

Appendix A: Global Schema

```

<?xml version="1.0" encoding="UTF-8" ?>
- <GSROOT
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
- <Department>
  <department_id />
  <lname />
  <dphone />
  <doffice />
  <college />
  <chair />
</Department>
- <Faculty>
  <name />
  <ssn />
  <birthdate />
  <sex />
- <address>
  <no />
  <street />
  <city />
  <zip />
</address>
  <email />
  <faculty_id />
  <rank />
  <salary />
  <phone />
  <office />
  <works_in />
</Faculty>
- <Student>
  <name />
  <ssn />
  <birthdate />

```



```
<sex />
- <address>
  <no />
  <street />
  <city />
  <zip />
</address>
<email />
<student_id />
<class />
<phone />
<majors_in />
<minors_in />
</Student>
- <GradStudent>
  <student_id />
  - <Degree>
    <college />
    <degree />
    <year />
  </Degree>
  <advisor />
</GradStudent>
- <Course>
  <course_id />
  <cname />
  <credit />
  <description />
  <offer_by />
  <t_id />
  <ta_id />
</Course>
- <Study>
  <student_id />
  <course_id />
  <required />
  <markup />
</Study>
```

```
- <Publication>
  <isbn />
  <title />
  <author />
  <p_type />
  <p_year />
  <p_source />
  <abstract />
</Publication>
- <TeachingAssistant>
  <ta_id />
  <ta_name />
</TeachingAssistant>
</GSROOT>
```

Appendix B: Relations in Microsoft SQL Server

Department			
Number	Attribute Name	Type	Length (bytes)
1	department_id	char	10
2	department_name	char	30
3	mgr_id	char	10
4	fill	char	50
			Total = 100
Teacher			
Number	Attribute Name	Type	Length (bytes)
1	teacher_id	char	10
2	teacher_name	char	10
3	dep_id	char	10
4	rank	char	20
5	sex	char	2
6	birthdate	datetime	8
7	phone	char	10
8	office	char	10
9	email	char	20
			Total = 100
Student			
Number	Attribute Name	Type	Length (bytes)
1	student_id	char	10
2	student_name	char	10
3	sex	char	2
4	dept_id	char	10
5	class	char	10
6	birthdate	datetime	8
7	phone	char	10
8	address	char	20
9	email	char	20
			Total = 100

TeachingAssistant			
Number	Attribute Name	Type	Length (bytes)
1	ta_id	char	10
2	ta_name	char	20
3	fill	char	70
			Total = 100
Course			
Number	Attribute Name	Type	Length (bytes)
1	course_id	char	10
2	course_name	char	66
3	credit	int	4
4	t_id	char	10
5	ta_id	char	10
			Total = 100
Study			
Number	Attribute Name	Type	Length (bytes)
1	student_id	char	10
2	course_id	char	10
3	required	char	40
4	markup	char	40
			Total = 100

Appendix C: Schemas in Tamino XML Server

- **Department.TSD**

```

<?xml version="1.0" encoding="UTF-8" ?>
- <xs:schema elementFormDefault="qualified"
  xmlns:tsd="http://namespaces.softwareag.com/tamino/TaminoSchemaDefinition" xmlns:xs="http://www.w3.org/2001/XMLSchema">
- <xs:annotation>
  - <xs:appinfo>
    - <tsd:schemaInfo name="Department">
      <tsd:collection name="University" />
    - <tsd:doctype name="Department">
      - <tsd:logical>
        <tsd:content>closed</tsd:content>
      </tsd:logical>
    </tsd:doctype>
  </tsd:schemaInfo>
  </xs:appinfo>
</xs:annotation>
- <xs:element name="Deparment">
  - <xs:complexType>
    - <xs:sequence>
      <xs:element name="dname" type="xs:string" />
      <xs:element name="dphone" type="xs:string"
        maxOccurs="unbounded" />
      <xs:element name="doffice" type="xs:string" />
      <xs:element name="college" type="xs:string" />
      <xs:element name="chair" type="xs:string" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
</xs:schema>

