COSC 360 Project

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Conversational Chatbot

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https://github.com/Griffin-Brome/Dr-Notadoctor-MD

Overview

The aim of this project is to develop a functional chatbot that can simulate conversation with a human user for at least thirty turns of dialogue pertaining to a given topic. The topic we have selected is a medical diagnosis for sufferers of chronic pain. The chatbot agent will take on the role of a diagnosing medical professional. The goal of this project is not to replace a medical doctor, but to instead empower patients with more knowledge of their physical ailment.

Developer Roles

PM - Griffin Brome

Front-End Team - Kai Vrolk, Adam Collins

Back-End Team - Patrick Mahler, Nate Wickenheiser

Software Development Lifecycle

We have decided on a combination of Agile and Rapid Prototyping.

1. **Scrum:** We will be a small and self organizing team, so it is ideal to have as much communication as possible, also, we anticipate our design and implementation to change frequently.

2. **Incremental:** Since our team does not have much experience with this type of project, it is unlikely that we will have an ideal design right away. Therefore we will prioritize quick and simple working prototypes. We believe that this will complement the scrum methodology.

Project Phases

The phases of this project will be centered around incremental prototypes. Where each sprint should provide us with a small, working prototype. We may keep any amount of this prototype for the next sprint, from all of it -if it is satisfactory, to none of it -if it is not working.

A phase will look like this:

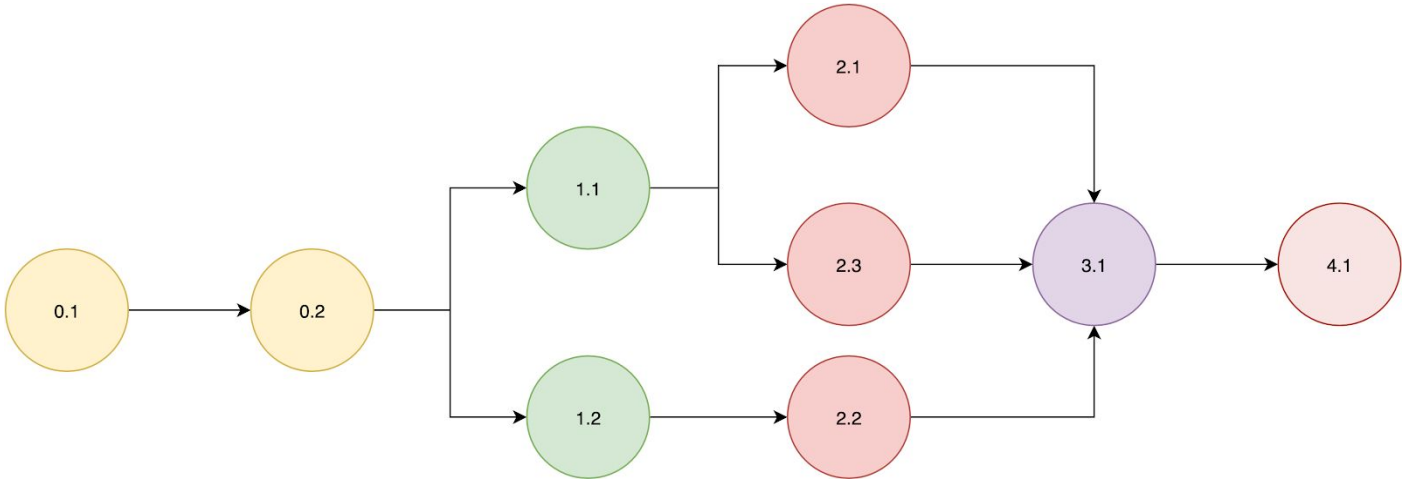
1. Design
    a. Build UML diagrams
    b. Build Wireframes (if needed)
    c. Build rough, abstract tests
2. Code
    a. Build front end
    b. Build back end
    c. Write unit tests
3. Test Software
    a. Coverage testing
    b. Unit testing
    c. Usability
4. Analysis and retroactive
    a. Team will discuss what went well and what did not
    b. Decide on what to keep from this prototype

This will be repeated every sprint, until the project is complete.

Work Breakdown Structure

Task	Subtask	Assigned To:	Projected Hrs	Actual Hrs
0 Meeting				
	0.1 Weekly Standup	Everyone	1.0	
	0.2 Project Management	Griff	0.5	
1 Design				
	1.1 UML Models	Patrick, Griff, Nate	1.5	
	1.2 Wireframes	Kai, Adam	1.5	
2 Implementation				
	2.1 Front-End	Kai, Adam	2.0	
	2.2 Back-End	Patrick, Griff	2.0	
	2.3 Unit Tests	Nate	2.0	
3 QA				
	3.1 Unit Testing	Everyone	0.5	
4 Post-Mortem				
	4.1 Team discussion	Everyone	1.0	

