

# CMPE 422

## DATABASE SYSTEMS

### XML PROJECT

## 28.12.2019

### INTRODUCTION

This is a bike rental project using xml. There are rental bike shops and all these shops are stored in bike\_rental.xml file. There are 10 query files running with Basex.

There are three rent bike shop. Their names are following:

- Turkey Bike Rent
- Istanbul On Bike
- Levent Rent Bike

They keep some informations like name, opening\_date and bike. They may have several bikes. Each bike has name, type, weight, price, year, engine\_capacity, maximum\_speed, fuel\_capacity, rent\_date and user. User has name and user\_TC fields.

### Infered XML Schema (XSD)

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Created with Liquid Technologies Online Tools 1.0 (https://
www.liquid-technologies.com) -->
<xs:schema attributeFormDefault="unqualified"
elementFormDefault="qualified" xmlns:xs="http://www.w3.org/2001/
XMLSchema">
  <xs:element name="bike_rental">
    <xs:complexType>
      <xs:sequence>
```

```

        <xs:element maxOccurs="unbounded" name="bike_rent_shop">
            <xs:complexType>
                <xs:sequence>
                    <xs:element name="name" type="xs:string" />
                    <xs:element name="opening_date" type="xs:unsignedShort" /
>
        <xs:element maxOccurs="unbounded" name="bike">
            <xs:complexType>
                <xs:sequence>
                    <xs:element name="name" type="xs:string" />
                    <xs:element name="type" type="xs:string" />
                    <xs:element name="weight" type="xs:unsignedShort" /
>
                    <xs:element name="price" type="xs:unsignedByte" />
                    <xs:element name="year" type="xs:unsignedShort" />
                    <xs:element name="engine_capacity"
type="xs:unsignedShort" />
                    <xs:element name="maximum_speed"
type="xs:unsignedByte" />
                    <xs:element name="fuel_capacity"
type="xs:unsignedByte" />
                    <xs:element name="rent_date" type="xs:date" />
                    <xs:element name="user">
                        <xs:complexType>
                            <xs:sequence>
                                <xs:element name="name" type="xs:string" />
                                <xs:element name="user_TC"
type="xs:unsignedLong" />
                            </xs:sequence>
                        </xs:complexType>
                    </xs:element>
                </xs:sequence>
            </xs:complexType>
        </xs:element>
    </xs:sequence>
</xs:complexType>
</xs:element>

```

```
</xs:schema>
```

## Queries:

**Query 1 :** Show user name of given bike with name

```
doc("bike_rental.xml")/bike_rental/bike_rent_shop/bike[name = "CRF 1000L Africa Twin"]/user/name
```

**Run:** basex q\_user

**Result:** <name>yusuf</name>

**Query 2 :** Show names of the bikes of Turkey Bike Rent shop that have maximum\_speed more than 150 from bike\_rental.xml

```
doc("bike_rental.xml")/bike_rental/bike_rent_shop[name = "Turkey Bike Rent"]/bike[maximum_speed>150]/name
```

**Run:** basex q\_max\_speed

**Result:** <name>CRF 1000L Africa Twin</name>

<name>Yamaha T 700</name>

<name>Yamaha XT660-R</name>

**Query 3 :** Show names of the bikes of Levent Rent Bike shop whose price is lower than 50

```
doc("bike_rental.xml")/bike_rental/bike_rent_shop[name = "Levent Rent Bike"]/bike[price<50]/name
```

**Run:** basex q\_price

**Result:** <name>Honda Spacy 110</name>

<name>SYM GTS EVO 250i</name>

<name>Honda MSX 125</name>

**Query 4 :** Show names of bike rent shops

