

# XQuery to SQL Translation module for Shrex

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## Progress report on November 19<sup>th</sup>:

- I looked at the grammar for XQuery on the W3c website – they do not have a reference implementation available. They do have a parser that creates an abstract syntax tree (AST) representation of XQuery queries, but it does not evaluate the queries – so this is not useful for our purpose.
- I then looked for an XQuery parser – that actually can evaluate the expressions – there are two implementations that satisfy this criteria – Saxon, exist Native XML Database. The documentation for the parser is scarce in both of them, Saxon faring a little better.
- I decided to delve deeper into Saxon to look in depth at the parsing and construction of AST for XQuery expressions. Having looked at both of them, I settled on using Saxon.
- As of now, I have an overall understanding of the Saxon XQuery parser – to write an XQuery -> SQL translator for Shrex, this is a plausible path to explore.
  - Read the XQuery expression.
  - Use the Saxon parser to parse the query and obtain the AST.
  - Modify the nodes of the AST such that wherever there is an absolute path expression, we evaluate that path using the query translation already present in Shrex (ie. XPath -> SQL) and replace the XPathContext for that node in the AST with an in-memory representation of the XML returned by Shrex.
  - Evaluate this modified AST using Saxon and display the results.

## Work going forward:

- I need to evaluate how feasible it is to modify an AST generated by the Saxon parser. The Java code is around 4000 lines long and fairly intricate.
- If this method does not work, explore alternative options for writing a translation module.