

Antenatal Care

Iteration Four



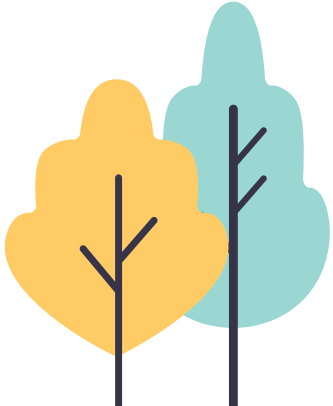


Team Composition

Cameron Rothwell
Team 1

Dejan Tisma & Joshua Turner
Team 2

Joe Small
Team Leader





Presentation Overview

01

LOOKING BACK

What were our plans for this iteration?

02

GOALS & RISKS

What do we hope to accomplish in this iteration, and what are the major risks?

03

STRATEGY

How do we intend to accomplish our goals and mitigate the risk?

04

RESULTS

What's changed?

05

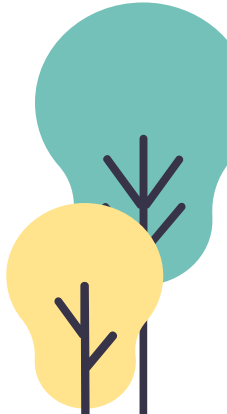
ITERATION SUMMARY

Did we meet goals and their associated time estimates?

06

LOOKING FORWARD

What are our plans for Iteration 5?



LOOKING BACK



DISPLAY VISITS

Display a list of a patient's previous visits



REFACTORING

Refactor existing code to follow design patterns and eliminate inefficiencies



BUG & FEATURE FIXES

Implement better error checking & provide a more intuitive GUI



PREP FOR THE CLOUD

Wrap up project in preparation for transition to GCP

ITERATION GOALS



**PREPARE FOR
TRANSITION
TO
THE CLOUD**



**REFACTOR
EXISTING CODE**



**ADD NEW
FEATURES**

GUI

ERROR CHECKING

Inform the user where and how they made an error

AESTHETICS

Make the GUI more intuitive to the user

MODEL

DESIGN PATTERNS

Implement a design pattern to reduce coupling in Controller structure

CLASSES

Refactor classes to reduce redundant data storage

**USE
CASE**

PREVIOUS VISITS

A user wishes to list the stored visits for a particular patient, and inspect the measurements taken at a particular visit associated with that patient.

**USE
CASE**

MONTHLY REPORT

A user wishes to aggregate data from a particular month's visits and prepare it for inclusion with a Monthly Midwives Report.

ITERATION RISKS



RISKS



MAJOR CODE REFACTOR



PATIENT SEARCH

DESIGN PATTERNS ARE:

- a relatively new concept to the team
- possibly time consuming to implement with existing code

THERE'S THE POSSIBILITY THAT:

- there are lots of loose ends from previous iterations
- limited access to resources may inhibit productivity

NO UNIQUE IDENTIFIER FOR PATIENTS

- Current code relies on search returning a single object
- No field which can guarantee returning a single object

OUR GUI DOES NOT SUPPORT MULTIPLE FIELD SEARCH

STRATEGY



RISK MITIGATION STRATEGY



MAJOR CODE REFACTOR



PATIENT SEARCH

DESIGN PATTERNS

- IDENTIFY CODE WHICH ALREADY RESEMBLES A KNOWN DESIGN PATTERN, BUT COULD BENEFIT FROM IMPROVEMENT

PRODUCTIVITY

- INSPECT CODE AS A TEAM EARLY IN THE ITERATION, IDENTIFYING SMALL BUT NECESSARY CODE CHANGES
- ASSIGN LARGER WORKLOAD TO PROGRAMMING PAIR

UNIQUE IDENTIFIER

- COORDINATE WITH CONSULTING REGISTER TO CONFIRM WHETHER A UNIQUE IDENTIFIER FOR A PATIENT EXISTS

GUI

- CONFIRM WITH CONSULTING REGISTER WHAT FUNCTIONALITY WE COULD EXPECT FROM THEM
- CONSIDER WHAT FUNCTIONALITY WE WILL ADD IN ITERATION 5

STRATEGY



**GOAL
STRATEGY**



**REFACTOR
EXISTING CODE**



**ADD NEW
FEATURES**

GUI

ERROR CHECKING

TEAM 2, TIME ESTIMATE: 1 HOUR

AESTHETICS

TEAM 2, TIME ESTIMATE: 3 HOURS

MODEL

IMPLEMENT FACADE PATTERN (CONTROLLERS)

