FHIR Intermediate Course

MODULE 4: SMART ON FHIR & CDS HOOKS

Assignments

Language: English

V1.0

Course Overview

Module I: Implementation Guides

Most relevant FHIR Implementation Guides: Argonaut & IPS
Argonaut Development and Roadmap
Argonaut Data Query IG: Scope, Use Cases
Argonaut Provider Directory IG: Scope, Use Cases
IPS FHIR IG: Scope, Use Cases

Module II: FHIR Clients

General Guidelines for FHIR Clients
FHIR Clients in JavaScript / C# / Java [1 - Elective]

Module III: FHIR Facades

Why use FHIR Server Facade: your system on FHIR
Specific FHIR Servers (FHIR Facade)
Facade Use Case / Scenarios
Facade Architecture / Patterns
Where to put the FHIR Facade
System Integration / Integration Engine / Bus / Messaging
Facade in Java / Node.JS [1 - Elective]

Module IV: FHIR Applications

Smart-On-FHIR
CDS-Hooks
Integration with Smart-On-FHIR / CDS-Hooks [1 - Elective]

Assignments For Module 4

Goals and Options

In this week you will create some parts of a new smart app in the “Build your Own” section and review some code , in the “Code Review” section.

Assignments

01	Create a new launch.html	20 points
02	Load Patient Immunizations	50 points
03	Fix the card	20 points
04	Change the FHIR Server	10 points

Maximum grade is 100 points
You need to obtain at least 60 points in order to complete this unit.

1. Assignment 01 : Create a new launch.html

BUILD YOUR OWN

You need to create a new module for the main app.
The application must be able to launch a SMART-ON-FHIR application.
Context Info: current user and patient info
Who will be using it: the practitioner
Launch Type: the app will be launched from the EHR
FHIR Resources Needed (read only): demographics, vital signs, immunizations, problems and procedures
Your task: create a new **launch.html** file that includes the correct SMART-ON-FHIR scope

2. Assignment 02: Load Patient Immunizations

BUILD YOUR OWN

Every time the athlete is treated, the system check that all immunizations according to their age have been applied. This control is carried out by calling a Clinical Decision Support System.

Create a new function loadPatientImmunizations, similar to loadPatientPrescriptions from the course project that retrieves all patient immunizations from the MySportTeam FHIR Server. Remember to include all mandatory and must-support elements from US CORE FHIR R4.
Note: The original function is the next page of this document, just in case you cannot find it in the JavaScript project.

This is the original function, just in case you cannot find it

```
/* Load the prescriptions that the patient already has */
     App.prototype.loadPatientPrescriptions = function(reload) {
      app.client.request('MedicationRequest?subject='+
app.patientId+'&_count=200').then(function(prescriptions){
         var medicationRequests = prescriptions.entry;
         if (medicationRequests !== undefined) {
            if(reload){ /*If I am reloading the table, before I delete the content */
               $('#prescriptions-table tbody').empty();
            }

            for(var i=0; i < medicationRequests.length; i++){
               var medicationRequest = medicationRequests[i].resource;
               var date = app.getdate(new Date(medicationRequest.authoredOn));
               var medicationReference = medicationRequest.medicationReference.reference;
               var instructions = medicationRequest.dosageInstruction[0];
               var doseQuantity = instructions.doseAndRate[0].doseQuantity.value + 'mg';
               var doseFrequency = instructions.timing.repeat.frequency;
               var dose = doseQuantity + ' - ' + doseFrequency + ' times per day';
               var status = medicationRequest.status;
               app.attachRowInPrescriptionsTable(date, medicationReference, dose, status);
            }
            $("#prescriptions-table").show();
         }
      });
     };
```

3. Assignment 03: Fix the card

CODE REVIEW

The app has a bug that could not be detected by our team and it fails in the applications that consume the service.

Your task: Find the bug and fix it

```
1.  if(missingImmunization) {
2.                      card.put("summary","Missing immunization");
3.                      card.put("detail", "The patient should have been immunized");
4.                      card.put("indicator","warning");
5.                      JSONArray sources = new JSONArray();
6.                      JSONObject source = new JSONObject();
7.                      source.put("label","Maximum Dose Calculation");
8.                      source.put("url", "https://www.augie.edu/sites/default/files/u51/HEALTH%
    20REQUIREMENTS.docx_.pdf");
9.                      sources.put(source);
10.                     card.put("sources", sources);
11.                     JSONArray suggestions = new JSONArray();
12.
13.                     JSONObject calendar = new JSONObject();
14.                     calendar.put("label","Review the calendar for + theImmunization + " for
    the patient");
15.                     calendar.put("uuid", UUID.randomUUID());
16.                     suggestions.put(calendar);
17.
18.                     cardsArray.put(card);
19.                     break;
20.             }
```

4. Assignment 04: Change the FHIR Server

BUILD YOUR OWN

What should be the correct code if instead of using a local FHIR server you use another?
Change the code assuming your new FHIR server is:
http://ec2-34-219-109-229.us-west-2.compute.amazonaws.com:4004/hapi-fhir-jpaserver/fhir

Your task: modify the **ehr.js** file and includes that server.