CSIS 612 - Final Project

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Overview

- Topics
- The Project
  - Idea, Inspiration, UI, and Implementation
- Demo
- Lessons Learned
- Future Work

Topic

- Memory Hierarchy
  - Caching - 2 levels
- Data Level Parallelism
- Thread Level Parallelism

The Project - Idea

Build a simulation “game” that can be used as an instructional tool to represent the chosen topics.

- Users can step through the simulation to observe all working parts
- Personal Goal: Something with a medical context

The Project - Inspiration

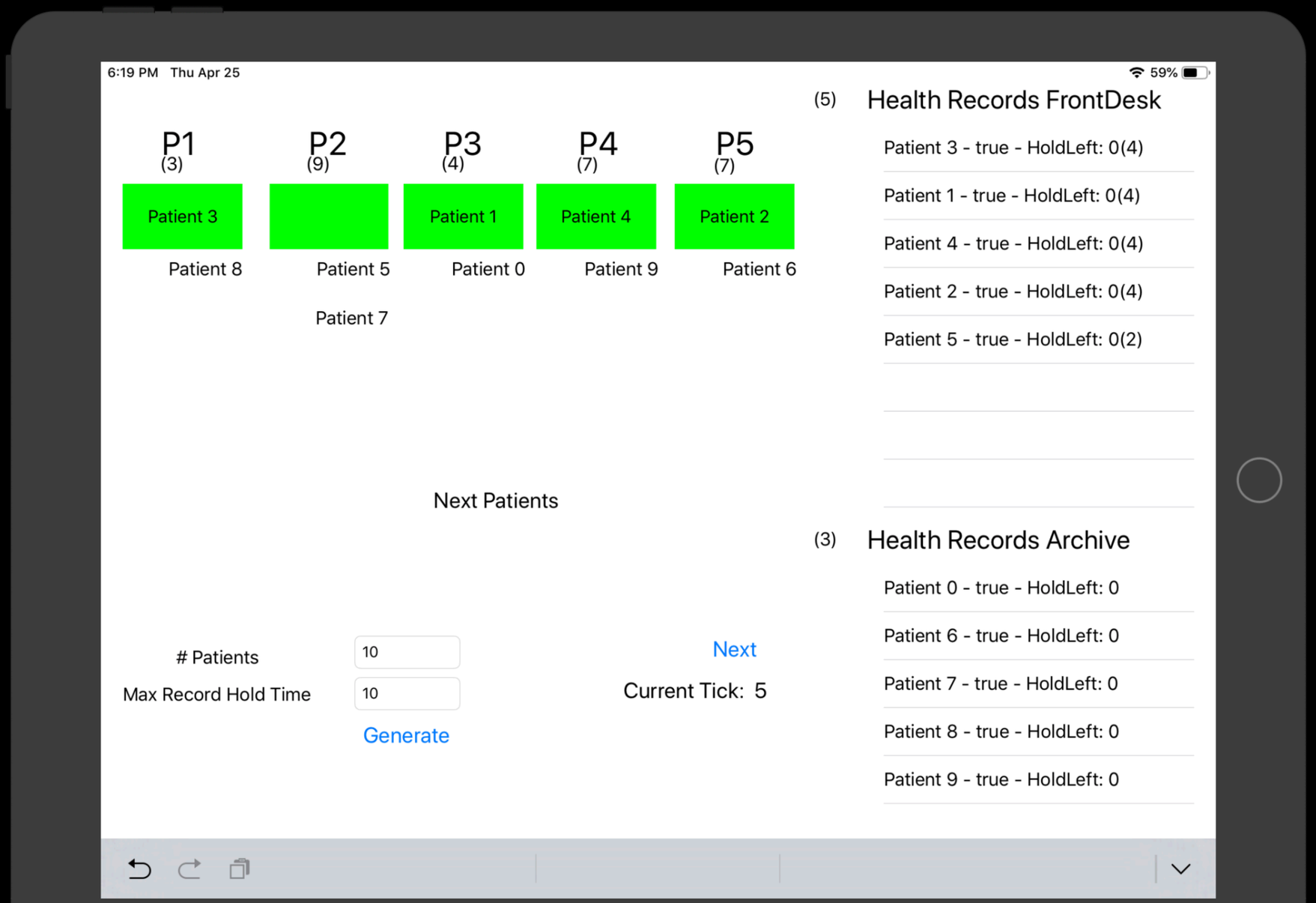
- Task Management games
  - Diner Dash
  - Farmville

http://cdn.ghstatic.com/images/screens/2010/1/3.jpg

https://articles-images.sftcdn.net/wp-content/uploads/sites/3/2019/01/FarmVille.jpg

The Project - UI

VERY simple



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59%

P1 (3)	P2 (9)	P3 (4)	P4 (7)	P5 (7)
Patient 3		Patient 1	Patient 4	Patient 2
Patient 8	Patient 5	Patient 0	Patient 9	Patient 6
	Patient 7			

Next Patients

Patients 10

Max Record Hold Time 10

Generate

Next

Current Tick: 5

(5) Health Records FrontDesk

- Patient 3 - true - HoldLeft: 0(4)
- Patient 1 - true - HoldLeft: 0(4)
- Patient 4 - true - HoldLeft: 0(4)
- Patient 2 - true - HoldLeft: 0(4)
- Patient 5 - true - HoldLeft: 0(2)

(3) Health Records Archive

- Patient 0 - true - HoldLeft: 0
- Patient 6 - true - HoldLeft: 0
- Patient 7 - true - HoldLeft: 0
- Patient 8 - true - HoldLeft: 0
- Patient 9 - true - HoldLeft: 0

