

## 5.2.21 OWL Expression Reference Set

### Purpose

An [762676003 |OWL expression type reference set|](#) associates description logic statements with [SNOMED CT concept](#) in the OWL functional syntax.

The SNOMED CT International Release contains two [reference sets](#) that follow the [762676003 |OWL expression type reference set|](#) pattern:

- The [733073007 |OWL axiom reference set \(foundation metadata concept\)|](#), in which the OWL expressions represent and axioms that form part of the definition of the [concept](#) identified by the [referencedComponentId](#).
- The [762103008 |OWL ontology reference set \(foundation metadata concept\)|](#), in which the OWL expressions represent essential information about an ontology. This information includes, namespaces, ontology URI, ontology version URI, and import statements. The [762103008 |OWL ontology reference set \(foundation metadata concept\)|](#) enables the use of prefixes in the ontology

### Data Structure

An [762676003 |OWL expression type reference set|](#) is structured as shown in the following table.

Field	Data type	Purpose	Mutable	Part of Primary Key
id	UUID	A 128 bit unsigned <a href="#">Integer</a> , uniquely identifying this <a href="#">reference set member</a> .  Different versions of a <a href="#">reference set member</a> share the same <a href="#">id</a> but have different <a href="#">effectiveTime</a> . This allows a <a href="#">reference set member</a> to be modified or made <a href="#">inactive</a> (i.e. removed from the active set) at a specified time.	NO	YES (Full /Snapshot)
effectiveTime	Time	The inclusive date or time at which this version of the identified <a href="#">reference set member</a> became the current version.  <b>Note:</b> In distribution files the effectiveTime should follow the short ISO date format ( <a href="#">YYYYMMDD</a> ) and should not include the hours, minutes, seconds or timezone indicator.  The current version of this <a href="#">reference set member</a> at time <i>T</i> is the version with the most recent <a href="#">effectiveTime</a> prior to or equal to time <i>T</i> .	YES	YES (Full)  Optional (Snapshot)
active	Boolean	The state of the identified <a href="#">reference set member</a> as at the specified <a href="#">effectiveTime</a> .  If <a href="#">active</a> = 1 (true) the <a href="#">reference set member</a> is part of the current version of the set, if <a href="#">active</a> = 0 (false) the <a href="#">reference set member</a> is not part of the current version of the set.	YES	NO
moduleId	SCT ID	Identifies the <a href="#">SNOMED CT module</a> that contains this <a href="#">reference set member</a> as at the specified <a href="#">effectiveTime</a> .  The value must be a <a href="#">subtype</a> of <a href="#">900000000000443000  Module (core metadata concept) </a> within the metadata <a href="#">hierarchy</a> .	YES	NO
refsetId	SCT ID	Identifies the <a href="#">reference set</a> to which this <a href="#">reference set member</a> belongs.  In this case, a subtype descendant of: <a href="#">762676003  OWL expression type reference set (foundation metadata concept) </a>	NO	NO
referencedComponentId	SCT ID	A reference to the <a href="#">SNOMED CT component</a> to be included in the <a href="#">reference set</a> .  The <a href="#">concept</a> to which the OWL expression applies. In the case of the <a href="#">733073007  OWL axiom reference set (foundation metadata concept) </a> , the axiom contributes to the definition of the identified <a href="#">concept</a> .	NO	NO
owlExpression	String	The text of OWL expression to attach to the <a href="#">component</a> identified by <a href="#">referencedComponentId</a> .	YES	NO

### Metadata

The following metadata supports this reference set:

[900000000000454005 |Foundation metadata concept|](#)  
[900000000000455006 |Reference set|](#)  
[762676003 |OWL expression type reference set|](#)  
[762103008 |OWL ontology reference set|](#)  
[733073007 |OWL axiom reference set|](#)  
[900000000000457003 |Reference set attribute|](#)

70699006 |Expression|  
 762677007 |OWL expression|  
 90000000000459000 |Attribute type|  
 90000000000465000 |String|  
 762678002 |OWL 2 language syntax|

