

Saint Bernard Emergency Transfer Summary

Problem Domain

Saint Bernard is a minimalistic electronic medical record (EMR) app for remote nursing and emergency facilities. The app combines local storage with cloud synchronization strategies to allow working offline, during intermittent communication and online periods. When a patient needs to be transferred, the system allows to send patient records electronically if possible, and printed case summaries in several forms.

Saint Bernard is trying to sign a new client owning 5 Ski Camps in Europe. This client, as a precondition to signing the deal, requested to implement an emergency summary to transfer injured skiers from their medical outposts to hospitals. This summary deviates from standard forms, being closer to a narrated summary written by the medical staff. Here an example the client gave to Saint Bernard sales team:

Emergency Transfer Summary (Form 34L-D)				
Transferring Facility				
Name				
Blue Alps Ski Camp				
Patient Information				
First Name	Middle Name	Last Name	Medical Record (MR)	
Thomas		Schudel	30997	
Summary				
<p>This 43 years old male was admitted to Blue Alps Ski Camp emergency facility on February 18, 2018, at 5:07 pm due to a fracture of upper end of the right tibia (S82.101). The observed symptoms on admission were severe pain, swelling and limited bending of the joint. No soft tissues were damaged.</p> <p>Upon asking about known allergies, the patient disclosed hypersensitivity to aspirin or NSAIDs and gluten intolerance. Upon asking about chronic conditions, the patient disclosed Asthma (J45). The patient was administered with Acetaminophen 500mg PO q4hr to relieve pain, and Naproxen 500mg PO q6hr to relieve swelling.</p> <p>The staff performed an exploratory radiography on February 18, 2018, at 5:15 pm, revealing a closed fracture in the right tibia (S82.101A). Our team proceeded to temporary bracing the right leg to restrict the motion.</p>				

Challenge

As a Saint Bernard software developer, you have the mission to create a simple prototype that closes the deal. This prototype should render an emergency summary template, parsing and interpolating different placeholders from persisted data. The prototype must be compatible with the Saint Bernard app, a Ruby on Rails web application using SQLite for data storage and Bootstrap 3 for the UI.

It is important you deliver legible, clean, and extensible code that other developers can integrate to satisfy more requirements. You must also provide enough test coverage to guaranty a reliable demo to the client, helping other developers to refactor and improve your code. Feel free to ask any question regardless of requirements and preconditions.

Below what is known so far:

User Story

As an emergency staff, and after selecting a patient from a list, I want to view the corresponding emergency summary with the option to print.

Form Template

* Note: Blue font represents persisted data.

Emergency Transfer Summary (Form 34L-D)	
Transferring Facility	
Name	
{{facility.name}}	
Patient Information	

First Name	Middle Name	Last Name	Medical Record (MR)	
{{patient.first_name}}	{{patient.middle_name}}	{{patient.last_name}}	{{patient.mr}}	
<p>Summary</p> <p>This {{patient.age}} years old {{patient.gender}} was admitted to {{facility.name}} on {{patient.admission.date}} at {{patient.admission.time}} due to {{patient.admission.diagnoses > described_code to_sentence}}. The observed symptoms on admission were {{patient.admission.symptoms > description to_sentence}}. {{patient.admission.observations > description to_sentence}}.</p> <p>Upon asking about known allergies, the patient disclosed {{patient.allergies > description to_sentence}}. Upon asking about chronic conditions, the patient disclosed {{patient.chronic_conditions > described_code to_sentence}}. The patient was administered with {{patient.medications > name, dosage, route, frequency, "to", necessity space_join to_sentence}}.</p> <p>The staff performed {{patient.diagnostic_procedures > description, "on", moment.date, "at", moment.time space_join to_sentence}}, revealing {{patient.diagnoses > described_code to_sentence}}. Our team proceeded to {{patient.treatments > description, "to", necessity space_join to_sentence}}.</p>				

Persisted Data Structures

- Facility: Model
 - name: String
- Patient: Model
 - first_name: String
 - middle_name: String
 - last_name: String
 - mr: String
 - dob: DateTime
 - gender: Gender
 - admission: Admission
 - allergies: [Allergy]
 - chronic_conditions: [Diagnosis]
 - medications: [MedicationOrder]
 - diagnostic_procedures: [DiagnosticProcedure]
 - diagnoses: [Diagnosis]
 - treatments: [Treatment]
- Gender: Enumeration
 - male
 - female
 - other
- Admission: Model
 - moment: DateTime
 - diagnoses: [Diagnosis]
 - symptoms:[Symptom]
 - observations: [Observation]
- Diagnosis: Model
 - coding_system: String
 - code: String
 - description: Text
- Symptom: Model
 - description: Text
- Observation: Model
 - description: Text
 - moment: DateTime
- Allergy: Model
 - description: Text
- MedicationOrder: Model
 - name: String
 - unit: MassUnit
 - dosage: Decimal
 - route: MedicationRoute
 - frequency: OrderFrequency
 - necessity: Text
- MassUnit: Enumeration
 - mg
- MedicationRoute: Enumeration
 - PO
 - IM
 - SC
- OrderFrequency: Model
 - value: String
 - unit: FrequencyUnit
- FrequencyUnit: Enumeration
 - hour

- DiagnosticProcedure: Model
 - description: Text
 - moment: DateTime
- Treatment: Model
 - description: Text
 - necessity: Text