Project Name: Routine Visualizer
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Github Name: RoutineVisualizer
Github Link: https://github.com/popperr2/RoutineVisualizer
Dr. Pulimood
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Proposal and Specifications

The Social Justice Issue

The Social Justice issue I am approaching falls under the Disability category, specifically focusing on the neurological and developmental condition Autism Spectrum Disorder (ASD).

A lot of focus on the condition is currently on young children who are on the spectrum, and on the disabling social aspects of autism. While adults may work on their social skills, they often still have difficulty with everyday tasks, often domestic tasks that non-autistic people may find easy, such as hygiene, cleaning, laundry, and preparing food. They may have difficulty forming morning and evening routines because of this. For many autistic adults trying to live independently, they may need reminders for these tasks, and without them they can struggle. They may also struggle with other parts of living independently such as going shopping for food, going to the doctor, etc.

Project Title: Routine Visualizer

Option 1 or 2:

Option 2: Propose your own project to design and implement an innovative computational solution to the social justice issue you identified.

Web or Mobile, Programming Languages, Frameworks, and Platforms

The project will be a mobile project, due to the personalization and portability aspect of it. I am thinking of creating the project in Xamarin because of it's cross-platform functionality and the ability to code in C#. By downloading Xamarin it attaches itself to Visual Studio. I also have looked into the Xamarin API called Xamarin.Forms, which helps develop apps that require little platform-specific functionality. I am hoping the final application can be used on both iOS and Android.

The Project Idea (One Sentence)

A mobile application that aims to help adults on the spectrum select and carry out everyday routines with ease due to its visual nature.

Innovation & Addressing the Social Justice Issue

There already exist applications that create visual schedules, yet none of them are aimed at adults on the spectrum. These applications are designed with children in mind, and are childishly themed and child-focused, especially on the activities that the person using the app could do. These applications also don't allow for much customization, and are very conspicuous that the user has autism due to using puzzle pieces everywhere. These visual schedules are also very macro level, and seem to plan how an entire day goes in general, rather than focusing on specific routines in detail, such as a morning routine. They would not be helpful for an adult trying to get ready in the morning or an adult trying to go grocery shopping.

The application I wish to create innovates on the idea of visual schedules by making them more adult-like. The aesthetics would be less classroom and childhood themed, and would be crisp, elegant and modern. The application would allow for customization and the addition of adult activities such as doing laundry. The application would be able to store different versions of the same routine, in case the person wanted to do it differently a certain day, for example having a pressed for time morning routine versus a morning routine where the person has all the time they want. This would get a lot of the mental energy of planning routines and knowing when to switch them out of the way. This app would be addressing the social justice issue due to helping these adults who do not have many resources about adult autism available to them.

Algorithm

The algorithm that would be the baseline of this project would be one that reads in a schedule of the user's day, and matches routines with it depending on what the person wants to do, using computational power to pick the optimal routines for the day. For example, it will prompt the user with a short morning routine if the user wakes up late, perhaps cutting out excess things that people could do to get ready in the morning (such as putting on makeup). The user just has to input a daily schedule and the app will use this algorithm to let them know what things they will be doing and in what order.

