# FHIR Shorthand Quick Reference: Syntax

## Paths

<table>
<thead>
<tr>
<th>Nested element</th>
</tr>
</thead>
<tbody>
<tr>
<td>element.subelement.subelement</td>
</tr>
<tr>
<td>Array element</td>
</tr>
<tr>
<td>array-element[index] (optional)</td>
</tr>
<tr>
<td>Choice [x] element</td>
</tr>
<tr>
<td>valueDataType</td>
</tr>
<tr>
<td>Reference choices</td>
</tr>
<tr>
<td>reference-element[Resource or Profile]</td>
</tr>
<tr>
<td>Extensions</td>
</tr>
<tr>
<td>extension[extension-name or id or url]</td>
</tr>
<tr>
<td>Sliced arrays</td>
</tr>
<tr>
<td>slice-path[slice-name]</td>
</tr>
<tr>
<td>slice-path[slice-name][reslice-name]</td>
</tr>
<tr>
<td>StructureDefinition</td>
</tr>
<tr>
<td>*structure-definition-path</td>
</tr>
<tr>
<td>Escape</td>
</tr>
<tr>
<td>*element-path *element-definition-path</td>
</tr>
</tbody>
</table>

## Notations and Special Values

- **code**: `#code "optional-display-text"
- **Coding and CodeableConcept**: `system #code "optional-display-text"`
- **Cardinality**: `min_max (min integer, max int or *)`
- **Comments**: `// single line /* multi-line */`
- **Flags**: `MS (must support, 5)` `SU (summary, 2)` `? (modifier)`
- **Binding strengths**: `required, extensible, preferred, example`
- **Multi-line string**: `*** string or markdown with new line ***`

## SUSHI and IG Publisher

- **File extension**: `.fsh`
- **Install/Update SUSHI**: `$ npm install -g fsh-sushi`
- **Run SUSHI**: `$ sushi input-folder -o output-folder`
- **Update IG Publisher**: `$ _updatePublisher (Windows)` `$ _updatePublisher.sh (Mac)`
- **Run IG Publisher**: `$ _genonce (Windows)` `$ _genonce.sh (Mac)`

## Item Keywords

| Alias                                           | Alias: alias-name = url or oid   |
| Profile                                        | Profile: name                   |
| Instance                                       | Instance: id                   |
| Extension                                      | Extension: name                 |
| Value set                                      | ValueSet: name                  |
| Code system                                    | CodeSystem: name                |
| **Invariant**                                  | Invariant: key                  |
| **Mixin**                                      |Mixin: name | Parent: profile or resource name |

## Rules

- **Fixed Value**: `* path = value`
- **Binding**: `* path from value set (binding strength)`
- **Cardinality**: `* path min_max`
- **Data type[x] restriction**: `* path only type`
- **Reference restriction**: `* path only Reference(Resource or Profile)`
- **Flags**: `* path flag1 flag2`
- **Extensions**: `* extension-path contains extension-reference1 card1 flags1 and extension-reference2 card2 flags2 ...`
- **Slices**: `* array-element-path contains slice-name1 card1 flags1 and slice-name2 card2 flags2 ...`
- **Invariants**: `* obey invariant` `* path obeys invariant`

## Value Set Rules

- **Include single code**: `* system #code "display"`
- **Exclude single code**: `* exclude system #code "display"`
- **Include entire code system**: `* codes from system codesystem`
- **Include from value set**: `* codes from value set valueset`
- **Exclude from value set**: `* exclude codes from value set valueset`

## Operators

- **Filter syntax**: `property operator string-code-boolean-or-regex-value`
- **Include with filtering**: `* codes from system codesystem where filter1 and filter2 and ...`
- **Exclude with filtering**: `* exclude codes from system codesystem where filter`  

## Slicing Rubric

- `* array-path`slicing.discriminator.type = #pattern | #value`
- `* array-path`slicing.discriminator.path = FHIRPath string`
- `* array-path`slicing.rules = open | closed | openAtEnd (optional)`
- `* array-path`slicing.ordered = true | false (optional)`
- `* array-path`slicing.description = string (optional)`

## More Information

- **FHIR Shorthand Zulip channel**: (#shorthand)
- **FHIR Shorthand Documentation and Tutorial**: http://build.fhir.org/g/HL7/fhir-shorthand
- **FHIR Shorthand Documentation Issue Reports**: https://github.com/HL7/fhir-shorthand/issues
- **SUSHI Code Repository**: https://github.com/FHIR/sushi
- **SUSHI Issue Reports**: https://github.com/FHIR/sushi/issues
- **HL7 Confluence Site**: https://confluence.hl7.org/display/FHIR/FHIR+Shorthand
- **Conference Calls**: See http://hl7.org/concalls for details

© 2020 The MITRE Corporation. All rights reserved. Approved for Public Release 19-3439. Distribution Unlimited. HL7®, FHIR® and the flame design mark are the registered trademarks of Health Level Seven International.
Planned features not yet implemented in SUSHI

Notations and Special Values

code #confirmed
Coding and CodeableConcept http://snomed.info/sct#363346000 "Malignant neoplastic disease (disorder)"
ICD10CM#C004
Cardinality 0..0 1..1 1..*
Comments // end of line or single line
/* This comment continues over multiple lines */

SUSHI and IG Publisher

FSH file MyFile.fsh
Install/Update SUSHI $ npm install -g fsh-sushi
Run SUSHI (executed in FSH directory; output to ./_build) $ sushi
Update IG Publisher (in output directory) $ ./_updatePublisher.sh (Windows)
$ ./_updatePublisher.sh (Mac)
Run IG Publisher (in output directory) $ _genonce (Windows)
$ _genonce.sh (Mac)

More Information

FHIRE Shorthand Zulip channel (#shorthand) https://chat.fhir.org/#narrow/stream/215610-shorthand
FHIRE Shorthand Documentation and Tutorial http://build.fhir.org/ig/HL7/fhir-shorthand
FHIRE Shorthand Documentation Issue Reports https://github.com/HL7/fhir-shorthand/issues
SUSHI Code Repository https://github.com/FHIR/sushi
SUSHI Issue Reports https://github.com/FHIR/sushi/issues
HL7 Confluence Site https://confluence.hl7.org/display/FHIR/FHIR+Shorthand
Conference Calls See http://hl7.org/concalls for details

© 2020 The MITRE Corporation. All rights reserved. Approved for Public Release 19-3439. Distribution Unlimited. HL7®, FHIR® and the flame design mark are the registered trademarks of Health Level Seven International.

© 2020 The MITRE Corporation. All rights reserved. Approved for Public Release 19-3439. Distribution Unlimited. HL7®, FHIR® and the flame design mark are the registered trademarks of Health Level Seven International.