```

- **Faculty.TSD**

```

<?xml version="1.0" encoding="UTF-8" ?>
- <xs:schema
  xmlns:tsd="http://namespaces.softwareag.com/tamino/TaminoSchemaDefinition" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  - <xs:annotation>
    - <xs:appinfo>
      - <tsd:schemaInfo name="Faculty">
        <tsd:collection name="University" />
      - <tsd:doctype name="Faculty">
        - <tsd:logical>
          <tsd:content>closed</tsd:content>
        </tsd:logical>
      </tsd:doctype>
    </tsd:schemaInfo>
  </xs:appinfo>
</xs:annotation>
- <xs:element name="Faculty">
  - <xs:complexType>
    - <xs:sequence>
      <xs:element name="name" type="xs:string" />
      <xs:element name="faculty_id" type="xs:string" />
      <xs:element name="ssn" type="xs:string" />
      <xs:element name="birthdate" type="xs:date" minOccurs="0" />
    - <xs:element name="sex">
      - <xs:simpleType>
        - <xs:restriction base="xs:string">
          <xs:enumeration value="M" />
          <xs:enumeration value="F" />
        </xs:restriction>
      </xs:simpleType>
    </xs:element>
  - <xs:element name="address" minOccurs="0"
    maxOccurs="unbounded">
    - <xs:complexType>
      - <xs:sequence>
        <xs:element name="no" type="xs:short" />
        <xs:element name="street" type="xs:string" />

```

```

        <xs:element name="city" type="xs:string" />
        <xs:element name="zip" type="xs:short" />
    </xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="rank" type="xs:string" />
<xs:element name="salary" type="xs:float" />
<xs:element name="office" type="xs:string" />
<xs:element name="phone" type="xs:string"
    maxOccurs="unbounded" />
<xs:element name="works_in" type="xs:string" />
</xs:sequence>
</xs:complexType>
</xs:element>
</xs:schema>

```

- **Student.TSD**

```

<?xml version="1.0" encoding="UTF-8" ?>
- <xs:schema
    xmlns:tsd="http://namespaces.softwareag.com/tamino/TaminoSchemaDefinition" xmlns:xs="http://www.w3.org/2001/XMLSchema">
- <xs:annotation>
    - <xs:appinfo>
        - <tsd:schemaInfo name="Student">
            <tsd:collection name="University" />
            - <tsd:doctype name="Student">
                - <tsd:logical>
                    <tsd:content>closed</tsd:content>
                </tsd:logical>
            </tsd:doctype>
        </tsd:schemaInfo>
    </xs:appinfo>
</xs:annotation>
- <xs:element name="Student">
    - <xs:complexType>
        - <xs:sequence>
            <xs:element name="name" type="xs:string" />
            <xs:element name="student_id" type="xs:string" />

```



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<xs:element name="ssn" type="xs:string" />
<xs:element name="birthdate" type="xs:date" minOccurs="0" />
- <xs:element name="sex">
  - <xs:simpleType>
    - <xs:restriction base="xs:string">
      <xs:enumeration value="M" />
      <xs:enumeration value="F" />
    </xs:restriction>
  </xs:simpleType>
</xs:element>
- <xs:element name="address" minOccurs="0"
  maxOccurs="unbounded">
  - <xs:complexType>
    - <xs:sequence>
      <xs:element name="no" type="xs:short" />
      <xs:element name="street" type="xs:string" />
      <xs:element name="city" type="xs:string" />
      <xs:element name="zip" type="xs:short" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="class" type="xs:string" />
<xs:element name="majors_in" type="xs:string" />
<xs:element name="minors_in" type="xs:string" minOccurs="0"
  maxOccurs="unbounded" />
</xs:sequence>
</xs:complexType>
</xs:element>
</xs:schema>

```

- **GradStudent.TSD**

```

<?xml version="1.0" encoding="UTF-8" ?>
- <xs:schema
  xmlns:tsd="http://namespaces.softwareag.com/tamino/TaminoSchemaDefinition" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  - <xs:annotation>
    - <xs:appinfo>
      - <tsd:schemaInfo name="GradStudent">

```

