



HEALTH CARE CODING APP

Team 3

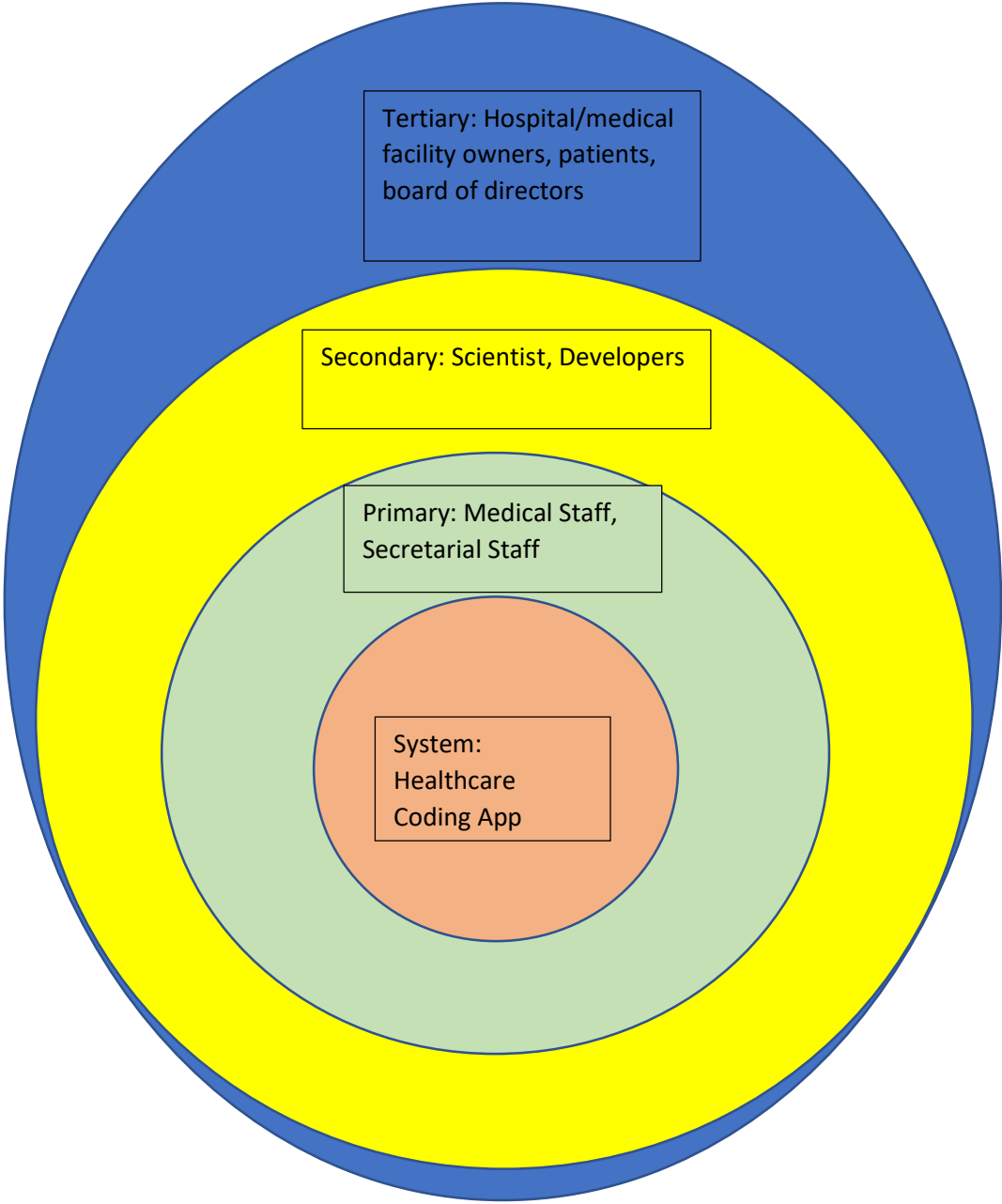
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Grad 5

App Description

This app aims to improve the quality and efficiency of generating a medical code for health care workers. It should ask for user input to answer a series of questions that evaluate the severity and complexity of the visit. It will have an algorithm that allows it to use that information to automatically classify the reason for the medical visit and output a standardized code for medical visits.

Onion Model Stakeholder Analysis



Stakeholder Descriptions:

Medical Staff: This includes nurses, physicians, physicians assistants, nurse practitioners, occupational and physical therapists, surgeons, etc. Most often it would be used by a nurse, but all types of medical professionals would be qualified and able to use it. They would be directly interfacing with the system by answering the prompts provided in order to give the app information on the reason for the visit.

Scientist: Our scientist is the one with direct contact with the users of the app and is responsible for understanding the needs and preferences of the users in order to communicate to the developers what is needed.

