

1. Write and execute XQuery expressions for the following queries on the company.xml document:

Company.xml:

```
<?xml version="1.0" ?>
```

```
<companyDB>
```

```
  <departments>
```

```
    <department dno="5">
```

```
      <lname>Research</lname>
```

```
      <locations>
```

```
        <location>Houston</location>
```

```
      </locations>
```

```
      <manager mssn="888665555">
```

```
        <startDate>19-JUN-1971</startDate>
```

```
      </manager>
```

```
      <employees essns="888665555"/>
```

```
      <projectsControlled pnos="20"/>
```

```
    </department>
```

```
  </departments>
```

```
</companyDB>
```

```
<employee ssn="888665555" worksFor="5" supervisor="888665555" manages="5">
```

```
<fname>Franklin</fname>

<lname>Wong</lname>

<dob>08-DEC-45</dob>

<address>638 Voss, Houston, TX</address>

<sex>M</sex>

<salary>40000</salary>

<dependents>

  <dependent>

    <dependentName>Alice</dependentName>

    <sex>F</sex>

    <dob>05-APR-1976</dob>

    <relationship>Daughter</relationship>

  </dependent>

  <dependent>

    <dependentName>Theodore</dependentName>

    <sex>M</sex>

    <dob>25-OCT-1973</dob>

    <relationship>Son</relationship>

  </dependent>

</dependents>

<supervisees essns="123456789 666884444 453453453"/>

<projects>

  <worksOn pno="2" hours="10.0"/>

  <worksOn pno="3" hours="10.0"/>

  <worksOn pno="10" hours="10.0"/>

  <worksOn pno="20" hours="10.0"/>

</projects>
```

```

    </employee>
  </employees>
</projects>
<project pnumber="1" controllingDepartment="5">
  <pname>Product X</pname>
  <plocation>Bellaire</plocation>
  <workers>
    <worker essn="123456789">32.5</worker>
    <worker essn="453453453">20.0</worker>
  </workers>
</project>
</projects>
</companyDB>
=====
=====

```

a. Retrieve the names and addresses of employees who work for the “Research” department.

=>

Queries:

```
let $path := doc("Company.xml")
```

```
let $deptPath := $path/companyDB/departments/department[dname = "Research"]
```

```
let $empPath := $path/companyDB/employees/employee
```

```
for $i in $empPath
```

```
  where $i/@worksFor = $deptPath/@dno
```

```
  return
```

```
    <result>
```

```
      {$i/fname}
```

```

    {$/lname}

    {$/address}

</result>

```

Result:

```

<result><fname>Franklin</fname><lname>Wong</lname><address>638 Voss, Houston,
TX</address></result>

```

```

=====
=====

```

b. For every project located in “Bellaire”, retrieve the project number, the controlling department number, and the department’s manager’s last name, address, and birth date

=>

Queries:

```
let $path := doc("Company.xml")
```

```
let $projPath := $path/companyDB/projects/project[plocation = "Bellaire"]
```

```
let $deptPath := $path/companyDB/departments/department[@dno =
data($projPath/@controllingDepartment)]
```

```
let $empPath := $path/companyDB/employees/employee[@ssn =
data($deptPath/manager/@mssn)]
```

```
for $i in $empPath
```

```
return
```

```
<result>
```

```
<manager>
```

```

    {
        $i/lname |
        $i/address |
        $i/dob
    }
</manager>

<pnumber>

{
    data($projPath/@pnumber)
}

</pnumber>

<controllingDepartment>

{
    data($projPath/@controllingDepartment)
}

</controllingDepartment>

</result>

```

Result:

```

<result><manager><lname>Wong</lname><dob>08-DEC-45</dob><address>638 Voss, Houston,
TX</address></manager><pnumber>1</pnumber><controllingDepartment>5</controllingDepartm
ent></result>

```

```

=====
=====

```

c. Retrieve the names of all employees who have two or more dependents.

=>

Queries:

```
let $path := doc("Company.xml")
let $empPath := $path/companyDB/employees/employee
for $i in $empPath
  where count($i//dependent)>=2
  return
    $i/fname
```

Result:

<fname>Franklin</fname>

=====

d. Retrieve the names of managers who have at least one dependent.

=>

Queries:

```
let $path := doc("Company.xml")
let $empPath := $path/companyDB/employees/employee[@manages]
for $i in $empPath
  where count($i//dependent)>=1
  return
    $i/fname
```

Result:

<fname>Franklin</fname>

=====

e. Retrieve the names of employees who work on all projects controlled by department “5”.

=>

Queries:

```
let $path := doc("Company.xml")
```

```
let $empPath := $path/companyDB/employees/employee
```

```
for $i in $empPath
```

```
  where $i[@worksFor = 5]
```

```
    return
```

```
      $i/fname
```

Result:

<fname>Franklin</fname>