## Descriptor Template and Examples

The reference set example tables on this page have been revised as follows to aid clarity and understanding:

- The first four columns which are present in all release files are not shown. The omitted columns ( id, effectiveTime, active) are used in the same way in all referenced sets to support identification, versioning and packaging. They do not directly affect the specific features of a particular reference set or reference set type.
- Reference set columns that contain SNOMED CT identifiers are expanded to show details of the concept or description referenced by that identifier. In some cases, the term is shown in the same column using the expression syntax, in other cases an additional column with a name suffix '\_term' has been added. In the standard reference set files only the identifier is present in the column and there is no added column for the term. When using reference sets, the term and other details of the component are looked up from the relevant component release files.

## Descriptor Template

The table below shows the descriptors that define the structure of the 762676003 |OWL expression type reference set| pattern and examples of the descriptors for specific reference sets that follow this pattern.

**Table 4-3: Descriptor templates for OWL expression reference sets**

refsetId	referencedComponentId	attributeDescription	attributeType	attributeOrder
90000000000456007  Reference set descriptor	762676003  OWL expression type reference set	449608002  Referenced component	90000000000461009  Concept type component	0
90000000000456007  Reference set descriptor	762676003  OWL expression type reference set	762677007  OWL expression	762678002  OWL 2 language syntax	1
90000000000456007  Reference set descriptor	762103008  OWL ontology reference set	449608002  Referenced component	90000000000461009  Concept type component	0
90000000000456007  Reference set descriptor	762103008  OWL ontology reference set	762677007  OWL expression	762678002  OWL 2 language syntax	1
90000000000456007  Reference set descriptor	733073007  OWL axiom reference set	449608002  Referenced component	90000000000461009  Concept type component	0
90000000000456007  Reference set descriptor	733073007  OWL axiom reference set	762677007  OWL expression	762678002  OWL 2 language syntax	1

## OWL Ontology Reference Set Example

**Table 4-3: OWL ontology reference set example**

moduleId	refsetId	referencedComponentId	owlExpression
9000000000012004  SNOMED CT model component module	762103008  OWL ontology reference set	734146004  OWL ontology namespace	Prefix(:=<http://snomed.info/id/>)
9000000000012004  SNOMED CT model component module	762103008  OWL ontology reference set	734146004  OWL ontology namespace	Prefix(owl:=<http://www.w3.org/2002/07/owl#>)
9000000000012004  SNOMED CT model component module	762103008  OWL ontology reference set	734146004  OWL ontology namespace	Prefix(rdf:=<http://www.w3.org/1999/02/22-rdf-syntax-ns#>)
9000000000012004  SNOMED CT model component module	762103008  OWL ontology reference set	734146004  OWL ontology namespace	Prefix(xml:=<http://www.w3.org/XML/1998/namespace>)
9000000000012004  SNOMED CT model component module	762103008  OWL ontology reference set	734146004  OWL ontology namespace	Prefix(xsd:=<http://www.w3.org/2001/XMLSchema#>)
9000000000012004  SNOMED CT model component module	762103008  OWL ontology reference set	734146004  OWL ontology namespace	Prefix(rdfs:=<http://www.w3.org/2000/01/rdf-schema#>)
9000000000012004  SNOMED CT model component module	762103008  OWL ontology reference set	734147008  OWL ontology header	Ontology(<http://snomed.info/sct/90000000000207008>)

