)

```

Select s.sname, s.status
From supplier s, shipment sh
Where s.supplier_id=sh.supplier_id and sh.part_id=7
Group by s.sname, s.status
Having sum(sh.quantity) =(select sum(shi.quantity) from shipment shi, supplier si where
shi.supplier_id=si.supplier_id and shi.supplier_id=36 and shi.part_id=7 and
si.status>s.status)

```

d) Get project\_ids of projects supplied entirely by supplier with id 88.

```

Select project_id
From shipment where supplier_id=88
minus
Select project_id
From shipment where supplier_id<>88

```

e) The following query gets the part\_id and part name of parts supplied to all projects in London. Please fill in the blanks:

```

select p.part_id, p.pname
from part p
where not exists
(
  select * from project
  where city='London' and project_id not in
    ( select sh.project_id from shipment sh
      where p.part_id=sh.part_id
    )
)

```