SPRINT 10 FINAL SUBMISSION

Term: Fall 2021

Group G: Dynamic FHIR IG

BASIC PROJECT REQUIREMENTS OVERVIEW:

- Research – We thoroughly investigate the problem and interview members of Team Inferno to understand their requirements. We identified the missing attributes of the dataset generated by industry existing tools and provided a solution to make it satisfy the client's demand.
- Functionality – The final app work fulfilled the design proposed by the team and it fully met the user's basic requirements.
- Usability – A user could easily start using the app by reading the user manual. The architect diagram clearly shows how the app works and it's easy to understand.
- Design – The user interface is improved by Swagger UI. It allows users to interact with the API. The interaction with the API using the Swagger UI Framework gives clear insight into how the API responds to parameters.
- Innovation – Our team developed and implemented new ideas that aren't already in common use. We can hardly find an app that can generate an example dataset of a specific FHIR IG.
- Final Report – The final video clearly explains what we determined to be the problem, our solution, and how we implemented it.

SECTION I: TEAM DETAILS

Team Members:

- Nikesh - nghimire3@gatech.edu
- Vineeth - vsekharan3@gatech.edu
- Yinan - yyang601@gatech.edu

TA Mentor:

- Eric - ericpan64@gatech.edu

Industry/Course Advisor:

- Bender, John (OS/ONC) - John.Bender@hhs.gov

Quick Description of Application or Solution:

FHIR Implementations Guides are key to interoperable health information. Standardizing data representation and terminology is key to preserving semantic interoperability. FHIR IGs are crafted by groups of stakeholders and domain experts who must adapt their models to meet growing challenges. Example data is a key part of an FHIR IG, but the example data provided often is not comprehensive or becomes out of date. This project will explore dynamically creating example data based on an FHIR IG.

Team Member Roles & Responsibilities:

- Nikesh – Design and Development
- Vineeth – Project management and Testing
- Yinan – Development and Testing

Final Gantt Chart:

Task Name	Duration	Start	Predecessors	Finish	% Complete	Status	Comments
Sprint #1: Requirement Mapping	14d	09/06/21		09/20/21	100%	Complete	
Product Backlog							
User Story Creation and task breakdown							
Sprint #2: Feature Design	10d	10/08/21		10/18/21	100%	Complete	
Understand the data to be analyzed							
Design the reports, dashboard and chart features							
Sprint #3: Development	7d	10/18/21		10/25/21	100%	Complete	
Identified data flow							
Confirmed assumptions							
Created initial docker with api and postgresql							
Sprint #4: Development	7d	10/25/21		11/01/21	100%	Complete	
Explore handling core data type							
Added methods to find type of the IG passed							
Methods to handle flags sent by users							
Sprint #5: Development	7d	11/01/21		11/08/21	100%	Complete	
Added Synthea docker to application							
Add all the profiles for us-core IG							
Mapped default values for primitive datatypes							
Added method to retrieve all attributes from IG							
Sprint #6 : Development	7d	11/08/21		11/15/21	100%	Complete	
Added method to generate values for Primitive datatypes							
Integrated with Swagger UI							
Created API and skeleton methods for each controller							
Added method to fetch all missing attributes from Synthea							
Sprint #7 : Development and Testing	7d	11/15/21		11/22/21	100%	Complete	
Added profiles for ips and qi-core							
Feature to generate data for complex datatype							
Tested the app on different implementation guides							
Functionality to dynamically handle implementation guides							
Sprint #8 : Development and Testing	7d	11/22/21		11/29/21	100%	Complete	
Identified issue with logic while getting data from Synthea and fixed it							
Modified data structure to use multimap to store data read from Synthea							
Added class to generate examples by using all previously created methods							
Sprint #9 : Development and Testing	7d	11/29/21		12/06/21	100%	Complete	
Added flags support to example generator method							
Fixed logic in the method for missingAttributesForSynthea							
Added API to render example data							
Refactored code to remove multiple reads of profiles							
Updated API to support flags from users							
Sprint #10 : Testing, Sprint Review and Demo	7d	12/06/21		12/13/21	100%	Complete	
Final testing							
Documentations							
Demo							

Figure 1—Final Gantt Chart.

SECTION II – APPLICATION OR SOLUTION

Github Repository:

Final Git Commit: fc123b508528f5f380a20d8a65288f06512e5f3f

Github Link: https://github.gatech.edu/nghimire3/FHIR-Example

Branch: master

Application or Solution Details:

App Name: Dynamic FHIR IG Examples

App URL: Docker

App Description: This app allows the user to choose a supported implementation Guide with some additional options, then it will generate the corresponding example dataset that can be browsed in the browser or directly be downloaded.

SECTION III – PROJECT PRESENTATION

Clickable Link to Presentation Video:

https://drive.google.com/file/d/1g88wcWoMYb-uTtabIjmsVt5twpzYTzpp/view?usp=sharing

Slides are attached at the end of the pdf.

SECTION IV – PROJECT DOCUMENTATION

Final Gantt Chart:

https://github.gatech.edu/nghimire3/FHIR-Example/blob/master/Final%20Delivery/Final%20Gantt%20Chart%20-%20Team%20G.xlsx

Application Manual:

https://github.gatech.edu/nghimire3/FHIR-Example/blob/master/Final%20Delivery/manual%20-%20Team%20G.pdf

Documentation Directory:

https://github.gatech.edu/nghimire3/FHIR-Example/tree/master/Final%20Delivery/Documentation

Design Document:

https://github.gatech.edu/nghimire3/FHIR-Example/blob/master/Final%20Delivery/Architect%20Diagram%20-%20Team%20G.png