Schema Simple Data Types

- Predefined Simple Data Types
- Creating Custom Simple Data Types

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Schema Data Types

- The XML Schema Recommendation recognizes two basic categories of data types:
    - **Simple types** – Cannot have child elements or attributes
    - **Complex types** – Have child elements and/or attributes
- This chapter deals with simple types, both **predefined** and **custom**

The predefined, or built-in types are defined in the XML Schema Recommendation Part 2. This document is available at:

`http://www.w3.org/TR/xmlschema-2`

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Data Type Terminology

- **Value space** is the possible values for a given data type. For example, an **integer** can have values of whole numbers (but no fractions)
- **Lexical space** is the textual representation of a value. For example, **330** and **3.3E2** have different characters but represent the same value
- **Facets** are properties of a value space. For example, a string has a **maxlength** facet. We often use facets to create new types that are more constrained than an existing type

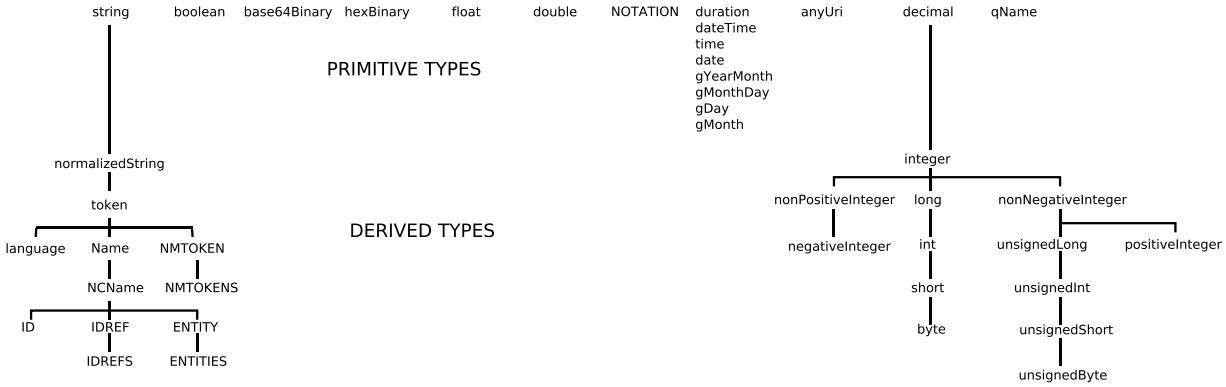
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This terminology becomes especially important when you are deriving new types.

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Predefined Simple Data Types

- The XML Schema Recommendation Part 2 defines 44 simple data types



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String Primitive Types

- These data types represent strings perhaps formatted in some fashion

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Encoded Binary Primitive Types

- These data types represent binary data – according to the XML Recommendation, all XML must consist of Unicode characters

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Numeric Primitive Data Types

- These data types represent a numeric value in some fashion

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Date/Time Primitive Data Types

- These data types represent a date, time or portion thereof

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String Derived Types

- These data types are derived directly or indirectly from **xs:string** and constrain the string characters in some fashion

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Decimal Derived Types

- These data types are derived directly or indirectly from **xs:decimal** and constrain the numeric value in some fashion

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Predefined Data Types Example

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Data Types Quiz #1

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Deriving New Simple Data Types

- XML Schema allows you to create your own simple data types, basing them on some existing type
- Typically, you use **facets** to constrain the base type in some fashion

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What Are Facets?

- A **facet** is a property or characteristic of a data type
- XML Schema recognizes two basic categories of facets:
- **Fundamental facets** – intrinsic facets
- **Constraining facets** – limit the value or lexical space of a type

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The Fundamental Facets

- These facets are shared by all data types and define the type's basic characteristics
- Fundamental facets determine the relevance of constraining facets – for example, the **minInclusive** constraining facet only makes sense if the base data type is ordered

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Constraining Facets

- You can use these, as appropriate, to derive a new type from a base type

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Using the Length Facets

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Using the Enumeration Facet

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Using the Min/Max Facets

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Introduction to Regular Expressions

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Uisng the Pattern Facet

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Data Types Quiz #2

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Chapter Summary

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