TEAM 2, TIME ESTIMATE: 4 HOURS

CLASS REFACTORING

BOTH TEAMS, TIME ESTIMATE: 2 HOURS

**PREVIOUS
VISITS**

DISPLAY A LIST OF VISITS TO USER

TEAM 2, TIME ESTIMATE: 5 HOURS

ALLOW USER TO INSPECT PREVIOUS VISIT

TEAM 2, TIME ESTIMATE: 5 HOURS

**MONTHLY
REPORT**

AGGREGATE DATA

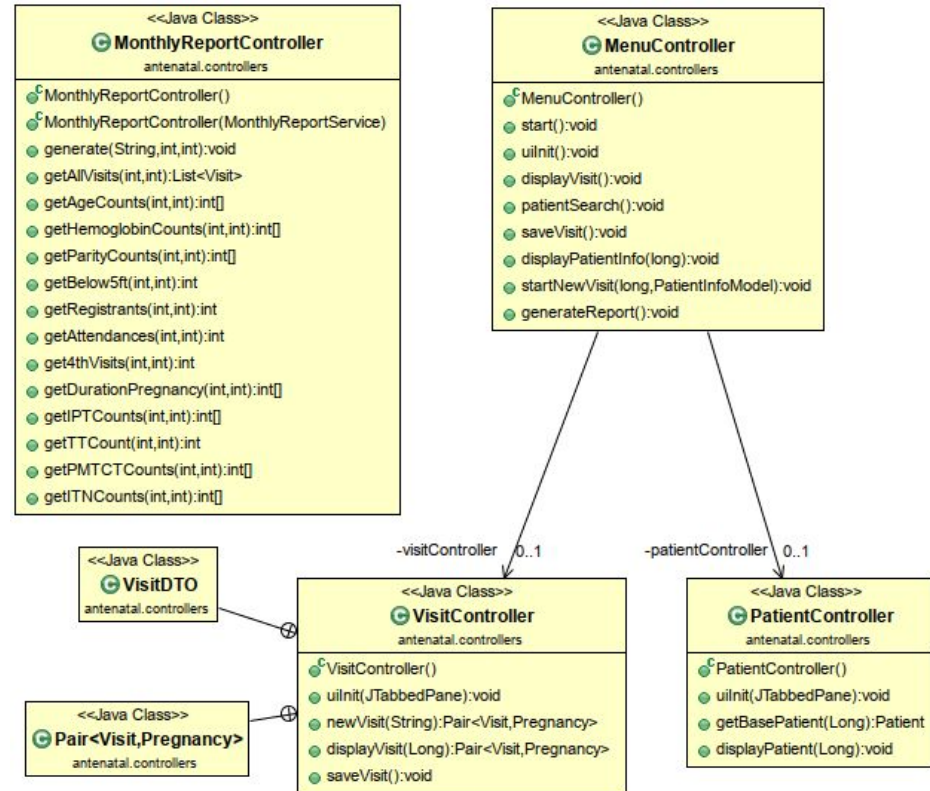
TEAM 1, TIME ESTIMATE: 1 HOUR

DISPLAY AGGREGATED DATA TO USER

TEAM 1, TIME ESTIMATE 4 HOURS

RESULTS: CONTROLLER REFACTOR

- Three “subcontrollers” used to perform actions on behalf of the user
- MenuController** takes in input from View and delegates actions to the appropriate subcontroller
- MenuController** has single **VisitController** and **PatientController** for entire lifecycle, but a new **MonthlyReportController** object is created for each call to `generateReport()`
- Subcontrollers also call on one another to perform certain actions and are tightly coupled
- Would benefit from refactor into a **Facade** or **Mediator** pattern