## OWL Axiom Reference Set Example

Table 4-3: OWL axiom reference set example

moduleId	refsetId	referenced Component Id	owlExpression	Explanatory Notes
900000000000207008  SNOMED CT core module	733073007  OWL axiom reference set	404684003  Clinical finding (finding)	SubClassOf(:404684003 :138875005)	<p>Example of SubClassOf, which is equivalent to an <b>Is a</b> relationship between most <b>SNOMED CT concepts</b>.</p> <div style="border: 1px solid orange; padding: 5px; margin: 5px 0;">  A different OWL expression is used to represent <b>Is a</b> relationships between <b>attributes</b>. This shown in the row below.         </div> <ul style="list-style-type: none"> <li>404684003  Clinical finding (finding) </li> <li>138875005  SNOMED CT Concept (SNOMED RT+CTV3) </li> </ul>
900000000000012004  SNOMED CT model component module	733073007  OWL axiom reference set	774081006  Proper part of (attribute)	SubObjectPropertyOf(:123005000 :733928003)	<p>Example of SubObjectPropertyOf, which is equivalent to an <b>Is a</b> relationship between <b>attributes</b>.</p> <ul style="list-style-type: none"> <li>774081006  Proper part of (attribute) </li> <li>733928003  All or part of (attribute) </li> </ul>
900000000000207008  SNOMED CT core module	733073007  OWL axiom reference set	90708001  Kidney disease (disorder)	EquivalentClasses(:90708001 ObjectIntersectionOf(:64572001 ObjectSomeValuesFrom(:609096000 ObjectSomeValuesFrom(:363698007 :64033007))))	<p>Example of EquivalentClasses, which is equivalent to stating that a <b>concept</b> is sufficiently defined by relationships a set of defining relationships.</p> <ul style="list-style-type: none"> <li>90708001  Kidney disease (disorder) </li> <li>64572001  Disease </li> <li>609096000  Role group (attribute) </li> <li>363698007  Finding site (attribute) </li> <li>64033007  Kidney structure (body structure) </li> </ul>
900000000000207008  SNOMED CT core module	733073007  OWL axiom reference set	126516008  Neoplasm of skin of upper limb (disorder)	EquivalentClasses(:126516008 ObjectIntersectionOf(:64572001 ObjectSomeValuesFrom(:609096000 ObjectIntersectionOf (ObjectSomeValuesFrom(:116676008 :108369006) ObjectSomeValuesFrom(:363698007 :371311000))))	<p>Example of a role group with a conjunction of two relationships as its value.</p> <ul style="list-style-type: none"> <li>126516008  Neoplasm of skin of upper limb (disorder) </li> <li>64572001  Disease </li> <li>609096000  Role group (attribute) </li> <li>116676008  Associated morphology (attribute) </li> <li>108369006  Neoplasm (morphologic abnormality) </li> <li>363698007  Finding site (attribute) </li> <li>371311000  Skin structure of upper limb (body structure) </li> </ul>
900000000000012004  SNOMED CT model component module	733073007  OWL axiom reference set	774081006  Proper part of (attribute)	TransitiveObjectProperty(:774081006)	<p>Example of a transitive object property.</p> <ul style="list-style-type: none"> <li>774081006  Proper part of (attribute) </li> </ul>

900000000000012004   SNOMED CT model component module	733073007   OWL axiom reference set	733930001   Regional part of (attribute)	SubObjectPropertyOf(ObjectPropertyChain(:127489000 :738774007) : 127489000))	<p>Example of a property chain.</p> <ul style="list-style-type: none"> <li>• 127489000  Has active ingredient (attribute) </li> <li>• 738774007  Is modification of (attribute) </li> </ul>
900000000000012004   SNOMED CT model component module	733073007   OWL axiom reference set	733929006   General concept inclusion axiom	EquivalentClasses(ObjectIntersectionOf(:244066003 ObjectSomeValuesFrom(:733930001 ObjectIntersectionOf(:244066003 ObjectSomeValuesFrom(:733931002 :302548004)))) ObjectIntersectionOf(:244066003 ObjectSomeValuesFrom(:733931002 ObjectSomeValuesFrom(:733930001 :302548004))))	<p>Example of a general concept inclusion (GCI).</p> <ul style="list-style-type: none"> <li>• 733929006  General concept inclusion axiom </li> <li>• 244066003  Entire skin region (body structure) </li> <li>• 733930001  Regional part of (attribute) </li> <li>• 244066003  Entire skin region (body structure) </li> <li>• 733931002  Constitutional part of (attribute) </li> <li>• 302548004  Entire head (body structure) </li> </ul>

## Related Links

- [SNOMED CT OWL Guide](#)
- [SNOMED CT Logic Profile Specification](#)

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