

APPLICATION MANUAL

Tunnel Snakes Scary Symptom Scrutinizer

Term: Spring 2020

ZDoggMD

Project Information	2
Team Details	2
Team Members	2
Team Mentors	2
Description of the Project	2
Team Member Roles & Responsibilities	2
Application Details	2
Github Repository	2
Application Details	3
App Name	3
App URL	3
App Description	3
Gantt Chart	3
Direct links	3
Introduction	3
Project Goals	3
Project Requirements	3
Background Research	4
Overview	4
Gaps in Domain	4
Examples of Gamification in Healthcare	4
Overview	4
Use Case	5
Application Walkthrough	5
References	8

Project Information

Team Details

Team Members

Bo Chen, Jake Rejwan, Kevin Margatan, Shihui Ruan, Tharun Saranga

Team Mentors

Ronnie Jones and Dr. Mark Braunstein

Description of the Project

Our application seeks to gamify the experience of selecting which examinations should be run on a patient. Users will be given a case from FHIR and select which procedures to perform by clicking on an animated patient. All decisions will be recorded, and a correctness score will be displayed to the user at the end.

Team Member Roles & Responsibilities

Bo Chen: Project Manager, Developer

Kevin Margatan: Developer, UI Designer

Jake Rejwan: Developer

Tharun Saranga: Developer

Shihui Ruan: UI Designer

Application Details

Github Repository

Github Link:

<https://github.gatech.edu/gt-cs6440-hit-spring2020/Gamified-Physical-Examination>

Branch: master

Final Git Commit:

Application Details

App Name

Gamified physical examination

App URL

<https://apps.hdap.gatech.edu/gamified-physical-examination/>

App Description

This app gamify the examinations for med students. It allows students to join an exercise, run examinations on a patient and see the exercise result. At last, students can get feedback on their performance.

Gantt Chart

[final gantt chart]

Direct links

Final Gantt Chart:

Application Manual:

Special Instructions:

Research Directory:

Documentation Directory:

Project Plan:

Use Case Model:

Design Document:

Test Plan:

Introduction

Project Goals

For this project, we aim to develop a web app that can be used by students for learning examinations.

Project Requirements

This project required research and research-based information architecture of the app. Then the initial mockup, frontend and backend deployment are also required as the deliverables of the final submission.

Background Research

Overview

This project is based on the CBL/PBL platform that developed by Dr. Mark and a group of University of Queensland IT students.

In 2019, the prototype was redeveloped as a production set of FHIR apps by a programming team based at the Australian e-Health Research Centre.

Our work this semester is to design an attractive interface and develop the app.

Gaps in Domain

Examples of Gamification in Healthcare

Join For Me [3]:

Targets overweight adolescents at risk for diabetes. Promotes physical activities for maintaining good health

GameMetrix Solutions [3]:

Platforms based on other classic games like Solitaire and Jeopardy. Pull patients into games using familiar game mechanics. Used to help manage chronic illnesses

GestureTek Health [4]:

VR exercise programs to enable patients to have fun while rehabbing injuries.

Syandus's COPD [3]:

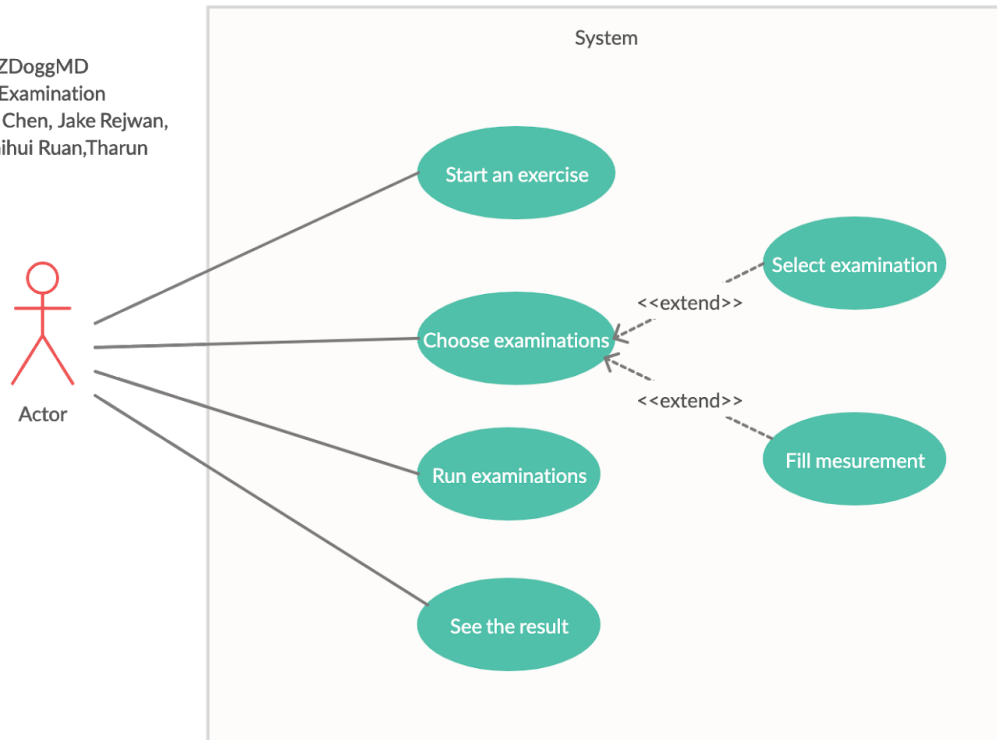
Create and control a virtual patient. Control variables by inserting actual medical record information. Tweaking tools for environmental variables and patient responses. Allows for introduction of drug therapy to the patient

Overview

We did competitive analysis and research on similar apps on the market. Some of the apps are inspiring to us. For example, Syandus's COPD allows users to create and control virtual patients. There are also a lot of educational app on the market, but we need to figure out how to gamify the experience.