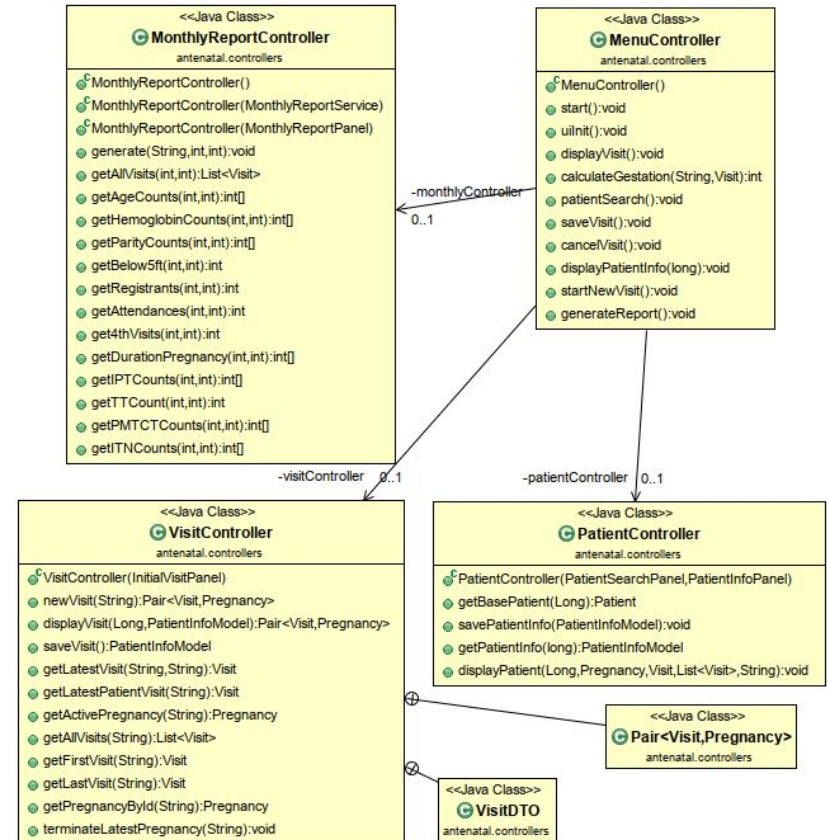


EXISTING CONTROLLER STRUCTURE

RESULTS: CONTROLLER REFACTOR

FACADE PATTERN

- The **Intent** is to wrap a complex subsystem into a simpler unified interface, which makes the subsystem easier to use
- MenuController** takes the role of the facade, taking input from the View and delegating operations to the subsystem.
- Similar to existing code, but now the subcontroller objects exist for entire lifecycle of the MenuController.
- Flavors of the **Mitigator** pattern?
 - New functionality provided by MenuController. Not just a simple facade.
 - Subsystem still loosely coupled with varying independent interaction.



RESULTS: GUI REDESIGN

Antenatal Care Team

Home Patient Information Visit Information

Patient Information 4888301 Previous Visits [New Visit](#)

Aboah, Kwaw Female 45
Accra, Church Mole-Dagbon
Last Visit: 2020-03-29

Parity	Height (cm)	Weight (kg)
0	120.0	80.0

Blood Group A **Venereal Disease Lab** Non-Reactive

Sickling TT
Negative AS ☐ First Dose

PMCTC ☐ Second Dose

☒ Pre-test Counseling ☐ Post-test Counseling ☐ 1st Dose
☐ Positive ☐ Anti-retroviral Drugs Given ☐ Detected

IPT
☐ First Dose ☐ Second Dose ☐ Third Dose

PATIENT SCREEN

Antenatal Care Team

Home Patient Information Visit Information

New Visit 2020-04-13 Patient Number 4888301

Est'd Date of Delivery 2020-02-20 Enter Remark
Height (cm) 120.0 Enter Complaint
Weight (kg)
Hemoglobin Registration (g/L)
Hemoglobin 36 Weeks (gm/dl) 0
Gestation (weeks) 3
Fundal Height (cm)
Blood Pressure /
Blood Group A

☐ Referred ☐ Blood Film
Parity

☐ ITN in Use ☐ Venereal Disease Lab

Sickling
☐ Positive Type AS

PMCTC
☐ Positive ☐ Pre-Test Counseling
☐ Post-Test Counseling ☐ Anti-Retroviral

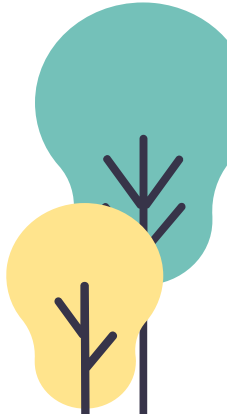
TT Booster **IPT**
Given Protected 1 2 3

Save Failed [Submit Info](#)

