GSoC 2020 : Improve FHIR Search

<table>
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Abstract

FHIR is an emerging standard for healthcare interoperability. While OpenMRS has been an early adopter of the FHIR standard, there is still work to do to get our FHIR implementation working properly. This project focuses on improving our implementation of FHIR's search capabilities. FHIR defines a very detailed API for searching that is fundamental to providing the correct data to any front-end applications. Currently, the OpenMRS FHIR module supports some basic search functionality, but it lacks capabilities to search across multiple properties or support advanced search operations such as _include. This project to extend this module to include support for these more complex search operations.

Project Champions

- Ian Bacher

Skills Needed

- Good Java skills
- Familiarity with SQL
- Bonus points for familiarity with Hibernate and especially the Criteria API
- Bonus points for knowledge of how to write efficient queries and how to optimize queries

Objectives

- Implement the FHIR search API across core resources (Patient, Encounter, Observation, Practitioner, Person, etc.), including the ability to sort results and to chain queries
- Implement proper paging using the HAPI FHIR IPagingProvider and the Hibernate Criteria API
- Implement many of the default parameters for all resources, including _id, _lastUpdated and _content
- Implement some advanced features, including _include, _elements, _summary, _list and _count
- Implement support for Lucene for the versions of OpenMRS where the Lucene index is available for a given resource

Extra Credit

- Implement the ability to search using the _filter special syntax
- Implement the ability to search via GraphQL

Extra Extra Credit

- Integrate FHIR search with ElasticSearch

Getting Started

- Read up on FHIR. Good introductions can be found in this post, in this slide show, or this video
- Read up on the HAPI FHIR library which we use for FHIR support, especially the part on search
- Read up on the Hibernate Criteria API
- Look through the FHIR module source code, especially the search implementation for Observation