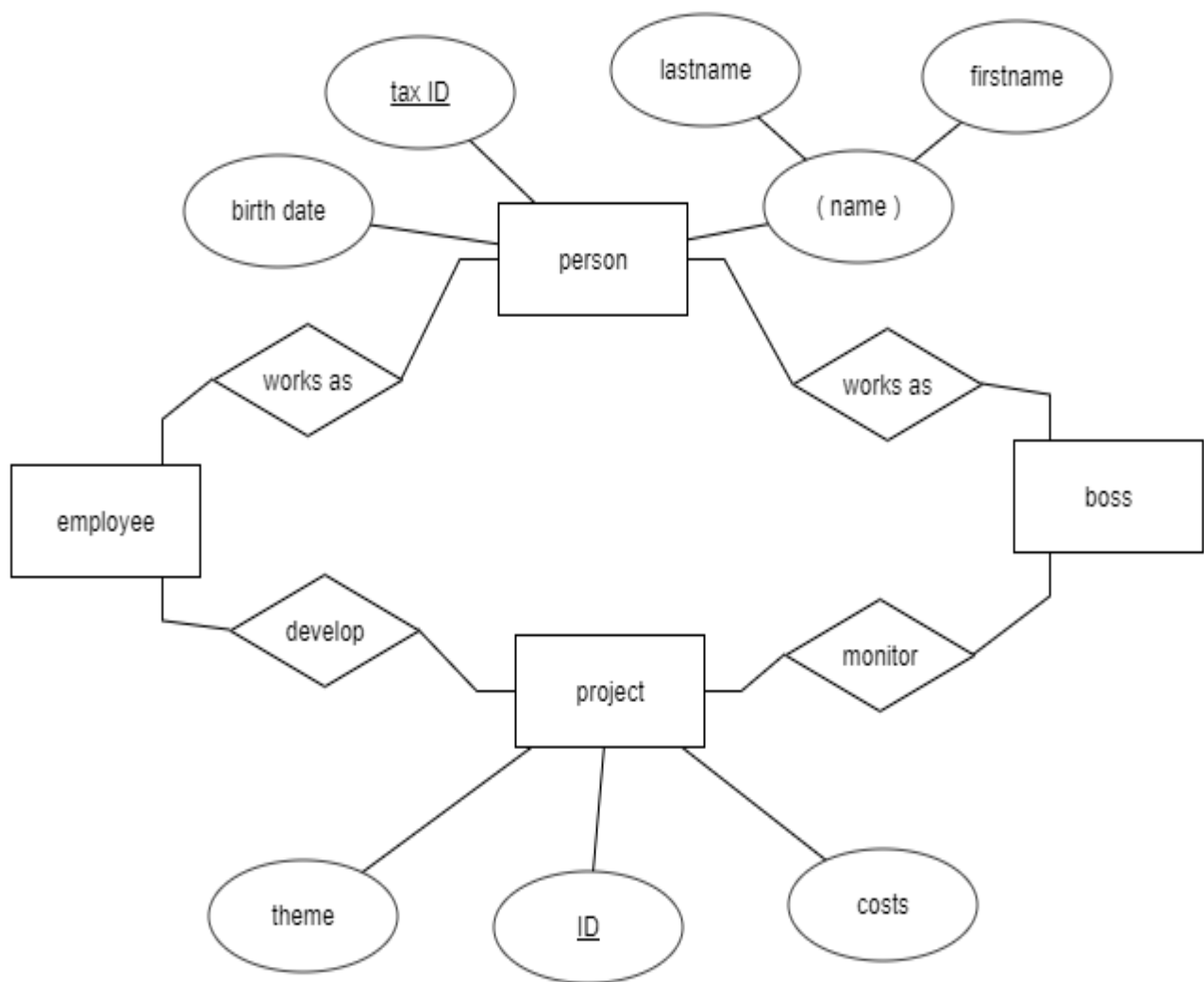


Adatkezelés XML-ben

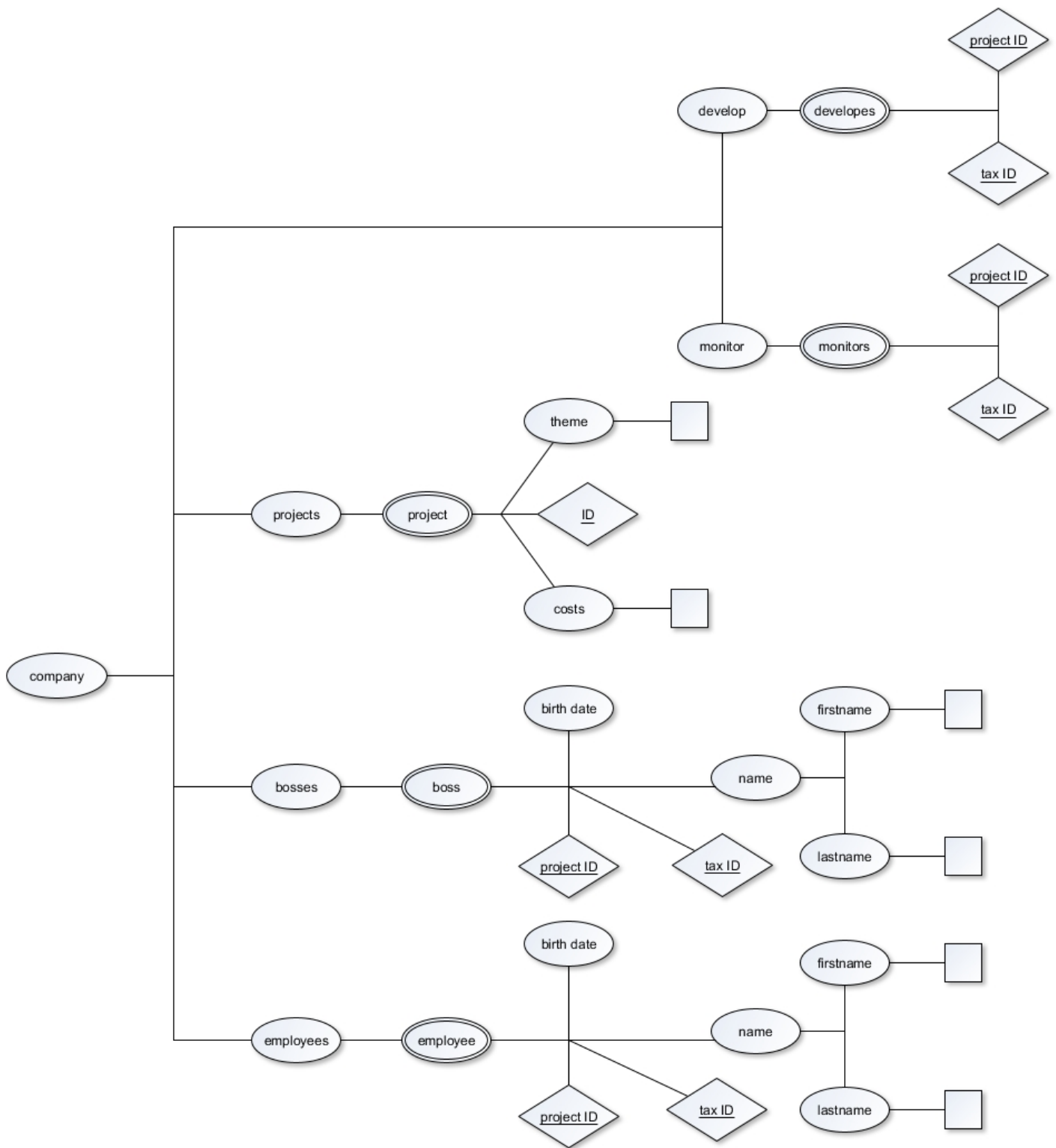
Beadandó

Sajó András

1. ER modell



2. XDM modell



3. XML Schema

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
```

```
  <xs:complexType name = "project">
```

```
    <xs:sequence>
```

```
      <xs:element name="theme" type="xs:string"/>
```

```
      <xs:element name="costs">
```

```
        <xs:simpleType>
```

```
          <xs:restriction base="xs:integer">
```

```
            <xs:minInclusive value="0"/>
```

```
            <xs:maxInclusive value="9999999999"/>
```

```
          </xs:restriction>
```

```
        </xs:simpleType>
```

```
      </xs:element>
```

```
    </xs:sequence>
```

```
    <xs:attribute name="ID" type="xs:string"/>
```

```
  </xs:complexType>
```

```
  <xs:complexType name = "projects">
```

```
    <xs:sequence>
```

```
      <xs:element name="project" type="project" minOccurs="0"  
        maxOccurs="unbounded"/>
```

```
    </xs:sequence>
```

```
  </xs:complexType>
```

```
  <xs:complexType name = "name">
```

```
    <xs:sequence>
```

```
      <xs:element name="lastname" type="xs:string"/>
```

```
      <xs:element name="firstname" type="xs:string"/>
```

```
    </xs:sequence>
```

```
  </xs:complexType>
```

```
  <xs:complexType name = "person">
```

```
    <xs:sequence>
```

```
      <xs:element name="name" type="name"/>
```

```
      <xs:element name="birth_date" type="date"/>
```

```
    </xs:sequence>
```

```
    <xs:attribute name="taxID" type="xs:string" use="required"/>
```

```
  </xs:complexType>
```

```
  <xs:complexType name = "employee">
```

```
    <xs:complexContent>
```

```
      <xs:extension base="person">
```

```
        <xs:attribute name="projectId" type="xs:string" use="required"/>
```

```

        </xs:extension>
    </xs:complexContent>
</xs:complexType>

<xs:complexType name = "employees">
    <xs:sequence>
        <xs:element name="employee" type="employee" minOccurs="0"
            maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>

<xs:complexType name = "boss">
    <xs:complexContent>
        <xs:extension base="person">
            <xs:attribute name="projectId" type="xs:string" use="required"/>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>