ERROR CHECKING

DEMONSTRATION

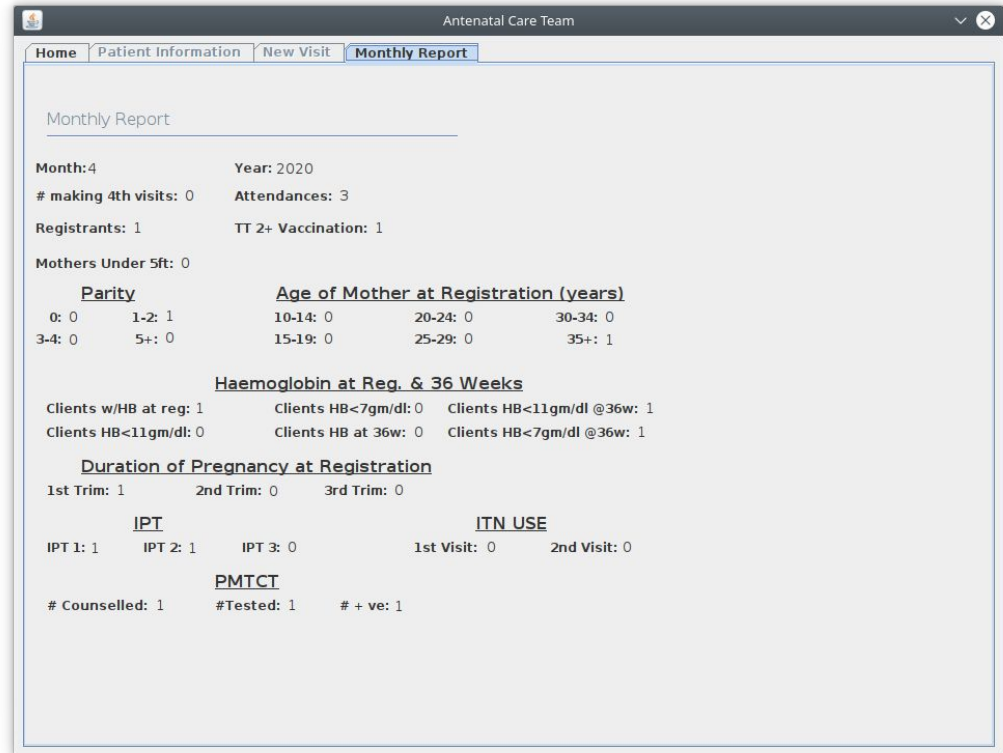
- **Display Visits** Use Case
- New, intuitive GUI
- Error checking & verbose messages



RESULTS: MONTHLY REPORT

Previously saved aggregated data to disk in either CSV or JSON format.

Option to save data to disk still functional, but now the report is also displayed to the user in the GUI's **Monthly Report** tab



The screenshot shows a web application window titled "Antenatal Care Team". It has four tabs: "Home", "Patient Information", "New Visit", and "Monthly Report", with the last one being active. The "Monthly Report" section displays the following data:

Month: 4 Year: 2020
making 4th visits: 0 Attendances: 3
Registrants: 1 TT 2+ Vaccination: 1
Mothers Under 5ft: 0

Parity		Age of Mother at Registration (years)		
0: 0	1-2: 1	10-14: 0	20-24: 0	30-34: 0
3-4: 0	5+: 0	15-19: 0	25-29: 0	35+: 1

Haemoglobin at Reg. & 36 Weeks

Clients w/HB at reg: 1	Clients HB<7gm/dl: 0	Clients HB<11gm/dl @36w: 1
Clients HB<11gm/dl: 0	Clients HB at 36w: 0	Clients HB<7gm/dl @36w: 1

Duration of Pregnancy at Registration

1st Trim: 1	2nd Trim: 0	3rd Trim: 0
-------------	-------------	-------------

IPT ITN USE

IPT 1: 1	IPT 2: 1	IPT 3: 0	1st Visit: 0	2nd Visit: 0
----------	----------	----------	--------------	--------------

PMTCT

# Counselling: 1	# Tested: 1	# + ve: 1
------------------	-------------	-----------




ITERATION SUMMARY: GOALS MET



REFACTOR EXISTING CODE

Teams successfully refactored code to meet **GUI goals** of adding **error checking** and **improving aesthetics**, and the **Model goals** of implementing a **design pattern** and **refactoring** the **domain classes**.