```
doc("bike_rental.xml")/bike_rental/bike_rent_shop/name
```

**Run:** basex q\_shop\_name

**Result:** <name>Turkey Bike Rent</name>

<name>Istanbul On Bike</name>

<name>Levent Rent Bike</name>

**Query 5 :** Show names of the bikes of Istanbul On Bike shop whose type is not SCOOTER.

**doc("bike\_rental.xml")/bike\_rental/bike\_rent\_shop[name = "Istanbul On Bike"]/bike[type != "SCOOTER"]/name**

**Run:** basex q\_bike\_type

**Result:** <name>Honda Rally CRF 250</name>

<name>BMW G 650 GS</name>

<name>Suzuki DL650A V-Storm</name>

**Query 6 :** Show names of the bikes that is not in Turkey Bike Rent shop and engine\_capacity is greater than or equal to 500 and price is less than 100.

**doc("bike\_rental.xml")/bike\_rental/bike\_rent\_shop[name != "Turkey Bike Rent"]/bike[engine\_capacity >= 500][price < 100]/name**

**Run:** basex q\_engine\_cap\_price

**Result:** <name>Suzuki DL650A V-Storm</name>

<name>Yamaha XT660Z-TNR</name>

<name>Honda NC750X</name>

**Query 7 :** Query rent date with given user name

**doc("bike\_rental.xml")/bike\_rental/bike\_rent\_shop/bike[user/name = "yusuf"]/rent\_date**

**Run:** basex q\_user\_rent\_date

**Result:** <rent\_date>2012-09-24</rent\_date>

<rent\_date>2010-02-20</rent\_date>

<rent\_date>2018-08-28</rent\_date>

<rent\_date>2019-07-21</rent\_date>

**Query 8 :** Query user's TC who rents given bike name.

**doc("bike\_rental.xml")/bike\_rental/bike\_rent\_shop/bike[name = "CRF 1000L Africa Twin"]/user/user\_TC**

**Run:** basex q\_user\_TC

**Result:** <user\_TC>33300439950</user\_TC>

**Query 9 :** Show names of the bikes that have maximum\_speed more than 150 from bike\_rental.xml document order by maximum\_speed

**for \$x in doc("bike\_rental.xml")/bike\_rental/bike\_rent\_shop/bike**

**where \$x/maximum\_speed>150**

**order by \$x/maximum\_speed**

**return \$x**

**Run:** basex flowr\_max\_speed

**Result:** <name>Yamaha XT660-R</name>

<name>Honda Rally CRF 250</name>

<name>Yamaha T 700</name>

<name>BMW G 650 GS</name>

<name>Honda NC750X</name>

<name>CRF 1000L Africa Twin</name>

<name>Suzuki DL650A V-Storm</name>

<name>Yamaha XT660Z-TNR</name>

<name>Yamaha XT-1200-ZE- Super TNR</name>

**Query 10 :** Show names of the shops that are opened earlier than 2011 order by opening\_date

**for \$x in doc("bike\_rental.xml")/bike\_rental/bike\_rent\_shop**

**where \$x/opening\_date<2011**

**order by \$x/opening\_date**

**return \$x/name**

**Run:** basex flowr\_bike\_year

**Result:** <name>Yamaha Neos 4 50 cc</name>  
<name>Yamaha XT-1200-ZE- Super TNR</name>  
<name>Honda MSX 125</name>  
<name>CRF 1000L Africa Twin</name>  
<name>Suzuki DL650A V-Storm</name>  
<name>BMW G 650 GS</name>

**Query 11 :** Show names of the shops order by name

```
for $x in doc("bike_rental.xml")/bike_rental/bike_rent_shop
order by $x/name
return $x/name
```

**Run:** basex flowr\_shops

**Result:** <name>Istanbul On Bike</name>  
<name>Levent Rent Bike</name>  
<name>Turkey Bike Rent</name>

**Query 12 :** Show names of the bikes whose type is not SCOOTER ordered by year

```
for $x in doc("bike_rental.xml")/bike_rental/bike_rent_shop/bike
where $x/type!="SCOOTER"
order by $x/year
return $x/name
```

**Run:** basex flowr\_type

**Result:** <name>Yamaha XT660-R</name>  
<name>Honda Rally CRF 250</name>  
<name>Yamaha XT660Z-TNR</name>  
<name>Honda NC750X</name>  
<name>Yamaha T 700</name>  
<name>Yamaha XT-1200-ZE- Super TNR</name>

<name>CRF 1000L Africa Twin</name>

<name>Suzuki DL650A V-Storm</name>

<name>BMW G 650 GS</name>

**Query 13 :** Show names of the bikes that published later than 2010 ordered by year

**for** \$x in doc("bike\_rental.xml")/bike\_rental/bike\_rent\_shop/bike

**where** \$x/year>2010

**order by** \$x/year

**return** \$x/name

**Run:** basex flowr\_open\_date

**Result:** <name>Turkey Bike Rent</name>

<name>Istanbul On Bike</name>

**Query 14 :** Show user details which rents given bike with name

**for** \$x in doc("bike\_rental.xml")/bike\_rental/bike\_rent\_shop/bike

**where** \$x/name = "CRF 1000L Africa Twin"

**return** \$x/user

**Run:** basex flowr\_user

**Result:** <user>

<name>yusuf</name>

<user\_TC>33300439950</user\_TC>

</user>

**Query 15 :** Query rent date with given user name

**for** \$x in doc("bike\_rental.xml")/bike\_rental/bike\_rent\_shop/bike

**where** \$x/user/name = "yusuf"

**return** \$x/rent\_date

**Run:** basex flowr\_rent\_date

**Result:** <rent\_date>2012-09-24</rent\_date>

<rent\_date>2010-02-20</rent\_date>

<rent\_date>2018-08-28</rent\_date>

<rent\_date>2019-07-21</rent\_date>