



Pocket Portfolio: Personalizing Education in the Modern Age

Your very own virtual academic advisor!

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What is Personalized Learning?

Personalized learning is the idea of optimizing the learning experience in a classroom setting by creating an environment where each student can learn at their own pace.¹ With this definition of personalized learning, a 1:1 teacher to student ratio could potentially be a solution.² However, this serves as a whole **new challenge**: there are not enough resources nor teachers for this idea to be sufficient. Thus, we have decided to take a microscale approach and start with optimizing learning for students at Chapman by making major changes to My.Chapman.edu - possibly one of the largest hindrances in optimizing Chapman students' education. Currently, the User Interface design of My.Chapman is **unappealing** and **difficult** to navigate, especially for those unfamiliar with the website. Our project consists of an application that **redefines** the My.Chapman.edu experience. From a recent study, it was found that when the user puts more cognitive effort into understanding the User Interface system, their ability to understand the task at hand is impeded.³ Thus, our focus on personalizing learning consists of a **user-friendly** mobile application to set students up for a learning experience unique to them. Additionally, our previous SCI150 instructor, Dr. Goldsmith, guided our studies towards creating an application to revise My.Chapman after discussing the issues of the website. Continuing this, we have created and developed a successful application through SCI 200 and SCI 250, which we have here to showcase.

Here is how we have put a twist to the solution of personalizing education:

- Maximize the learning experience by catering to a student's learning path
 - Unique course trees for individuals and their majors and minors
 - Course description including credits, prerequisites, and when it is offered
 - Instant access to invaluable contact information (including but not limited to Public Safety, Academic Advisor, and Dean of Students)

Methods

- Literature analyses and reviews
 - What personalized learning is about
 - How to implement the idea of personalizing the current education system
- Trial and Error of several app prototypes with different features
- Survey consisted of a majority of students wanting a four-year course tree
- App consists of basic features to help students' access four year plan and help hotline
 - Students will be able to view classes required with ease
 - Easy access to course descriptions
 - Simple to navigate

