Name: _____ USC ID: _____

# INF 551 – Fall 2017 (Afternoon section)

## Quiz 6: XML & ER (10 points), 15 minutes

/CATALOG/CD[ARTIST="Bob Dylan"]

1. [6 points] Consider an XML document containing a catalog of CD's as shown on the right. Write an XPath expression for each of the following questions.

```
▼<CATALOG>
  ▼<CD rating="3">
     <TITLE>Empire Burlesque</TITLE>
     <ARTIST>Bob Dylan</ARTIST>
     <COUNTRY>USA</COUNTRY>
     <COMPANY>Columbia</COMPANY>
     <PRICE>10.90</PRICE>
     <YEAR>1985</YEAR>
   </CD>
  ▼<CD rating="2">
     <TITLE>Hide your heart</TITLE>
     <ARTIST>Bonnie Tyler</ARTIST>
     <COUNTRY>UK</COUNTRY>
     <COMPANY>CBS Records</COMPANY>
     <PRICE>9.90</PRICE>
     <YEAR>1988</YEAR>
   </CD>
```

   a. Final all CDs (elements) by "Bob Dylan".
   /CATALOG/CD[ARTIST="Bob Dylan"]

c. /CATALOG/CD[YEAR>1985][@rating>=3]/ARTIST/text()

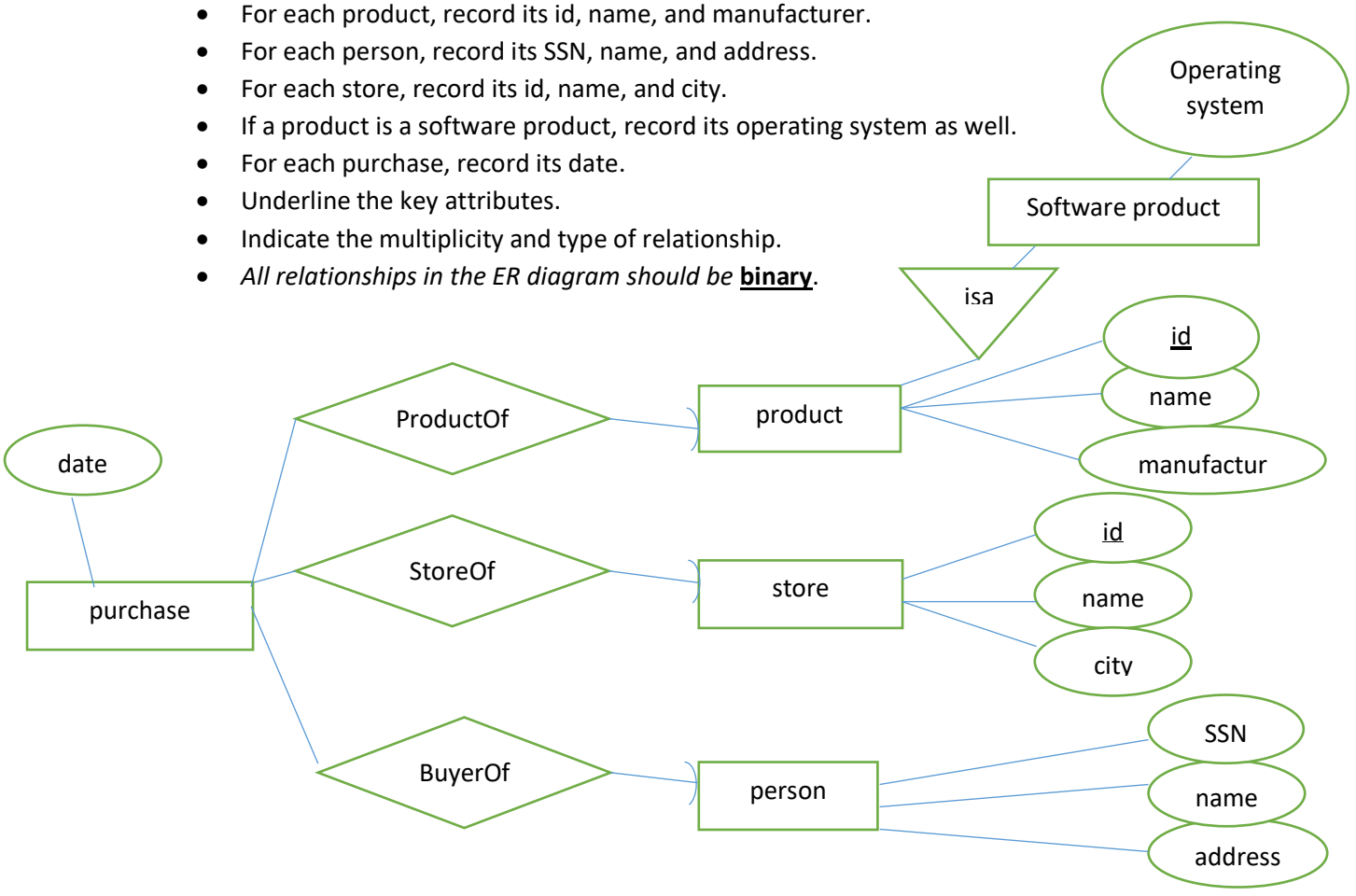
   b. Find the titles of all CDs produced by "Columbia" and with price < 10, return values only.

b. /CATALOG/CD[COMPANY="Columbia"][PRICE<10]/TITLE/text()
CD[COMPANY="Columbia"][PRICE<10]

   /CATALOG/CD[COMPANY="Columbia"][PRICE<10]/TITLE/text()

   c. Find the artists of CDs produced after 1985 and rated 3 or above, return values only.
   /CATALOG/CD[YEAR>1985][@rating>=3]/ARTIST/text()

2. [4 points] Draw an ER diagram to model the product-sale application with the following requirements.
   - For each product, record its id, name, and manufacturer.
   - For each person, record its SSN, name, and address.
   - For each store, record its id, name, and city.
   - If a product is a software product, record its operating system as well.
   - For each purchase, record its date.
   - Underline the key attributes.
   - Indicate the multiplicity and type of relationship.
   - *All relationships in the ER diagram should be* ***binary***.



