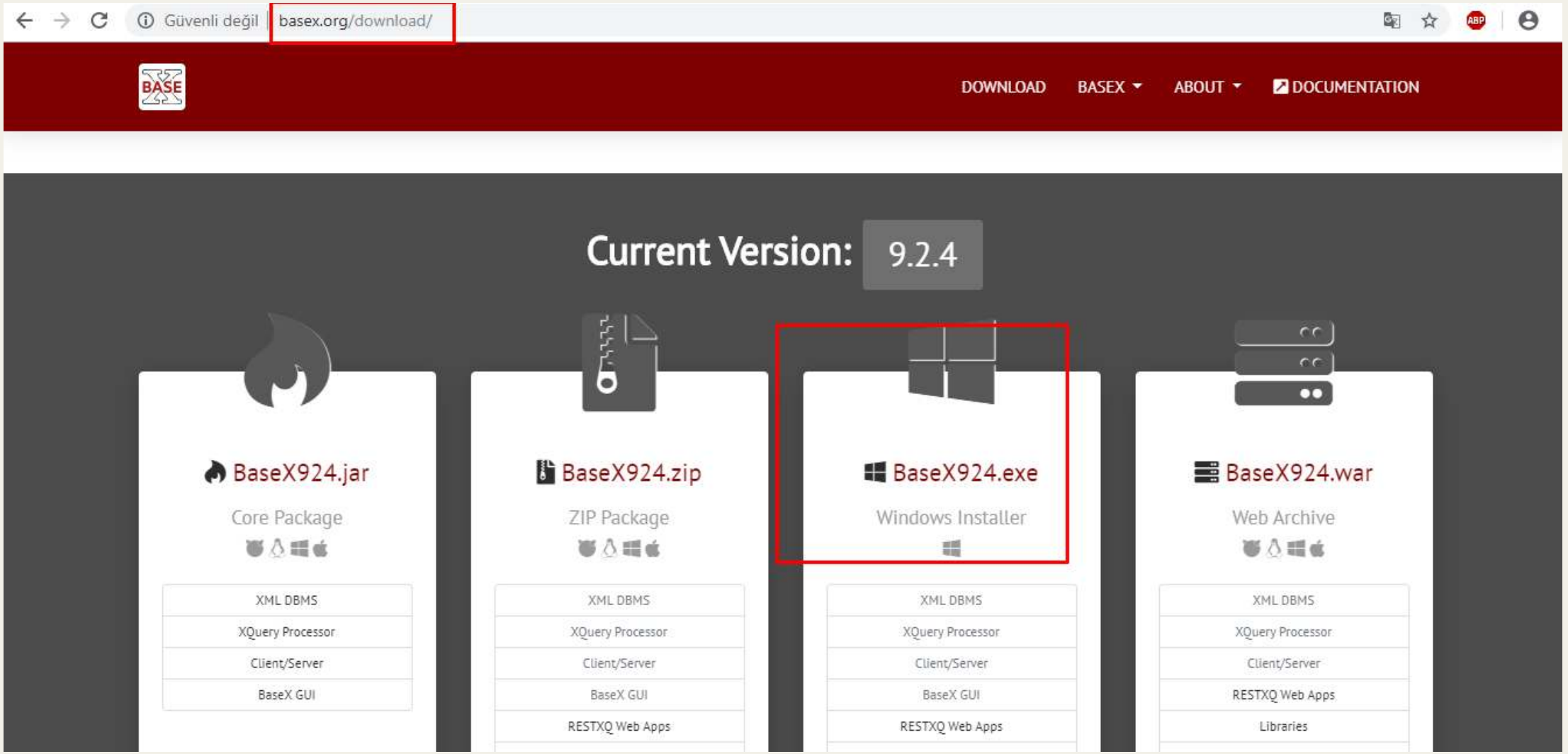
Lab-8

Xquery yapısı ve örnekleri.

Xquery Nedir?

