

DATA-540 Lab 4

Questions 1 to 4

Question 1:

1)

3 strong entity types: Instructor, Department, Student - Because all 3 of those entities can exist on their own while Course and Section use a partial primary key and depend on the existence on another entity.

2)

There are 4 one-to-many relationships in the diagram (many-to-one the same as one-to-many) -

i) Instructor to Department

ii) Department to Course

iii) Course to Section.

iv) Student to Instructor

3)

At least 5 instances of type Student must be present for an instance of type Section.

4)

No foreign keys, because cannot tell how many foreign keys from an ER design document.

5) Bold = PK, Underline = FK

Instructor(InstrId, name, address, deptid)

Department(deptid, name)

Student(studentId, name, InstrId)

Course(number, credits, description, name, deptid)

Section(SectId, semester, year, size, number, deptid)

Instructor_section(InstrId, SectId, semester, year, number, deptid)

Student_section(studentId, SectId, semester, year, number, deptid)

Question 2:

1)

1. `<LineItem productId = "P1"><price>25.00</price><quantity>11</quantity></LineItem>`
 - a. `<quantity>` should come before `<price>` as defined in the XML schema.
 - b. Validity error because goes against XML schema.
2. `<totalAmount>A LOT</totalAmount>`
 - a. `<totalAmount>` should be of type decimal
 - b. Validity error.
3. `<Order orderId = "3" customerId = "C1">`
 - a. `customerId` value, "C1", not closed with closing quotation marks.
 - b. Validity error.
4. `<LineItem productId = "P4"><quantity>2</quantity><price50.00</price></LineItem>`
 - a. `<price` tag not closed before value is given.
 - b. Validity error.
5. `<Customer customerId = "C1">`
`<cname>Aditya Bian</cname>`
`</Customer>`
 - a. No `<address>` element included for this customer
 - b. Well-formed error.
6. `<cname>Francisco Pena`
 - a. `<cname>` tag not closed
 - b. Validity error.
7. `<numOrders>4</numOrders>`
 - a. `<numOrders>` is not a defined nested element of `<Customer>`
 - b. Validity error.
8. `<numOrders>4</numOrders>`
 - a. No `numOrders` tag defined in the XML schema document.
 - b. Validity error
9. Root `<Orders>` is not closed at the end.
 - a. Validity error.

2)

`/Orders/Order/LineItem[quantity>5]`

3)

`/Orders/Order/LineItem[@productId="P1" and quantity>1]`

Question 3:

1)

```
{"id":5,"name":"Jenny","age":18,"marks":[54,76,99,72]}
```

OR

```
{  
  "id": 5,  
  "name": "Jenny",  
  "age": 18,  
  "marks": [  
    54,  
    76,  
    99,  
    72  
  ]  
}
```

2)

```
{"obj1":{"a":5,"c":{"arr":[3,4,5],"d":"e"},"prop2":{"a":4,"b":10}}}
```

OR

```
{  
  "obj1": {  
    "a": 5,  
    "c": {  
      "arr": [  
        3,  
        4,  
        5  
      ],  
      "d": "e"  
    }  
  }  
}
```

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```
    },  
    "prop2": {  
      "a": 4,  
      "b": 10  
    }  
  }  
}
```

Question 4:

- 1) Delete on emp, Select on emp, Select on workson
- 2) Update (eno, pno) on workson, Select on workson, Select on emp

Question 5:

On r_markdown file or markdown pdf.