Developers: That is our undergrad team. They are looking to make the app user friendly, efficient and accurate. They will need to get feedback from the scientist on how they can better perform this task. The scientist again, will be in contact with the actual users of the app.

Secretarial Staff: The staff at the hospital in charge of recording and storing information will need to be able to interact with the app in order to access the information provided by the app to the user. The medical staff inputs information into the app, the secretarial staff will obtain information from the app.

Hospital/ Med Facility Owners: The owners of the company that is using the app has a financial stake in the hospital and all associated equipment (hardware and software) as well as a public image to uphold. They are in charge of making sure all hospital standard practices are safe, accurate, correct, and reasonable. They cannot invest in an app that is not safe for the patients identity, or one that gives false information to medical providers, so they will not allow the app to be standard practice unless they deem it safe and worthwhile as well. It will have to have a large enough increase in efficiency and accuracy that it is worth their time and energy to adopt.

Patients: Patients are not directly interacting with this app, but they are being categorized as serious injury or not, so it's important to them that this app works well because if it didn't categorize their visit correctly, they could be at risk of serious injury or death.

Board of Directors: They are not in direct contact with the app, but are responsible for creating hospital policies and therefore would have a say on if the app was to be used as standard practice or not.

Goals Influence Table:

Stakeholder	Goals	Influence
Medical Staff	Easily and confidently generate a medical code for a patient visit	As the direct users of the app, their comfortability and willingness to use the app will be one of the most important factors.
Scientist	Merge the needs of the user with the ability of the developers to create an app that serves the medical professionals	They are in direct contact with the users of the app, so they have knowledge of both the users and developers. They're able to bridge the gap from the medical providers to the engineers.
Developers	Provide the medical staff and scientist with an app that meets their needs	They are the ones deciding how the app needs to work and look. They make all the final decisions on how the app looks and works based on their knowledge of the users needs.
Secretarial Staff	Obtain medical codes from the app	They may need to directly interact with the app in order to obtain the generated codes to record and sort or to interact with other software that uses the codes.
Business Owners	Provide their employees with a good work environment and best means to excel at their jobs	They ultimately decide if they want to invest in the app so they will have final say on if it's used or not by the staff.
Patients	Be cared for	Patients expect to be cared for to the best ability of the providers, this includes the software they choose to employ, so patient satisfaction will play a role in how much business owners and medical staff want to use the app.
Board of Directors	Keep a safe environment	They will be able to shut down the app if it is not safe for the patients or providers. They have final say on the safety of any medical software used. They will likely listen to feedback by the medical providers and business owners as well.

Summary of Stakeholder-goals-influence table:

There are a lot of stakeholders when it comes to implementing a new system into a business. They all are quite important. I think that the scientist plays a really big role in overseeing the development of the app because they have communications with both the users and makers of the app so they have extensive knowledge of how the app is going to be used and also has input on how it's made. The

developers and users also obviously have a large stake in the app. As the developers, they are trying to make it to be the absolute closest thing to the needs of the user. Their goal is to please the users of the app and help them have a good experience with it. The users get to evaluate their own experience with the app. Therefore, if they are please with it, the developers and scientist have succeeded in their goals. The medical staff also get to be the ones to set the bar for what they need. Because the app is being made to help convenience them, how they want it to be, is the most important thing.

All of the primary and secondary users are pretty easy to see what their stake in the app would be. However, if the board of directors deems it, inaccurate or unsafe, despite what the primary and secondary users say, the app cannot be used. The same goes for the owners of the business, if they decide that the app doesn't have a big enough impact on the hospital to invest in, then it again will not be used despite how the primary and secondary users feel about it. That's why it's super important to understand what their stake in the app is so that can be satisfied as well in order to allow the users to get to use the app. This puts a lot of responsibility on the developers because even if they make a super user-friendly app that pleases the medical professionals, if it is not effective and safe, it won't matter, so it's important that they take those factors into account when developing the app as well. In order for this to happen, it's also important that the scientist has communications with the tertiary stakeholders in order to understand the demands that must be met for them as well.

Personas:

Primary User 1: Randy (50, Nurse at John's Hopkins hospital)

Randy has been a nurse at this hospital for 20 years now. Every time he checks in a patient, he is required to ask them a list of questions and then rank the severity of the visit based on his assessment of these questions. Then he is required to go to a chart and decide which medical code his assessment of the patient best fits. He often skips the questions that he feels are irrelevant and just writes the associated code for the patient at the bottom of the paper because he's been doing this for so long he already knows what code it will be.

Primary User 2: Elizabeth (25, Intern at Maple Grove Hospital in Minnesota)

Elizabeth is asked to record the answers to each medical question that the nurses and doctors ask and submit proper documentation at the end of the day. Part of her training is to assess the information she takes and find and record the medical code for each patient she gets to go along for. She is super studious and careful to record everything. She is super nervous of assessing the code wrong so she often overthinks it and can't decide on one. Sometimes she leaves it blank with a note to ask the doctor or nurse which one is more correct.