<xs:complexType name = "bosses">
    <xs:sequence>
        <xs:element name="boss" type="boss" minOccurs="0"
            maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>

<xs:complexType name = "developes">
    <xs:attribute name="projectId" type="xs:string" use="required"/>
    <xs:attribute name="taxID" type="xs:string" use="required"/>
</xs:complexType>

<xs:complexType name = "develop">
    <xs:sequence>
        <xs:element name="developes" type="developes" minOccurs="0"
            maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>

<xs:complexType name = "monitores">
    <xs:attribute name="projectId" type="xs:string" use="required"/>
    <xs:attribute name="taxID" type="xs:string" use="required"/>
</xs:complexType>

<xs:complexType name = "monitor">
    <xs:sequence>

```

```

        <xs:element name="monitores" type="monitores" minOccurs="0"
        maxOccurs="unbounded"/>
    </xs:sequence>
</xs:complexType>

<xs:element name="company">
    <xs:complexType>
        <xs:sequence>
            <xs:element name="projects"/>
            <xs:element name="employees"/>
            <xs:element name="bosses"/>
            <xs:element name="developes"/>
            <xs:element name="monitores"/>
        </xs:sequence>
    </xs:complexType>

    <xs:key name="employee_taxID_key">
        <xs:selector xpath="./employees/employee"/>
        <xs:field xpath="@taxID"/>
    </xs:key>

    <xs:key name="boss_taxID_key">
        <xs:selector xpath="./bosses/boss"/>
        <xs:field xpath="@taxID"/>
    </xs:key>

    <xs:key name="person_taxID_key">
        <xs:selector xpath="./employees/employee|.bosses/boss"/>
        <xs:field xpath="@taxID"/>
    </xs:key>

    <xs:key name="projectID_key">
        <xs:selector xpath="./projects/project"/>
        <xs:field xpath="@projectID"/>
    </xs:key>

    <xs:keyref name="developes_taxID_ikey" ref="employee_taxID_key">
        <xs:selector xpath="./develope/developes"/>
        <xs:field xpath="@taxID"/>
    </xs:keyref>

    <xs:keyref name="developes_projectID_ikey" ref="project_projectID_key">
        <xs:selector xpath="./develope/developes"/>
        <xs:field xpath="@projectID"/>
    </xs:keyref>

```

```

<xs:keyref name="monitores_taxID_ikey" ref="boss_taxID_key">
    <xs:selector xpath="./monitor/monitores"/>
    <xs:field xpath="@taxID"/>
</xs:keyref>

<xs:keyref name="monitores_projectID_ikey" ref="project_projectID_key">
    <xs:selector xpath="./monitor/monitores"/>
    <xs:field xpath="@projectID"/>
</xs:keyref>
</xs:element>
</xs:schema>

```

4. XML

```

<?xml version="1.0" encoding="UTF-8"?>
<company>
  <projects>
    <project projectID="1234567">
      <theme>Maps for Android</theme>
      <costs>1500000 Ft</costs>
    </project>
    <project projectID="2132131">
      <theme>Messages for Iphone</theme>
      <costs>2100000 Ft</costs>
    </project>
    <project projectID="1148596">
      <theme>Graphics software</theme>
      <costs>400000 Ft</costs>
    </project>
    <project projectID="96658472">
      <theme>Photo downloader</theme>
      <costs>150000 Ft</costs>
    </project>
  </projects>

  <employees>
    <employee taxID="887456854">
      <name>
        <lastname>Szabó</lastname>
        <firstname>Máté</firstname>
      </name>
      <birthdate>1996.03.26</birthdate>
    </employee>
    <employee taxID="887855446">
      <name>
        <lastname>Heidrich</lastname>

```

```
        <firstname>Máté</firstname>
    </name>
    <birthdate>1996.07.24</birthdate>
</employee>
<employee taxID="865656552">
    <name>
        <lastname>Gyenes</lastname>
        <firstname>Gábor</firstname>
    </name>
    <birthdate>1996.10.15</birthdate>
</employee>
<employee taxID="811122351">
    <name>
        <lastname>Rási</lastname>
        <firstname>László</firstname>
    </name>
    <birthdate>1998.05.08</birthdate>
</employee>
</employees>

<bosses>
    <boss taxID="88754865">
        <name>
            <lastname>Sajó</lastname>
            <firstname>András</firstname>
        </name>
        <birthdate>1997.11.13</birthdate>
    </boss>
</bosses>

<develop>
    <developes taxID="887456854" projectID="1234567"/>
    <developes taxID="887855446" projectID="2132131"/>
    <developes taxID="865656552" projectID="1148596"/>
    <developes taxID="811122351" projectID="96658472"/>
</develop>

<monitor>
    <monitores taxID="88754865" projectID="1234567"/>
    <monitores taxID="88754865" projectID="2132131"/>
    <monitores taxID="88754865" projectID="1148596"/>
    <monitores taxID="88754865" projectID="96658472"/>
</monitor>
</company>
```