Use Case

CS 6440 Team 35 ZDoggMD
Gamified Physical Examination
Team members: Bo Chen, Jake Rejwan,
Kevin Margatan, Shihui Ruan, Tharun
Saranga



Application Walkthrough

1. New exercise

Students can start a new exercise at the homepage.

Leaderboard (Last Exercise)

Student name	Score	Time
Mark Brausstein	100%	0:10:11
Ronnie Jones	100%	0:16:03
Bo Chen	90%	0:36:25
Jake Rejwan	70%	0:45:58
Kevin Margatan	70%	0:56:34
Shihui Ruan	60%	1:01:56
Tharun Sharanga	50%	1:22:03

Upcoming Exercise



Join Now

My Past Exercises

Exercise	My Score	Time
Heart Attack	100%	0:10:11
Arthritis	100%	0:16:03
Diabetes	90%	0:36:25
Pneumonia	70%	0:45:58
Kidney Stone	70%	0:56:34

2. Add examinations

Students can add new examinations to the patient.

Select Examination

Patient Background

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Select Examinations Below:

Body / Vitals
 Cardiovascular
 Muscular
 Digestive
 Skeletal
 Nervous

Completed Examination

Examinations	Measurement	Duration
Submit	24:35	

Total Score:

Total Duration:

End Game

Select Examination

- Vital Signs
- ✓ Cardiovascular
- Eyes
- Body

Unit

Save Close

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3. Run the examinations

Select Examination

Patient Background

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Completed Examination

System	Exam	Unit	
Vital Signs	8310-5	15	
Eyes	SCTID 164734008	18	
Cardiovascular	8911-0	15	
Body	8302-2	5	

Submit 7:14

Select Examinations Below:

Body / Vitals

Cardiovascular

Muscu

Digestive

Skeletal

Nervous

Select Examination

System: Cardiovascular

Exam: ☒ Radial pulse right
☐ Radial pulse left
☐ Neck
☐ Carotid: Right palpate
☐ Carotid: Left palpate
☐ Carotid: Auscultate for bruits

Chest

☐ Two heart sounds (S1, S2)
☐ Murmur (systolic, diastolic)

Palpate

Lower limbs

☐ Pulse: femoral L
☐ Pulse: femoral R
☐ Pulse: dorsalis pedis L
☐ Pulse: dorsalis pedis R
☐ Pulse: popliteal L
☐ Pulse: popliteal R
☐ Pulse: posterior tibial L
☐ Pulse: posterior tibial R

Save

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4. See the result

Students can see the result of their exercises.

Examinations:

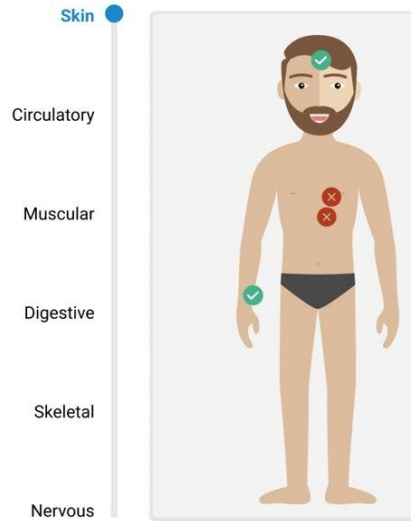
Temperature:	98.5 F	8310-5	✓
Blood Pressure:	110/60 mmHg	55284-4	✓
Heart Rate:	92 BPM	8867-4	✗
Respiratory Rate:			✗
Glucose:	4+	25428-4	✓
Ketones:		2514-8	?

Analysis

Based on the background summary provided, I performed a check on patient's temperature blood pressure, heart & respiratory rate, as well as glucose level.

Submit to EMR

Score: 50% Time: 1:03:10



References

- Braunstein, M. L., Oancea, I., Barry, B. K., Darlington, S., Steel, J., Hansen, D. P., ... Wong, T. T. (2019). The development and electronic delivery of case-based learning using a fast healthcare interoperability resource system. *JAMIA Open*, 2(4), 440–446. doi: 10.1093/jamiaopen/ooz055
- Johnson, D., Deterding, S., Kuhn, K.-A., Staneva, A., Stoyanov, S., & Hides, L. (2016). Gamification for health and wellbeing: A systematic review of the literature. *Internet Interventions*, 6, 89–106. doi: 10.1016/j.invent.2016.10.002
- 3 More Ways Gamification in Healthcare is Making a Difference. (n.d.). Retrieved from <https://www.zelis.com/resource/3-more-ways-gamification-in-healthcare-is-making-a-difference/>
- The Top 15 Examples of Gamification in Healthcare. (2018, October 2). Retrieved from <https://medicalfuturist.com/top-examples-of-gamification-in-healthcare/>