CPS-376 Spike: Investigate introducing ANTRL to resolve CpsPaths

🔖 **CPS-376** - Spike: Investigate introducing ANTRL to resolve CpsPaths `CLOSED`

Reference Material

- https://github.com/antlr/antlr4/blob/master/doc/getting-started.md
- https://pragprog.com/titles/tpantlr2/the-definitive-antlr-4-reference/#resources
- https://alexecollins.com/antlr4-and-maven-tutorial/
- https://tomassetti.me/antlr-mega-tutorial/

IntelliJ Ant plugin

- https://github.com/antlr/intellij-plugin-v4 useful for testing and troubleshooting while developing grammar

PoC Code
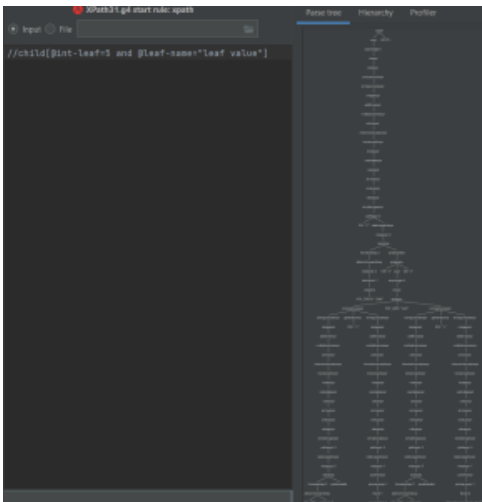
- https://gerrit.onap.org/r/c/cps/+/121503 (production ready!)

Findings

- Antlr4 can replace regex with less and more readable code
- Replacement of regex for `CpsPathQuery` fully replaced by fully compatible object generated using Antlr4 this commit: https://gerrit.onap.org/r/c/cps/+/121503
- Needed to add explicit error rule for handling unexpected tokens (otherwise Antlr would ignore them): `ErrorCharacter : . ;`
- Current CPS code using regex is inconsistent and needless limited for single leave condition
- Current CPS code was lacking @ token for attribute names in some test cases (fixed in https://gerrit.onap.org/r/c/cps/+/121503)
- `CpsPathQuerySpec` did not cover all necessary possibilities (as used in some DB integration tests) This has now been addressed
- `CpsDataPersistenceQueryDataNodeSpec` contains some grammar tests that should be (are already) in `CpsPathQuerySpec`
- IntelliJ plugin very useful for quick testing and troubleshooting of grammar
- Not sure of best way to refresh generated code (in IntelliJ) `mvn clean install` in cps-path-parser seems the surest way

Xpath31 grammar

The grammar defined in predefined xpath grammer: https://github.com/antlr/grammars-v4/tree/master/xpath/xpath31

To-Do

- Check and Improve error handling
- Re-use CpsPath Exception (wrap IllegalState exception)
- Clean up, simplify rules and remove redundant legacy limitations
  - Better names (check name-casing conventions Antrl)

- Consider using predefined xpath grammer: https://github.com/antlr/grammars-v4/tree/master/xpath/xpath31
  - Even just study it or extract small parts to get correct definition of valid container-names etc.