Gantt Chart



Sample Output

Version 1.0

```
Hello my name is Dr.310
I will try to help diagnose your overall health based on your symptoms
What is your name? Griffin
Hello Griffin! How old are you? 20
What is your gender? M
What is a symptom you are experiencing? (say none for no more) cough
How many days have you had this symptom? 3
On a scale from 1 to 10, how much discomfort does this cause you? 5
Okay, ill remember that...
What is a symptom you are experiencing? (say none for no more) bad data
Sorry, I don't recognise bad data
What is a symptom you are experiencing? (say none for no more) sore throat
How many days have you had this symptom? 2
On a scale from 1 to 10, how much discomfort does this cause you? 9
Okay, ill remember that...
What is a symptom you are experiencing? (say none for no more) none
Analyzing results...
...
...
...
...
...
...
...
Well Griffin...
I suggest you go to a real doctor
```

Version 2.0

```
PS C:\Users\Griff\Documents\University\3rd_Year\SEM_2\COSC_310\COSC_310_Project\Dr-Notadoctor-MD> & C:/Users/Griff/AppData/Local/Programs/Python/Python38-32/python.exe c:/Users/Griff/Documents/University/3rd_Year/SEM_2/COSC_310/COSC_310_P
roject/Dr-Notadoctor-MD/python/Chatbot.py
Hello my name is Dr.310
I will try to help diagnose your overall health based on your symptoms
What is your name? Griffin
Hello Griffin! How old are you? 20
What is your gender? Male, Female or other. man
man is invalid
Did you mean: male?
What is your gender? Male, Female or other. male
Are you looking for a general doctor. Or, a dentist? doctor
What is a symptom you are experiencing? (say none for no more) I have a cough
How many days have you had this symptom? 3
On a scale from 1 to 10, how much discomfort does this cause you? 4
Okay, I will remember that...
What is a symptom you are experiencing? (say none for no more) I'm experiencing some congestion
How many days have you had this symptom? 3
On a scale from 1 to 10, how much discomfort does this cause you? 2
Okay, I will remember that...
What is a symptom you are experiencing? (say none for no more) I'm sneezing a lot too
How many days have you had this symptom? 4
On a scale from 1 to 10, how much discomfort does this cause you? 1
Okay, I will remember that...
What is a symptom you are experiencing? (say none for no more) my throat is very sore
How many days have you had this symptom? 8
On a scale from 1 to 10, how much discomfort does this cause you? 4
Okay, I will remember that...
What is a symptom you are experiencing? (say none for no more) my tummy hurts
How many days have you had this symptom? 5
On a scale from 1 to 10, how much discomfort does this cause you? 1
Okay, I will remember that...
What is a symptom you are experiencing? (say none for no more) I'm tired
How many days have you had this symptom? 5
On a scale from 1 to 10, how much discomfort does this cause you? 1
Okay, I will remember that...
What is a symptom you are experiencing? (say none for no more) none
While my diagnosis is being calculated. How's your week been?
Analyzing results...
...
...
...
...
...
...
...
Could be worse I guess
...
 Well Griffin...
I suggest you go to a real medical professional
PS C:\Users\Griff\Documents\University\3rd_Year\SEM_2\COSC_310\COSC_310_Project\Dr-Notadoctor-MD>
```

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Griff\Documents\University\3rd_Year\SEM_2\COSC_310\COSC_310_Project\Dr-Notadoctor-MD> & C:/Users/Griff/AppData/Local/Programs/Python/Python38-32/python.exe c:/Users/Griff/Documents/University/3rd_Year/SEM_2/COSC_310/COSC_310_P
roject/Dr-Notadoctor-MD/python/Chatbot.py
PS C:\Users\Griff\Documents\University\3rd_Year\SEM_2\COSC_310\COSC_310_Project\Dr-Notadoctor-MD> & C:/Users/Griff/AppData/Local/Programs/Python/Python38-32/python.exe c:/Users/Griff/Documents/University/3rd_Year/SEM_2/COSC_310/COSC_310_P
roject/Dr-Notadoctor-MD/python/Chatbot.py
Hello my name is Dr.310
I will try to help diagnose your overall health based on your symptoms
What is your name? Sarah
Hello Sarah! How old are you? 30
What is your gender? Male, Female or other. female
Are you looking for a general doctor. Or, a dentist? I want a dentist
What is a symptom you are experiencing? (say none for no more) I have bad breath
How many days have you had this symptom? 4
On a scale from 1 to 10, how much discomfort does this cause you? 1
Okay, I will remember that...
What is a symptom you are experiencing? (say none for no more) This one tooth hurts when I chew
How many days have you had this symptom? 5
On a scale from 1 to 10, how much discomfort does this cause you? 9
Okay, I will remember that...
What is a symptom you are experiencing? (say none for no more) there is a gap in my smile
How many days have you had this symptom? 7
On a scale from 1 to 10, how much discomfort does this cause you? 3
Okay, I will remember that...
What is a symptom you are experiencing? (say none for no more) my jaw is also sore
How many days have you had this symptom? 8
On a scale from 1 to 10, how much discomfort does this cause you? 4
Okay, I will remember that...
What is a symptom you are experiencing? (say none for no more) none
This may take a while. Any plans for the weekend?
Analyzing results...
...
...
...
...
...
...
...
Could be worse I guess
...
 Well Sarah...
I suggest you go to a real medical professional
PS C:\Users\Griff\Documents\University\3rd_Year\SEM_2\COSC_310\COSC_310_Project\Dr-Notadoctor-MD>
```

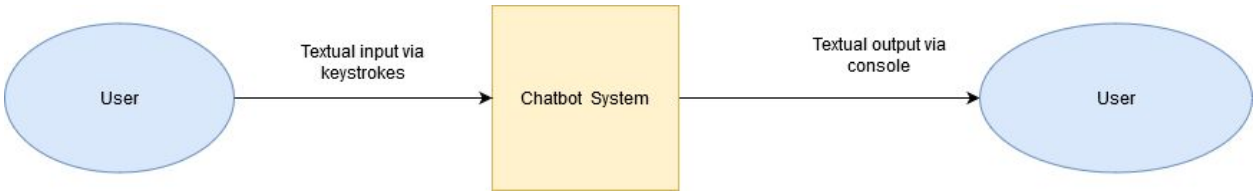
Version 2.0 limitations

