DTD

XML DTD (Document Type Definition) is language used to define the structure behind how the data is presented within each element. It lists legal child elements and attributes of a parent. The file extension for this document is .dtd . DTD can be used internally or externally, the standalone attribute and file path must be defined.

External vs internal example:

Internal:

```
<?xml version="1.0" standalone="yes" ?>
<!DOCTYPE student [
 <!ELEMENT student (firstName,lastName,email,mobile)>
 <!ELEMENT firstName (#PCDATA)>
 <!ELEMENT lastName (#PCDATA)>
 <!ELEMENT email (#PCDATA)>
 <!ELEMENT mobile (#PCDATA)>
]>
<student>
<firstName>John</firstName>
<lastName>Smith</lastName>
<email>jsmith@gmail.com</email>
<mobile>0211223344</mobile>
</student>
```

External:

```
<?xml version="1.0" standalone="no" ?>
<!DOCTYPE student SYSTEM "student.dtd">
<student>
 <firstName>John</firstName>
 <lastName>Smith</lastName>
 <email>jsmith@gmail.com</email>
 <mobile>0211223344</mobile>
</student>
```

Syntax Structure of DTD:

```
<!ELEMENT dailyTransaction (person*)>
<!ATTLIST dailyTransaction date CDATA #REQUIRED>
<!ELEMENT person (firstName,lastName,mobile)>
<!ATTLIST person staffDbId CDATA #REQUIRED>
<!ATTLIST person operation CDATA #REQUIRED>
<!ELEMENT firstName (#PCDATA)>
<!ELEMENT lastName (#PCDATA)>
<!ELEMENT mobile (#PCDATA)>
```

Elements:
Are defined by !ELEMENT

Children:
Are defined within the brackets of the element declaration

Multiplicities:
Are defined after a child, the following symbols are used for the multiplicities.

+	One or More
*	Zero or More
?	Zero or One
|	OR option
,	The parent element must have these children in the following order

Attributes:
Are defined by !ATTLIST

Attribute Data:
Is defined after an attribute name declaration, CDATA

Attribute Requirements:
Is used to define whether or not an attribute must be required, #default can also be used when defining a default value

Element Data:
Must be defined with a # following the type of data you wish to use. Here PCDATA stands for parsed character data.