```

    <tsd:collection name="University" />
  - <tsd:doctype name="GradStudent">
    - <tsd:logical>
      <tsd:content>closed</tsd:content>
    </tsd:logical>
  </tsd:doctype>
</tsd:schemaInfo>
</xs:appinfo>
</xs:annotation>
- <xs:element name="GradStudent">
  - <xs:complexType>
    - <xs:sequence>
      <xs:element name="name" type="xs:string" />
      <xs:element name="student_id" type="xs:string" />
      <xs:element name="ssn" type="xs:string" />
      <xs:element name="birthdate" type="xs:date" minOccurs="0" />
    - <xs:element name="sex">
      - <xs:simpleType>
        - <xs:restriction base="xs:string">
          <xs:enumeration value="M" />
          <xs:enumeration value="F" />
        </xs:restriction>
      </xs:simpleType>
    </xs:element>
  - <xs:element name="address" minOccurs="0"
    maxOccurs="unbounded">
    - <xs:complexType>
      - <xs:sequence>
        <xs:element name="no" type="xs:short" />
        <xs:element name="street" type="xs:string" />
        <xs:element name="city" type="xs:string" />
        <xs:element name="zip" type="xs:short" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:element name="class" type="xs:string" />
  <xs:element name="majors_in" type="xs:string" />
  <xs:element name="minors_in" type="xs:string" minOccurs="0"

```

```

        maxOccurs="unbounded" />
    - <xs:element name="Degree">
        - <xs:complexType>
            - <xs:sequence>
                <xs:element name="college" type="xs:string" />
                <xs:element name="degree" type="xs:string" />
                <xs:element name="year" type="xs:string" />
            </xs:sequence>
        </xs:complexType>
    </xs:element>
    <xs:element name="advisor" type="xs:string" minOccurs="1"
        maxOccurs="unbounded" />
</xs:sequence>
</xs:complexType>
</xs:element>
</xs:schema>

```

- **Course.TSD**

```

<?xml version="1.0" encoding="UTF-8" ?>
- <xs:schema
    xmlns:tsd="http://namespaces.softwareag.com/tamino/TaminoSchemaDefinition" xmlns:xs="http://www.w3.org/2001/XMLSchema">
    - <xs:annotation>
        - <xs:appinfo>
            - <tsd:schemaInfo name="Course">
                <tsd:collection name="University" />
            - <tsd:doctype name="Course">
                - <tsd:logical>
                    <tsd:content>closed</tsd:content>
                </tsd:logical>
            </tsd:doctype>
        </tsd:schemaInfo>
    </xs:appinfo>
</xs:annotation>
- <xs:element name="Course">
    - <xs:complexType>
        - <xs:sequence>
            <xs:element name="cname" type="xs:string" />

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    <xs:element name="cno" type="xs:string" />
    <xs:element name="description" type="xs:string" />
    <xs:element name="offer_by" type="xs:string" />
  </xs:sequence>
</xs:complexType>
</xs:element>
</xs:schema>

```

- **Publication.TSD**

```

<?xml version="1.0" encoding="UTF-8" ?>
- <xs:schema
  xmlns:tsd="http://namespaces.softwareag.com/tamino/TaminoSchemaDefinition" xmlns:xs="http://www.w3.org/2001/XMLSchema">
- <xs:annotation>
  - <xs:appinfo>
    - <tsd:schemaInfo name="Publication">
      <tsd:collection name="University" />
    - <tsd:doctype name="Publication">
      - <tsd:logical>
        <tsd:content>closed</tsd:content>
      </tsd:logical>
    </tsd:doctype>
  </tsd:schemaInfo>
</xs:appinfo>
</xs:annotation>
- <xs:element name="Publication">
  - <xs:complexType>
    - <xs:sequence>
      <xs:element name="isbn" type="xs:string" />
      <xs:element name="title" type="xs:string" />
      <xs:element name="author" type="xs:string" minOccurs="1"
        maxOccurs="unbounded" />
      <xs:element name="p_type" type="xs:string" />
      <xs:element name="p_year" type="xs:date" />
      <xs:element name="p_source" type="xs:string" />
      <xs:element name="abstract" type="xs:string" minOccurs="0"
        maxOccurs="1" />
    </xs:sequence>

```

```
</xs:complexType>  
</xs:element>  
</xs:schema>
```