Secondary User 1: Mike (35, Software Developer in Boston)

Mike is very highly educated and has several years of experience as a software developer. He often develops codes for large manufacturing companies and hasn't done much of the HCI stuff. He doesn't really have a knack for what is visually appealing or user friendly. He is super knowledgeable about programming though, and has done some work for medical companies before. He has a good base knowledge of the restrictions and standards that come with the medical facilities, but doesn't know much about the clinical side as far as how patient coding works.

Secondary User 2: Gwen (40, Contracting UX consultant)

Gwen has a degree in graphic design and has done a lot of contract work to help computer scientist makes their programs user friendly and visually appealing. She is less knowledgeable about backend coding, but is super good at making user friendly interfaces and knows how to understand the needs of her clients. She decides to take on a client that is asking for an app to help them more efficiently generate medical codes. She spends time getting to understand the process that the primary user has to undergo and gladly agrees to help a team of computer scientists to create an app for her client that makes their job easier and more convenient.

Hierarchical Task Analysis:

Login Page: Only authorized personnel should be able to access this application

Home Page: Allows users to select which functions they'd like to perform

Start a visit (allows doctors to log their visit with their patient, and starts a timer for the visit)

Find Client: allows doctors to log a visit with an existing patient

New Client: allows doctors to input information about a new patient before logging visit

Multiple choice question pages for the doctors to answer

Special Notes

End Visit: This stops the timer, records the questions, and generates a medical code. It also automatically should record the information under that patient's name.

Summary of Visit: Allows doctor to view last visit

View Visits: Allows other staff to access the stored information.

Print button

Export button

List of clients: Allows staff to view information of a specific patient

Information and code for each client displayed.

Print button

Export button

Summary:

The first page allows only authorized personnel to log in. The next page allows the differentiation between logging or viewing a patient visit. If they are logging a visit, they have to first start the visit in order to activate a timer. If a doctor is logging a new visit, they can either pull up the information of an existing client to add to, or they can create a new client. After defining the client, the app will prompt the user to answer a series of questions meant to evaluate the severity of the visit. It will both record and analyze this information. It will record the answer to each question that the doctor answers and ultimately generate a code for that patient. When the doctor ends the visit, all the information and the code generated code will be displayed to the doctor or nurse until the next visit is started. When a secretary is using the app and needs to reference a patient for their code, they'll be able to login and

press the “view visits” button. This should bring them to a list of patients that they’re able to click on and view all the recorded information from that client. They are able to both print or export the entire list of patients seen with timestamps, or they’re able to print or export the information of just an individual patient.

Appendix:

I wasn't able to attend either scientist meetings because they happened to be at the same time as my practice, I was able to talk with my undergraduate team and help with the interview questions and they took notes and sent them to me. The attached notes are from my team, and the notes that I used for my app description.

Meeting Information -

Subject: Care Code;

Meeting with: Kathryn Kass - Physician Assistant

Time: Tuesday, 1/25/2022 at 5:15 pm EST

Location: By Phone; 906-281-0992; We will be using Google Meets, check discord for link

Recording: [Here](#)

Interview Positions / Jobs:

Cody Boyd (TL) - Writing second half of questions.

Shane O'Brien (PO) - Write First Half of Questions

Colin Knudsen - Writing First Half of Questions.

Eric Belt - Writing second half of questions

Patrick Philbin - Asking first half of questions

Harry Taylor - Asking questions

Interview Questions:

First Half

Writing: Colin, Shane

Asking: Patrick

- Would you like to have a scheduled meeting with the team for progress updates (can be just every 2 or 3 weeks)?
 - Doesn't matter to the scientist, up to the team. We do not have to meet formally, we can just send emails and set up a meeting if needed.
- How would you imagine the application worked when fully developed?
 - Med providers would use, saved as a link on google. Used for not 100% sure how to code it. Get on, fill in the info, get the code and place it into the notes. In the dream world the coder will have a quick blurb that would have more info about the patient. Nothing will get saved after filling in the info the page clears.
- Could you walk through the coding document that was sent?
 - Watch the recording at 5:26 pm.
- Could you walk through the coding algorithm that was sent?
 - Watch the recording at 5:31 pm.

Second Half

Writing: Cody, Eric

Asking: Harry

- Is this application used for every patient? Or specific patients?
 - From what I gathered, yes it will be used for every patient.
- Will the application that we develop be a finished product or a prototype?
 - Seems to be a prototype, not so much a finished product.
- Is there any more information that can be sent to the team to aid us in development?
 - Spreadsheet provided.