```
Are you looking for a general doctor. Or, a dentist? dentist
What is a symptom you are experiencing? (say none for no more) coughing
Sorry I do not know that symptom
What is a symptom you are experiencing? (say none for no more) coug
Are you sure that's a real thing try something else
What is a symptom you are experiencing? (say none for no more)
```

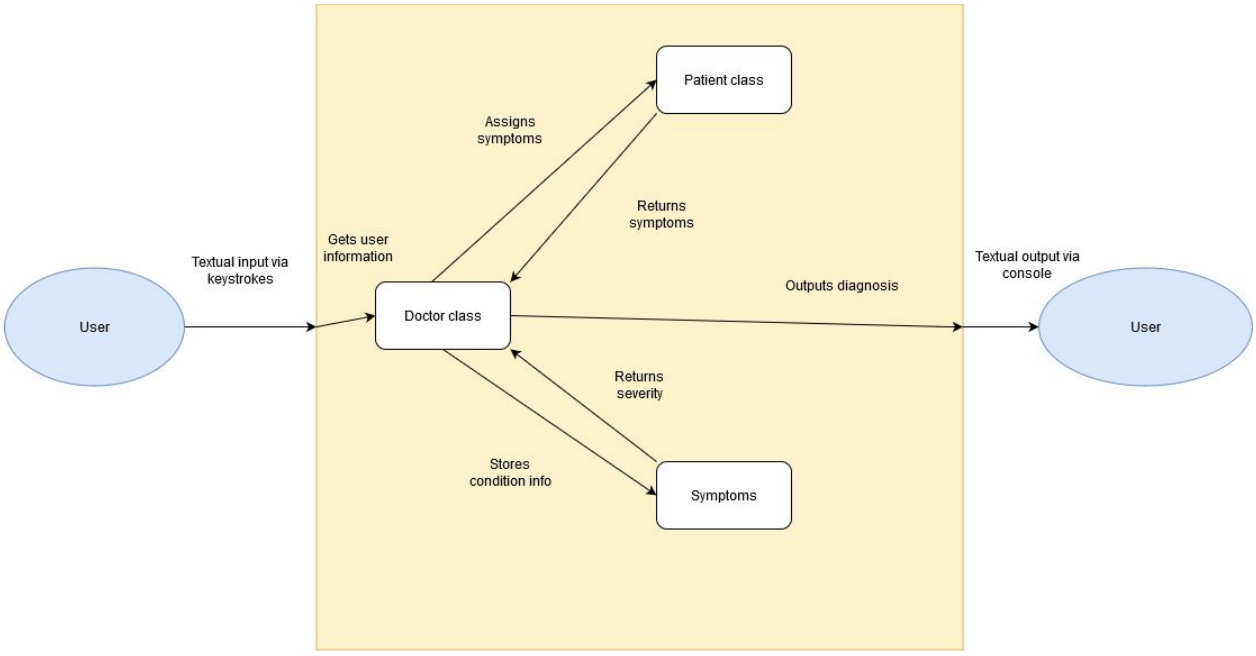
```
PS C:\Users\Griff\Documents\University\3rd_Year\SEM_2\COSC_310\COSC_310_P
roject/Dr-Notadoctor-MD/python/Chatbot.py
Hello my name is Dr.310
I will try to help diagnose your overall health based on your symptoms
What is your name? max
Hello max! How old are you? 32
What is your gender? Male, Female or other. I am a girl
I am a girl is invalid
What is your gender? Male, Female or other.
```

DFDs

Level 0:



Level 1:



Branch Graph

https://github.com/Griffin-Brome/Dr-Notadoctor-MD/network

API

Some features that could be used by external programs through an API

- Get all symptoms of a patient
- List current patients for a doctor instance
- Converse with the chatbot via push notifications
- Get records of a patient's conversation with the bot
- List all current doctor instances