

Key to Expression Syntax

| | |
|------------------|---|
| {curly braces} | An item to be substituted |
| <angle brackets> | Path to an element of given data type |
| <i>Italics</i> | An optional item |
| <i>Italics</i> | An optional statement |
| ellipsis (...) | Indicates a pattern that can be repeated |
| vertical bar () | Indicates a choice of items or data types |
| bold | Default value |

Notations and Special Values

| | | | |
|---------------------|---|---|--------------|
| code | # <code>{code}</code> | | |
| Coding | {CodeSystem name id url}/{ <i>version string</i> #{code} " <i>display string</i> "} | | |
| Cardinality | <i>min..max</i> | <i>min..</i> | <i>..max</i> |
| Quantity with units | {decimal or integer} {UCUM code}' | | |
| Comments | // single line comment | /* multi-line comment */ | |
| Flags | MS // must support SU // summary, Σ ?! // modifier | TU // trial use N // normative D // draft | |
| Binding strengths | required extensible preferred example | | |
| Triple quote string | """ {string markdown} """ | | |
| References | Reference({Resource name id url}) Canonical({name id}) | | |

Paths

| | |
|---------------|---|
| Array element | <array element>[0-based index] |
| Reference | <Reference>[{Resource Profile name id url}] |
| Extension | <Extension>[{extension name id URL}] |
| Sliced array | <array element>[slice-name] <i>[reslice-name]</i> |
| Caret paths | ^<element of StructureDefinition> <element in Profile> ^<element in corresponding ElementDefinition> |

Slicing Rubric

* <array-path> ^slicing.discriminator.type = {#pattern|#value|#type|#profile|#exists}
 * <array-path> ^slicing.discriminator.path = {FHIRPath string}
 * <array-path> ^slicing.rules = {#open|#closed|#openAtEnd}
 * <array-path> ^slicing.ordered = true|false
 * <array-path> ^slicing.description = {string}

Item Keywords

| | |
|---------------------------|--|
| Alias | Alias: {alias name} = {uri urn:oid} |
| Extension | Extension: {name} Parent: {Extension name id url} Id: {id} Title: {string} Description: {string or markdown} |
| Instance | Instance: {id} InstanceOf: {Resource Profile name id url} Usage: {#example #definition #inline} Title: {string} Description: {string or markdown} |
| Invariant | Invariant: {id} Severity: {#error #warning} Description: {string markdown} Expression: {FHIRPath string} XPath: {XPath expression string} |
| Mapping | Mapping: {id} Source: {Profile name id} Target: {Target specification uri} Id: {Target specification id} Title: {Target description string} Description: {string} |
| Profile | Profile: {name} Parent: {Resource Profile name id url} Id: {id} Title: {string} Description: {string or markdown} |
| RuleSet | RuleSet: {name} |
| Value Set and Code System | ValueSet: {name} or CodeSystem: {name} Id: {id} Title: {string} Description: {string or markdown} |

Code System Rules

Define local code * {code} "*display string*" "*definition string*"

Get More Information



FSH Specification



FSH Chat



SUSHI Github



Project Page

Rules

| | |
|----------------------------------|--|
| Assignment | * <element> = {value} (<i>exactly</i>) |
| Binding | * <bindable> from {ValueSet name id url} (<i>strength</i>) |
| Cardinality | * <element> { <i>cardinality</i> } |
| Contains (inline extensions) | * <Extension> contains {name1} {cardinality1} { <i>flags1</i> } and {name2} {cardinality2} { <i>flags2</i> } and {name3} {cardinality3} { <i>flags3</i> } ... |
| Contains (standalone extensions) | * <Extension> contains {Extension1 name id url} named {name1} {cardinality1} { <i>flags1</i> } and {Extension2 name id url} named {name2} {cardinality2} { <i>flags2</i> } and {Extension3 name id url} named {name3} {cardinality3} { <i>flags3</i> } ... |
| Contains (slicing) | * <array> contains {name1} {cardinality1} { <i>flags1</i> } and {name2} {cardinality2} { <i>flags2</i> } and {name3} {cardinality3} { <i>flags3</i> } ... |
| Flag | * <element1> and <element2> and <element3> ... {flag1} {flag2} {flag3}... |
| Insert | * insert {RuleSet name} |
| Mapping | * <element> -> "{map string}" " <i>comment string</i> " # <i>{mime-type code}</i> |
| Obeys | * <element> obeys {Invariant1 id} and {Invariant2 id} ... |
| Type | * <element> only {datatype1} or {datatype2} or {datatype3} ... * <element> only Reference({ResourceType1 name id url} or {ResourceType2 name id url} or {ResourceType3 name id url} ...) |

Value Set Rules

| | |
|---|---|
| Include single code | * <i>include</i> {Coding} |
| Exclude single code | * <i>exclude</i> {Coding} |
| Include entire code system | * <i>include</i> codes from system {CodeSystem name id url} |
| Include from value set | * <i>include</i> codes from valueset {ValueSet name id url} |
| Exclude from value set | * <i>exclude</i> codes from valueset {ValueSet name id url} |
| Filter syntax: {property} {filter-operator} {value} | |
| Include codes with filtering | * <i>include</i> codes from system {CodeSystem name id url} where {filter1} and {filter2} and ... |
| Exclude codes with filtering | * <i>exclude</i> codes from system {CodeSystem name id url} where {filter1} and {filter2} and ... |