Name: _____ USC ID: _____

# INF 551 – Fall 2017 (Morning section)

## Quiz 6: XML & ER (10 points), 15 minutes

1. [6 points] Consider an XML document containing a catalog of CD's as shown on the right. Write an XPath expression for each of the following questions.

   a. Find all CDs (elements) not released in "UK".

   **/catalog/cd[country != 'UK']**

   b. Find the titles of all CDs with rating <= 3.

   **/catalog/cd[@rating <= 3]/title**

   c. Find all CDs (elements) by artists whose name contains "Bob".

   **/catalog/cd[contains(artist,'Bob')]**

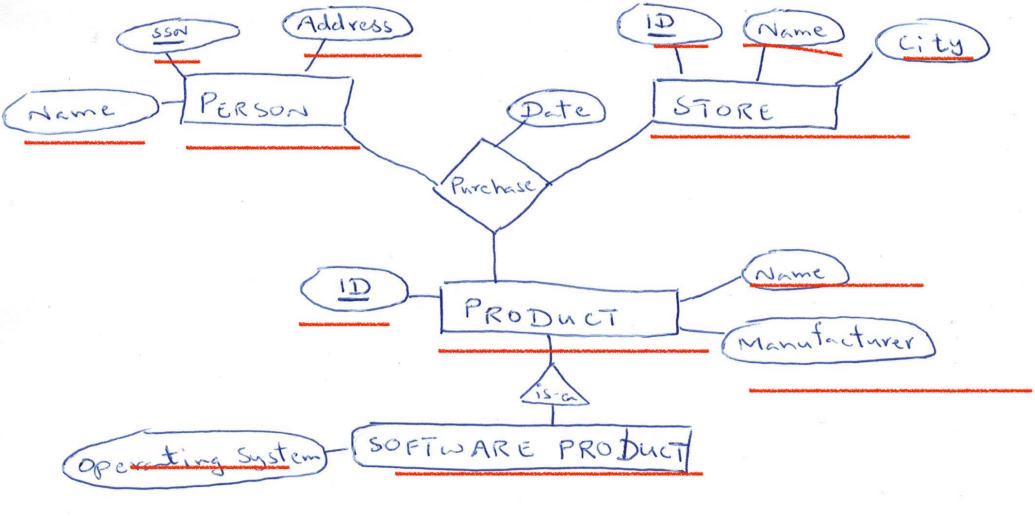
/CATALOG/CD [COUNTRY != 'UK']

```
▼<CATALOG>
 ▼<CD rating="3">
    <TITLE>Empire Burlesque</TITLE>
    <ARTIST>Bob Dylan</ARTIST>
    <COUNTRY>USA</COUNTRY>
    <COMPANY>Columbia</COMPANY>
    <PRICE>10.90</PRICE>
    <YEAR>1985</YEAR>
  </CD>
 ▼<CD rating="2">
    <TITLE>Hide your heart</TITLE>
    <ARTIST>Bonnie Tyler</ARTIST>
    <COUNTRY>UK</COUNTRY>
    <COMPANY>CBS Records</COMPANY>
    <PRICE>9.90</PRICE>
    <YEAR>1988</YEAR>
  </CD>
```

b. /catalog/cd [@rating<=3]/title

c. /catalog/cd [contains(artist, 'Bob')]

2. [4 points] Draw an ER diagram to model the product-sale application with the following requirements.
   - For each product, record its id, name, and manufacturer.
   - For each person, record its SSN, name, and address.
   - For each store, record its id, name, and city.
   - If a product is a software product, record its operating system as well.
   - For each purchase, record its date.
   - Underline the key attributes.
   - Indicate the multiplicity and type of relationship.



Name: _____ USC ID: _____

# INF 551 – Spring 2018

## Quiz 4: File format (10 points), **15 minutes**

1. [6 points] The Unicode code point for the math symbol '∈' (meaning "is an element of") is U+2208. Derive its UTF-8 encoding in **both** binary and hexadecimal formats.
   $(2208)_{hex} = (0010\ 0010\ 0000\ 1000)_{binary}$
   Binary: 11100010 10001000 10001000
   Hexadecimal: E2 88 88

2. [4 points] Consider the following XML document shown in class. Write an XPath for each of the following questions.

a. /bib/book[year > 1995]/title

```
▼<bib>
   <cd>abc</cd>
  ▼<book>
     <publisher>Addison-Wesley</publisher>
     <author>Serge Abiteboul</author>
    ▼<author>
       <first-name>Rick</first-name>
       <last-name>Hull</last-name>
     </author>
     <author age="20">Victor Vianu</author>
     <title>Foundations of Databases</title>
     <year>1995</year>
     <price>38.8</price>
   </book>
  ▼<book price="55">
     <publisher>Freeman</publisher>
     <author>Jeffrey D. Ullman</author>
     <title>Principles of Database and Knowledge Base Systems</title>
     <year>1998</year>
   </book>
  ▼<book>
     <title>xyz</title>
     <author/>
   </book>
 </bib>
```

b. /bib/book[author/@age = '20']/title
age = 20
为什么没有引号？

   a. [2 points] Find the titles of the books published after 1995.
   /bib/book[year > 1995]/title

   b. [2 points] Find the titles of the books written by someone at the age of 20.
   /bib/book[author/@age = 20]/title