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P1 (3)	P2 (9)	P3 (4)	P4 (7)	P5 (7)
Patient 3		Patient 1	Patient 4	Patient 2

Procedure Name

Record Hold Time

Procedure “Rooms”

Patient 8 Patient 5 Patient 0 Patient 9 Patient 6

Patient 7

Next Patients

(5) Health Records FrontDesk

Patient 1 - true - HoldLeft: 0(4)

Patient 4 - true - HoldLeft: 0(4)

Patient 2 - true - HoldLeft: 0(4)

Patient 5 - true - HoldLeft: 0(2)

(3) Health Records Archive

Patient 0 - true - HoldLeft: 0

Patient 6 - true - HoldLeft: 0

Patient 7 - true - HoldLeft: 0

Patient 8 - true - HoldLeft: 0

Patient 9 - true - HoldLeft: 0

Patients 10

Max Record Hold Time 10

Generate

Next

Current Tick: 5

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59%

P1 (3)

P2 (9)

P3 (4)

P4 (7)

P5 (7)

Patient 3

Patient 1

Patient 4

Patient 2

Patient 8

Patient 5

Patient 0

Patient 9

Patient 6

Patient 7

Next Patients

(5) Health Records FrontDesk

Patient 3 - true - HoldLeft: 0(4)

Patient 1 - true - HoldLeft: 0(4)

Patient 4 - true - HoldLeft: 0(4)

Patient 2 - true - HoldLeft: 0(4)

Patient 5 - true - HoldLeft: 0(2)

Patient Queues (Tasks)

Patients in Waiting

Patient 0 - true - HoldLeft: 0

Patient 6 - true - HoldLeft: 0

Patient 7 - true - HoldLeft: 0

Patient 8 - true - HoldLeft: 0

Patient 9 - true - HoldLeft: 0

Patients 10

Max Record Hold Time 10

Generate

Next

Current Tick: 5

6:19 PM Thu Apr 25

59%

P1 (3)

P2 (9)

P3 (4)

P4 (7)

P5 (7)

Patient 3

Patient 1

Patient 4

Patient 2

Patient 8

Patient 5

Patient 0

Patient 9

Patient 6

Patient 7

(5) Health Records FrontDesk

Patient 3 - true - HoldLeft: 0(4)

Patient 1 - true - HoldLeft: 0(4)

Patient 4 - true - HoldLeft: 0(4)

Patient 2 - true - HoldLeft: 0(4)

Patient 5 - true - HoldLeft: 0(2)

Next Patients

Inputs

(3) Health Records Archive

Patient 0 - true - HoldLeft: 0

Patient 6 - true - HoldLeft: 0

Patient 9 - true - HoldLeft: 0

Patients 10

Max Record Hold Time 10

Generate

Next

Current Tick: 5

Advance Simulation

Simulation Clock

Start New Simulation

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Cache Hold Time
(How long can it stay in cache)

(5)

P1 (3) | P2 (9) | P3 (4) | P4 (7) | P5 (7)

Patient 3 | | Patient 1 | Patient 4 | Patient 2

Patient 8 | Patient 5 | Patient 0 | Patient 9 | Patient 6

Patient 7

“Front Desk”
(cache)

Health Records FrontDesk

- Patient 3 - true - HoldLeft: 0(4)
- Patient 1 - true - HoldLeft: 0(4)
- Patient 4 - true - HoldLeft: 0(4)
- Patient 2 - true - HoldLeft: 0(4)
- Patient 5 - true - HoldLeft: 0(2)

Next Patients

Archive Hold Penalty
(Read From Disk)

(3)

Health Records Archive

- Patient 0 - true - HoldLeft: 0
- Patient 6 - true - HoldLeft: 0
- Patient 7 - true - HoldLeft: 0
- Patient 8 - true - HoldLeft: 0
- Patient 9 - true - HoldLeft: 0

Patients 10

Max Record Hold Time 10

Generate

“Archive”
(disk)

Next

Current Tick: 5

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P1 (3) | P2 (9) | P3 (4) | P4 (7) | P5 (7)

Patient 3 | | Patient 1 | Patient 4 | Patient 2

Patient 8 | Patient 5 | Patient 0 | Patient 9 | Patient 6

Patient 7

Next Patients

Patients 10

Max Record Hold Time 10

Generate

Next

Current Tick: 5

(5) Health Records FrontDesk

Patient 3 - true - HoldLeft: 0 (4)

Patient 1 - true - HoldLeft: 0 (4)

Patient 4 - true - HoldLeft: 0 (4)

Patient 2 - true - HoldLeft: 0 (4)

Patient 5 - true - HoldLeft: 0 (2)

(3) Health Records Archive

Patient 6 - true - HoldLeft: 0

Patient 7 - true - HoldLeft: 0

Patient 8 - true - HoldLeft: 0

Patient 9 - true - HoldLeft: 0

Patient Name

Record Available For Procedure?

Time Left Till Available

Time Left on Front Desk

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(3) Health Records Archive

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- Patient 7 - true - HoldLeft: 0
- Patient 8 - true - HoldLeft: 0
- Patient 9 - true - HoldLeft: 0

The Project - Implementation

- Language: Swift
- iOS - platform
    - iPad Pro (9.7in) specifically

DEMO!!

Lessons Learned

- There are no “great” libraries available to deal with displaying a simple grid for iOS

- Recommenced UICollectionView objects are sophisticated & robust but make SIMPLE grids hard to implement

Future Work

- Saving state!! (Enable a previous button)
- Use images instead of labels for a better UI experience
- Longer queues for procedures
- Create a “UISimpleGridView” library for Cocoapods 🤷🏽

Questions?

The End

(Thank You)