FHIR Shorthand 1.0 Quick Reference: Examples



| Notations and Special Values | |
|------------------------------|---|
| code | #confirmed |
| Coding and CodeableConcept | http://snomed.info/sct#363346000 "Malignant neoplastic disease (disorder)" ICD10CM#C004 |
| Cardinality | 0..1 1..1 2..* (two-sided) ..1 1.. 2.. (one-sided) |
| Comments | // end of line or single line /* This comment continues over multiple lines */ |
| References | Reference(Patient) Reference(Patient or Practitioner) Canonical(MyPatient) |

| Paths | |
|---|---|
| Nested element | stage.assessment |
| Array element | name[0].given[1] |
| Choice [x] element | valueQuantity, valueReference |
| Reference choices | performer[Organization] |
| Extensions | extension[terminationReason] extension[http://hl7.org/fhir/ StructureDefinition/location-distance] (Instance only; otherwise use slice name) |
| Sliced arrays | component[DiastolicPressure] |
| Resliced arrays | component[RespiratoryScore][OneMinute] |
| StructureDefinition escape (caret syntax) | ^abstract component[VariationCode] ^short |

| Slicing Rubric | |
|--|--|
| * component ^slicing.discriminator.type = #pattern | |
| * component ^slicing.discriminator.path = "code" | |
| * component ^slicing.rules = #open | |
| * component ^slicing.ordered = false | |
| * component ^slicing.description = "Slice on component.code" | |

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| Item | Keywords |
|-------------|---|
| Alias | Alias: UCUM = http://unitsofmeasure.org Alias: race = urn:oid:2.16.840.1.113883.6.238 Alias: \$GenderIdentity = http://hl7.org/fhir/ StructureDefinition/patient-genderIdentity |
| Code system | CodeSystem: AJCC_FairUse Title: "AJCC Fair Use" Description: "A small subset of AJCC staging codes used for IG examples." |
| Extension | Extension: TerminationReason Id: mcode-termination-reason Title: "Termination Reason" Description: "Reason for stopping a treatment." |
| Instance | Instance: mCODETumorMarkerExample01 InstanceOf: TumorMarker Usage: Example Description: "Epidermal growth factor example." |
| Invariant | Invariant: us-core-8 Description: "Patient.name.given or Patient.name.family or both SHALL be present" Expression: "family.exists() or given.exists()" Severity: #error XPath: "f:given or f:family" |
| Mapping | Mapping: USCorePatientToArgonaut Source: USCorePatient Target: "http://unknown.org/Argonaut-DQ-DSTU2" Id: argonaut-dq-dstu2 Title: "Argonaut DSTU2" |
| Profile | Profile: CancerPatient Parent: \$USCorePatient Id: mcode-cancer-patient Title: "Cancer Patient" Description: "A patient diagnosed with cancer" |
| Rule set | RuleSet: USCoreTerminologyRuleSet |
| Value set | ValueSet: AnatomicalOrientationVS Title: "Anatomical Orientation Value Set" Description: "Values for anatomical orientation." |

| Code System Rule | |
|-----------------------|--|
| Local code definition | * #NED "No Evidence of Disease" "No physical evidence of disease on exam or imaging tests." |

| Rules | |
|---------------------------------|---|
| Assignment | * status = #arrived * code = SCT#18165001 "Jaundice (finding)" * onsetDateTime = "2019-04-02" * subject = Reference(EveAnyperson) * valueQuantity = 2.5 'mm' * valueQuantity = UCUM#mm "millimeters" |
| Binding | * bodySite from CancerBodyLocationVS (preferred) * valueCodeableConcept from http://loinc.org/vs/LL1971-2 (required) * valueQuantity from LengthUnitsVS (extensible) |
| Cardinality | * severity 0..0 * subject 1.. |
| Contains (inline extension) | * extension contains treatmentIntent 0..1 MS and terminationReason 0..* MS |
| Contains (standalone extension) | * extension contains \$GenderIdentity named genderIdentity 0..1 MS and http://hl7.org/fhir/StructureDefinition/patient- disability named disability 0..1 MS |
| Contains (slicing) | * component contains GeneStudied 0..* MS and VariationCode 0..* and GenomicDNAChange 0..1 |
| Flag | * deceased[x] MS ?! SU * reasonCode and extension[terminationReason] MS |
| Insert | * insert USCoreTerminologyRuleSet |
| Mapping | * -> "Patient" * identifier.system -> "Patient.identifier.system" |
| Obeys | * obeys us-core-6 and us-core-9 * name obeys us-core-8 |
| Type | * value[x] only CodeableConcept * effective[x] only dateTime or Period * subject only Reference(CancerPatient) * assriter only Reference(Practitioner or Patient) |

| Value Set Rules | |
|---|---|
| Single code | * SCT#54102005 "G1 grade (finding)" |
| Exclude single code | * exclude SCT#12619005 |
| All codes in system | * include codes from system HGVS |
| Filter Rules for SNOMED-CT (assumes code system aliased as 'SCT') | |
| Subsumption | * include codes from system SCT where concept is- a #123037004 "Body Structure" |
| Exclude subsumption | * exclude codes from system SCT where concept is-a #128462008 "Secondary malignant neoplastic disease (disorder)" |