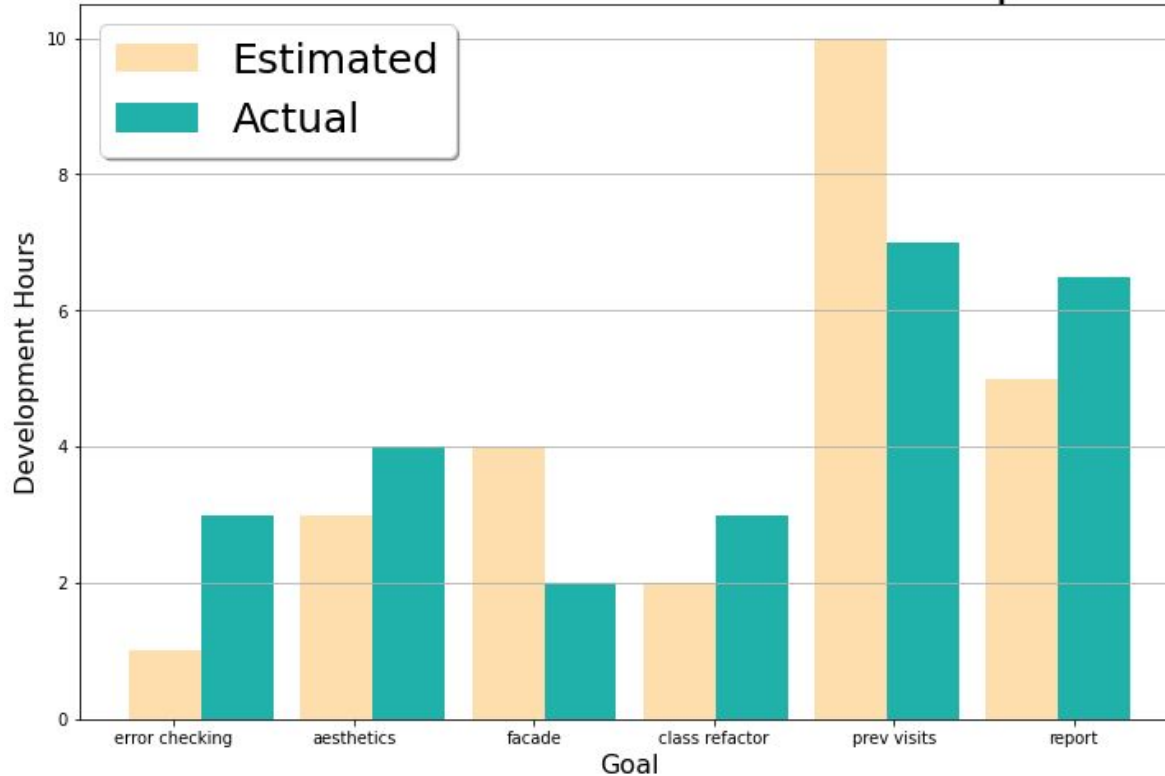
Both new features were implemented, adding functionality to **complete** the **Previous Visits** & **Monthly Report** use cases.



ADD NEW FEATURES

ITERATION SUMMARY: TIME PROJECTIONS

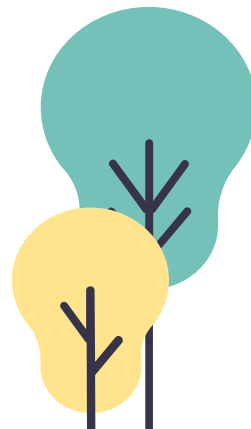
Time Estimates and Actual Time Spent



TOTALS

ESTIMATE: 25 hrs

ACTUAL: 25.5 hrs



LOOKING FORWARD



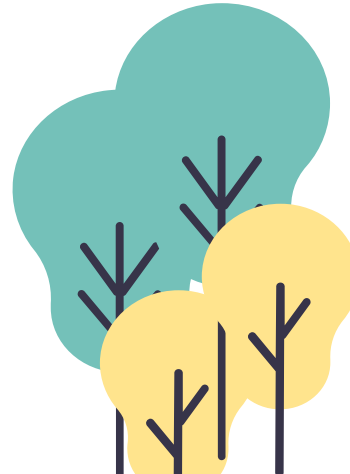
TO THE CLOUD

The team is comfortable with the functionality, design, and implementation of the application and ready to focus on transitioning to Google Cloud Platform and Postgres.

We plan to proceed in Iteration 5 based on feedback to the work done on this iteration.



STAKEHOLDER FEEDBACK



THE END

QUESTIONS?