- W3C (World Wide Web Consortium) standartı.
- Bir sorgulama dili (Q.L.)
- XML dosyaları içerisinde arama yapabilmek için geliştirilmiştir yapısal bir dil.
- **tag** (<book></book>, <fname></lname>) üzerinde arama gerçekleştiren bir yapı.
- Veritabanı için SQL ne ise, XML için de Xquery o.
- SQL ifadelerinin tamamını Xquery'de de gerçekleyebiliyoruz.
- Web servislerinden bilgi çıkarımında çok daha kullanışlı.
- **Relational Algebra** yok !
- **Relation** yok !

BaseX Kurulumu



Root Element: bookstore

Element: book, title, author, year, price.
book ->parent
title, author, year, price -> child

Attribute: category

```
<bookstore>
  <book category="cooking">
    <title lang="en">Everyday Italian</title>
    <author>Giada De Laurentiis</author>
    <year>2005</year>
    <price>30.00</price>
  </book>
  <book category="children">
    <title lang="en">Harry Potter</title>
    <author>J K. Rowling</author>
    <year>2005</year>
    <price>29.99</price>
  </book>
  <book category="web">
    <title lang="en">XQuery Kick Start</title>
    <author>James McGovern</author>
    <author>Per Bothner</author>
    <author>Kurt Cagle</author>
    <author>James Linn</author>
    <author>Vaidyanathan Nagarajan</author>
    <year>2003</year>
    <price>49.99</price>
  </book>
  <book category="web" cover="paperback">
    <title lang="en">Learning XML</title>
    <author>Erik T. Ray</author>
    <year>2003</year>
    <price>39.95</price>
  </book>
</bookstore>
```

Company.xml Tanıtımı

Root Element: company

Element: employee, department, dname, dnum

Attribute: dnumber, ssn, dep_no

```
<company>
    <employee ssn="888665555">
        <fname>James</fname>
        <minit>E</minit>
        <lname>Borg</lname>
        <bdate>10-NOV-27</bdate>
        <address>450 Stone, Houston, TX</address>
        <sex>M</sex>
        <salary>55000</salary>
        <superssn>null</superssn>
        <dno>1</dno>
    </employee>
    <department dnumber="5">
        <dname>Research</dname>
        <mgrssn>333445555</mgrssn>
        <mgrstartdate>22-MAY-78</mgrstartdate>
    </department>
    <dept_locations dnumber="1" dlocation="Houston" />
    <project pnumber="1">
        <pname>ProductX</pname>
        <plocation>Bellaire</plocation>
        <dnum>5</dnum>
    </project>
    <dependent dep_no="1">
        <essn>333445555</essn>
        <dependent_name>Alice</dependent_name>
        <sex>F</sex>
        <bdate>05-APR-76</bdate>
        <relationship>Daughter</relationship>
    </dependent>
    <works_on essn="123456789" pno="1">
        <hours>32.5</hours>
    </works_on>
</company>
```

Table 4-1. Simple path expressions

Example	Return value
`doc("catalog.xml")/catalog`	The `catalog` element that is the outermost element of the document
`doc("catalog.xml")//product`	All `product` elements anywhere in the document
`doc("catalog.xml")//product/@dept`	All `dept` attributes of `product` elements in the document
`doc("catalog.xml")/catalog/*`	All child elements of `catalog`
`doc("catalog.xml")/catalog/*/number`	All `number` elements that are grandchildren of `catalog`

XQUERY FLWOR ifadeleri

- **For :** Bir düğüm dizisini seçer.
- **Let:** Bir değişkene diziyi atar.
- **Where:** Düğümleri filtreler.
- **Order by:** Düğümleri sıralar
- **Return:** Sonuçları döndürür.

Xquery Örnekleri

Örnek 1:

Tüm çalışanların bilgilerini Xpath ve Xquery ile bulunuz.

