Assignment 2 Report

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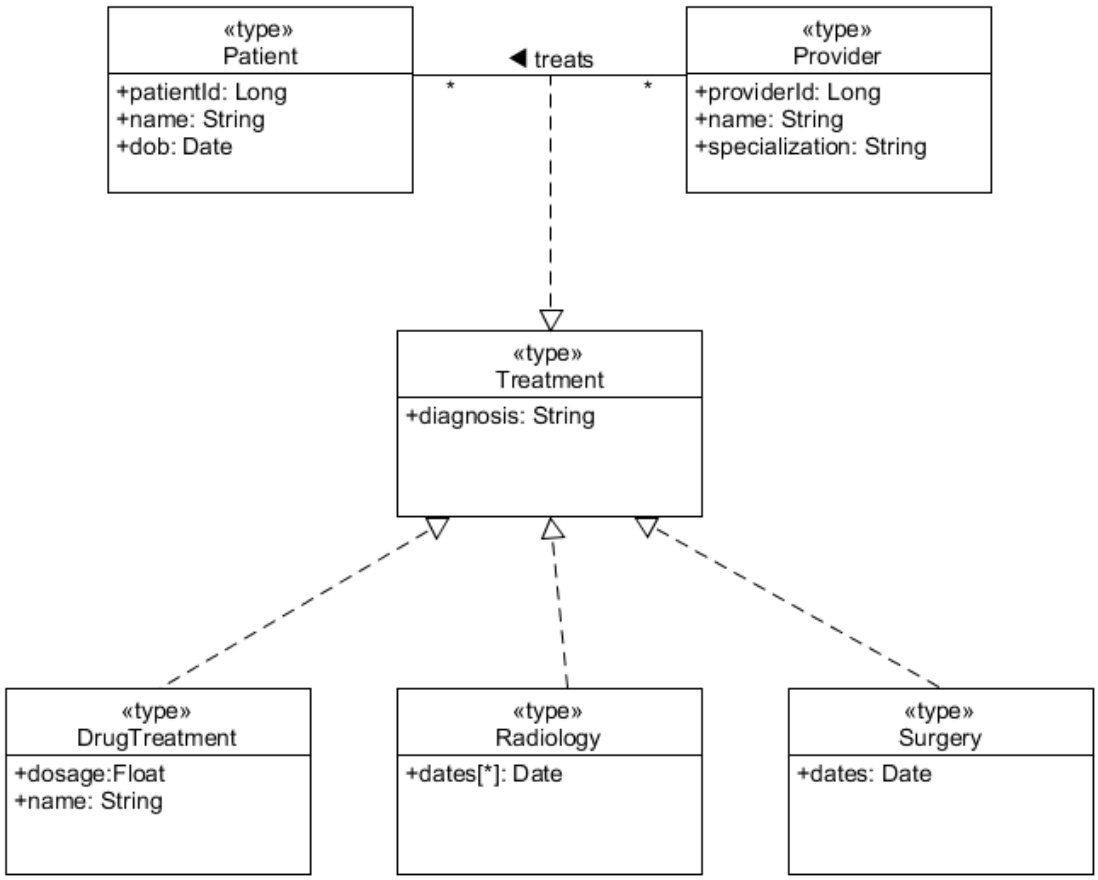
The UML diagram is at the root folder, and below is a screenshot of the diagram in case the file is corrupted.



The xsd files are written using Eclipse, and they are in the src folder of each of the three Eclipse projects.

The general structure is similar to the demonstration, while two other techniques are used to provide the variety of treatments. Below are the code segments of the xsd files.

```
<complexType name="TreatmentType" abstract="true">
    <sequence>
        <element name="provider-id" type="cids:ProviderIdType"></element>
        <element name="diagnosis" type="string"></element>
    </sequence>
</complexType>


<complexType name="DrugTreatmentType">
    <complexContent><extension base="tns:TreatmentType">
        <sequence>
            <element name="name" type="string"></element>
            <element name="dosage" type="float"></element>
        </sequence>
    </extension>
    </complexContent>
</complexType>

<complexType name="RadiologyType">
    <complexContent><extension base="tns:TreatmentType">
        <sequence>
        <element name="date" type="date" minOccurs="1" maxOccurs="unbounded"></element>
    </sequence>
    </extension>
    </complexContent>
</complexType>

<complexType name="SurgeryType">
    <complexContent><extension base="tns:TreatmentType">
        <sequence>
        <element name="date" type="date"></element>
    </sequence>
    </extension>
    </complexContent>
</complexType>
```

The type substitutability solution

```
<complexType name="TreatmentType">
    <sequence>
        <element name="provider-id" type="cids:ProviderIdType"></element>
        <element name="diagnosis" type="string"></element>
        <element ref="tns:treatment"></element>
    </sequence>
</complexType>

<complexType name="ContentType">
    <sequence>
    </sequence>
</complexType>

<element name="treatment" abstract="true"></element>
<element name="drug" substitutionGroup="tns:treatment" type="tns:DrugTreatmentType"></element>
<element name="radio" substitutionGroup="tns:treatment" type="tns:RadiologyType"></element>
<element name="surg" substitutionGroup="tns:treatment" type="tns:SurgeryType"></element>

<complexType name="DrugTreatmentType">
    <complexContent><extension base="tns:ContentType">
        <sequence>
            <element name="name" type="string"></element>
            <element name="dosage" type="float"></element>
        </sequence>
    </extension>
    </complexContent>
</complexType>

<complexType name="RadiologyType">
    <complexContent><extension base="tns:ContentType">
        <sequence>
        <element name="date" type="date" minOccurs="1" maxOccurs="unbounded"></element>
    </sequence>
    </extension>
    </complexContent>
</complexType>

<complexType name="SurgeryType">
    <complexContent><extension base="tns:TreatmentType">
        <sequence>
        <element name="date" type="date"></element>
    </sequence>
    </extension>
    </complexContent>
</complexType>
```

The element substitution solution

```
<complexType name="TreatmentType">
    <sequence>
        <element name="provider-id" type="cids:ProviderIdType"></element>
        <element name="diagnosis" type="string"></element>
        <choice>
            <element name="drug-treatment" type="tns:DrugTreatmentType"></element>
            <element name="radiology" type="tns:RadiologyType"></element>
            <element name="surgery" type="tns:SurgeryType"></element>
        </choice>
    </sequence>
</complexType>

<complexType name="DrugTreatmentType">
    <sequence>
        <element name="name" type="string"></element>
        <element name="dosage" type="float"></element>
    </sequence>
</complexType>

<complexType name="RadiologyType">
    <sequence>
        <element name="date" type="date" minOccurs="1" maxOccurs="unbounded"></element>
    </sequence>
</complexType>

<complexType name="SurgeryType">
    <sequence>
        <element name="date" type="date"></element>
    </sequence>
</complexType>
```

The choice element solution