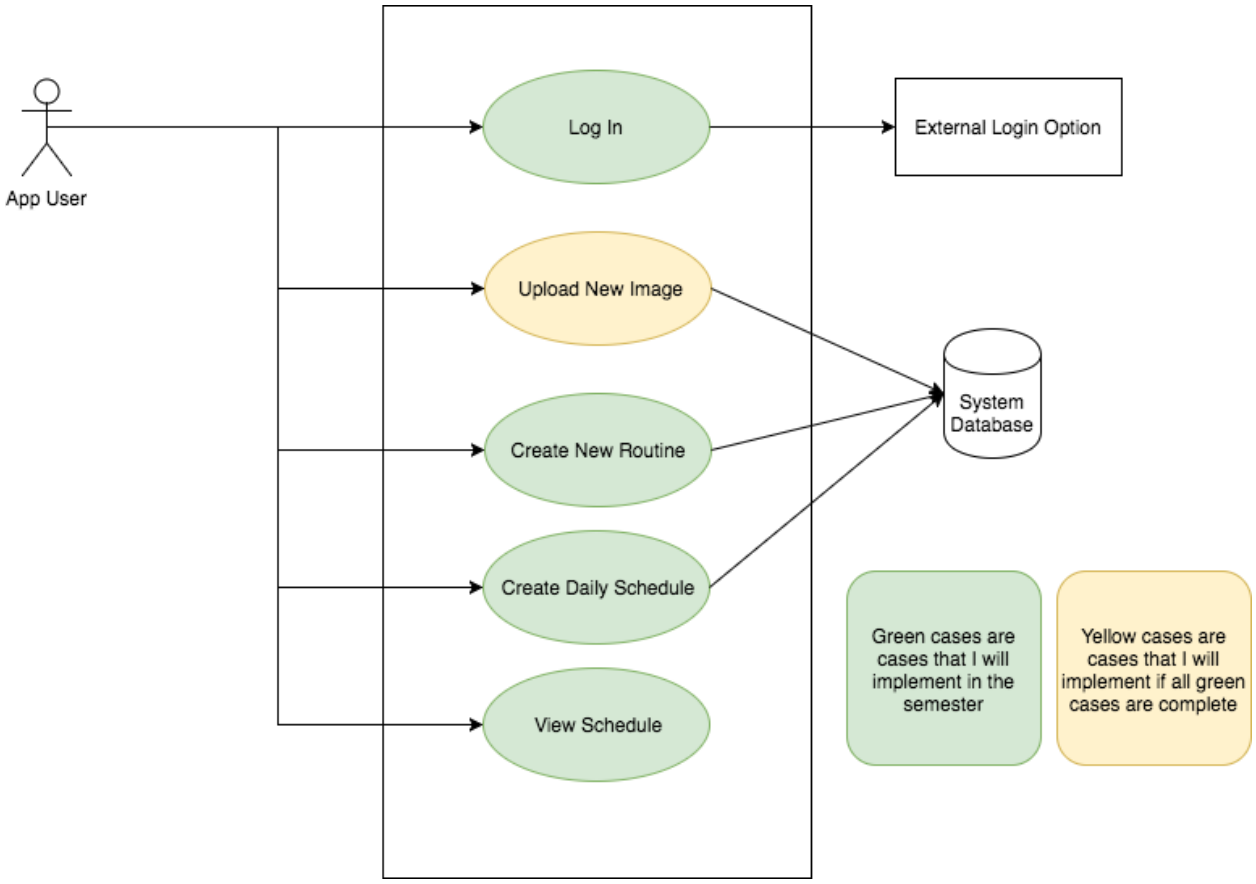
Data Structure

The data structure that will be utilized to hold all the routines will be a list of Routine objects. A list is C# is a generic version of an ArrayList, with a specified type. The list will contain Routine objects that have different properties, so the algorithm will grab elements of this list and search the properties to make decisions on which routines are appropriate for the day. There is also the possibility that databasing the routines will work better for this project and then I will look into using a version of SQL options in that case.

New Software Engineering Concepts To Learn and Enforce

The software engineering concepts that I wish to learn and enforce throughout this project's development process are using proper diagramming tools as well as a good software development process modeling system. The Unified Process of development is a software engineering concept that I would wish to try to use for my project on an individual and smaller scale way.

Use Case Diagram in UML



Log In - The user will be able to login so that they can access their saved routines and schedules.

Upload New Image - This functionality will be implemented last because the application should implement some stock photos to use. The ability to upload one's own pictures will be implemented once everything else can work properly.

Create New Routine - The user creates new routines from images and stores them into the database.

Create Daily Schedule - The user chooses a few things they want to do that day and the algorithm computers routines for it and creates the picture schedule.

View Schedule - The user is able to view their schedule for the day.

The primary actor in this system will be the user of the app. The app also connects to a backend database system that stores the actors images and routine information.

A Plan for Learning the Languages and Platforms

I have never worked with Xamarin before. I have done some mobile development in a previous class using AngularJS, HTML, and CSS. I also have some working knowledge of C#, which is the language that Xamarin uses. Mostly, I think I will have to focus on learning the Xamarin framework. I have found a number of tutorials on YouTube and will start by watching them before diving into anything. After that, I will begin trying to create my application in the Xamarin framework, and keep a Google doc with a list of errors I run into and how I fix them so that I can continue to learn as the project continues.

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