SELECT * FROM employee;

Xpath: **doc**("company.xml")/company/employee

Xquery: **for** $x **in doc**("company.xml")/company/employee

return $x

Satırları görünmez yapmak istediğimizde;

(: Comment :)

Örnek 2:

Şirkette olan departmanların isimlerini bulan Xquery sorgusunu yazınız.

```
SELECT dname FROM department;
for $x in doc("company.xml")/company/department
    return $x/dname
```

Örnek 3:

‘Seattle’ da oturan işçinin/işçilerin adını ve doğum tarihini listeleyen Xquery sorgusunu yazınız.

```
SELECT fname, bdate
FROM employee
 WHERE address LIKE '%Seattle%';
```

```
for $x in doc("company.xml")/company/employee[matches(address,'Seattle')]
    return $x/fname | $x/bdate
```

```
<fname>Jon</fname>
<bdate>22-AUG-1964</bdate>
<fname>Ray</fname>
<bdate>16-AUG-1949</bdate>
```

Tag’siz listelemek istersek : return data($x/fname | $x/bdate)

```
Jon
22-AUG-1964
Ray
16-AUG-1949
```

Örnek 4:

İsmi ‘Franklin Wong’ olan çalışanın çalıştığı projelerin numaralarını listeleyen Xquery sorgusunu yazınız.

SELECT pno **FROM** employee, works_on

WHERE fname = 'Franklin' **AND** lname = 'Wong' **AND** essn = ssn;

```
let $com := doc("company.xml")
for $emp in $com//employee
        let $ad := $emp/fname
        let $soyad := $emp/lname
        let $tc := $emp/@ssn
for $wo in $com//works_on
        let $etc := $wo/@essn
where
        $ad = 'Franklin' and $soyad = 'Wong' and $tc = $etc
return $wo/@pno
```

NOT: attribute’ler @ ile belirtilir.

Örnek 5:

Şirketin satış departmanının (“Sales”) hangi şehir(ler)de ofisi olduğunu bulan Xquery sorguyu yazınız. Şehirleri alfabetik olarak sıralayın.

SELECT dlocation FROM department d, dept_locations dl

WHERE dname = 'Sales' AND d.dnumber=dl.dnumber;

```
let $com := doc("company.xml")
for $dep in $com//department
        let $disim := $dep/dname
        let $dn1 := $dep/@dnumber
for $loc in $com//dept_locations
        let $dn2 := $loc/@dnumber
        let $dloc := $loc/@dlocation
where
        $disim = 'Sales' and $dn1 = $dn2
order by $dloc
return $dloc
```

Örnek 6:

'Elizabeth' isminde akrabası olan çalışanın yöneticisinin (supervisor) adını ve soyadını bulan Xquery sorgusunu yazınız.

SELECT e2.fname, e2.lname FROM employee e1, employee e2, dependent d

WHERE d.dependent_name = 'Elizabeth' AND d.essn = e1.ssn AND e1.superssn =e2.ssn;

```
let $com := doc("company.xml")
for $emp in $com//employee
        let $etc := $emp/@ssn
        let $e_stc := $emp/superssn
for $dep in $com//dependent
        let $disim := $dep/dependent_name
        let $d_tc := $dep/essn
for $sup in $com//employee
        let $stc := $sup/@ssn
        let $sad := $sup/fname
        let $ssoyad := $sup/lname
where
        $disim = 'Elizabeth' and $d_tc = $etc and $e_stc = $stc
return $sad | $ssoyad
```

Örnek 7:

«OperatingSystems» isimli projede çalışanların ve «Software» departmanında çalışanların ad, soyad bilgilerini bulan Xquery sorgusunu yazınız.

```
SELECT fname, lname
FROM employee e, project p, works_on wo
 WHERE pname = 'OperatingSystems'
AND p.pnumber = wo.pno AND wo.essn = e.ssn

INTERSECT

SELECT fname, lname
FROM employee e, department d
WHERE dname = 'Software' AND e.dno = d.dnumber;
```

```
let $com := doc("company.xml")
for $proje in $com//project
    let $pro_no := $proje/@pnumber
    let $pro_isim := $proje/pname
for $wo in $com//works_on
    let $wo_pno := $wo/@pno
    let $wo_tc := $wo/@essn
for $emp in $com//employee
    let $tc := $emp/@ssn
    let $ad := $emp/fname
    let $soyad := $emp/lname
    let $e_dno := $emp/dno
for $dep in $com//department
    let $d_no := $dep/@dnumber
    let $d_isim := $dep/dname
where
    $pro_isim = 'OperatingSystems' and
    $pro_no = $wo_pno and
    $tc = $wo_tc and
    $d_isim = 'Software' and
    $d_no = $e_dno
return $ad | $soyad
```

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