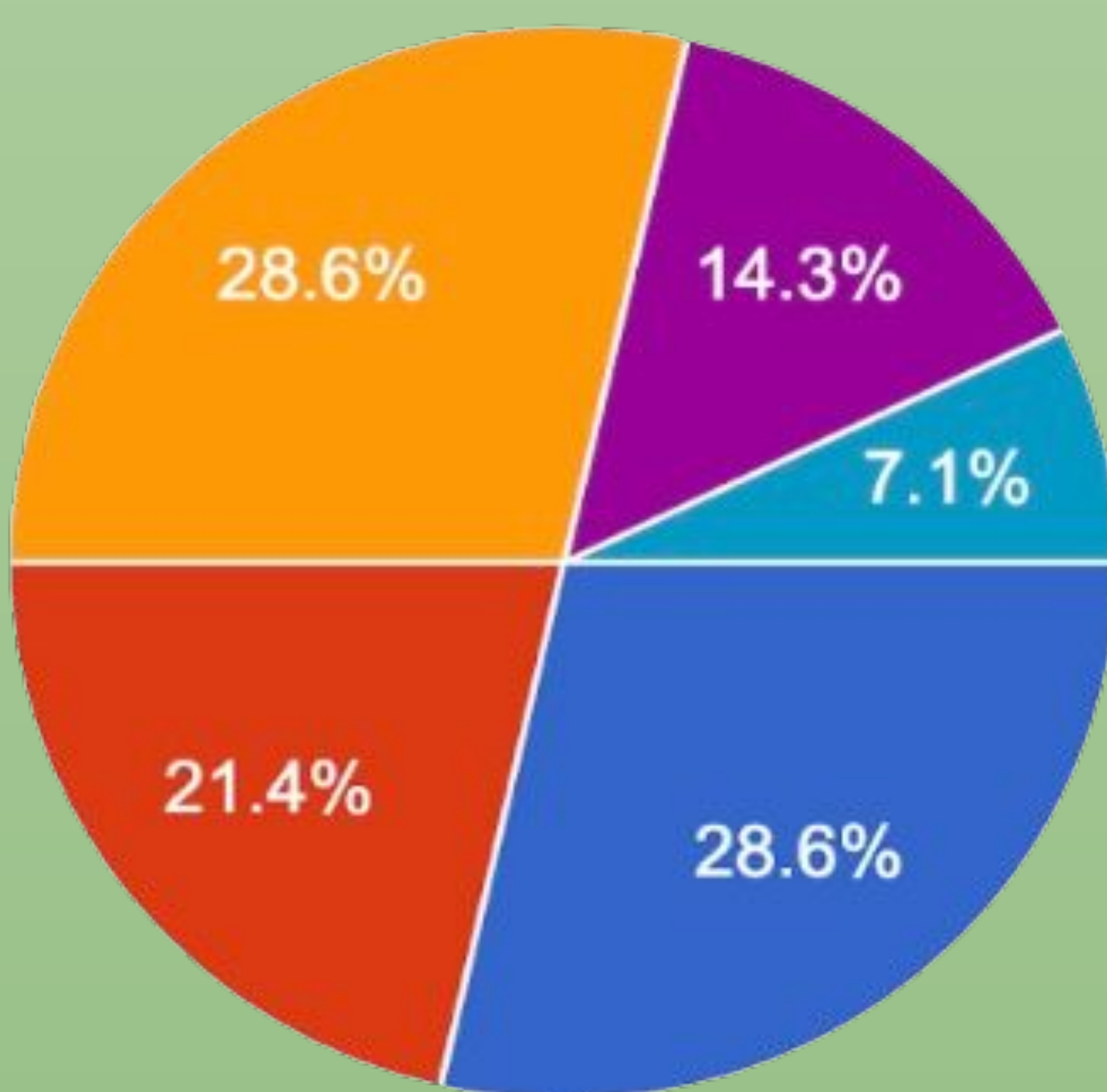


Figure 1. Pie Graph Displaying Most Prioritized App Features

The pie chart to the left displays the results of the app feature that was given the most priority by the 14 students in our GCI section. The dark blue piece is grade tracking, the red piece is the course tree, yellow is the instructor teaching style, purple is the campus map, and light blue is the student's daily course schedule. Given the time we had in the semester, our team decided the most doable piece was the Course Tree and plan on implementing other features in the app in the near future.

Many Thanks!

We would like to thank Dr. Quides for facilitating the start of our project and working on it with us for three of the four GCI semesters. Special thanks to Dr. Goldsmith as well for directing us towards a more reliable solution. Thank you to the GCI students in our section who helped fill out our survey for the features of the app to prioritize, and to Lucas Song for guiding us and advising us with app coding!



Scan this QR Code with the camera app on your smartphone to view some coding pictures and a click through of our final prototype of the app that we have created!

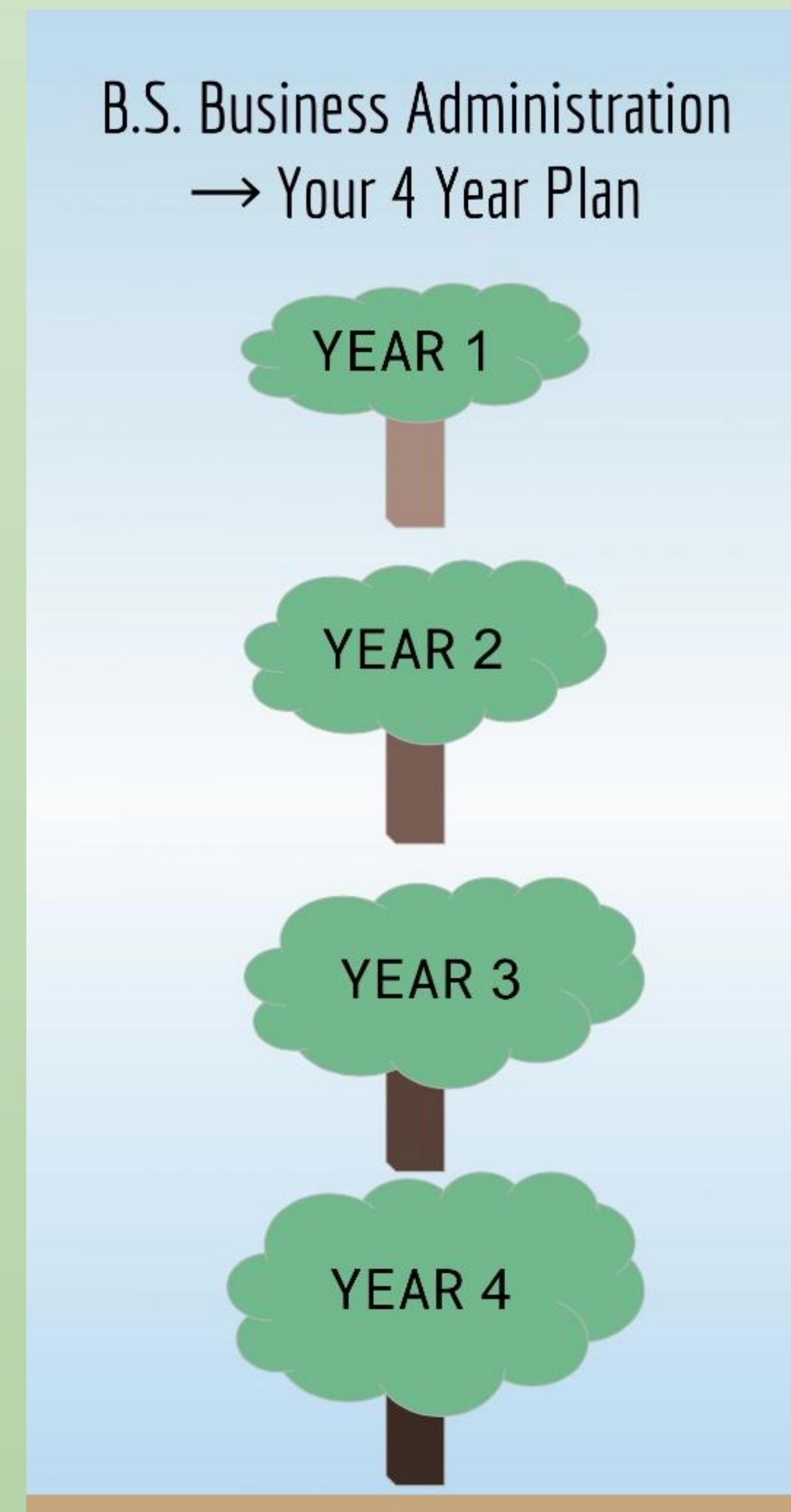


Figure 3. Clickable course tree a student can navigate to see which classes they need to enroll in.

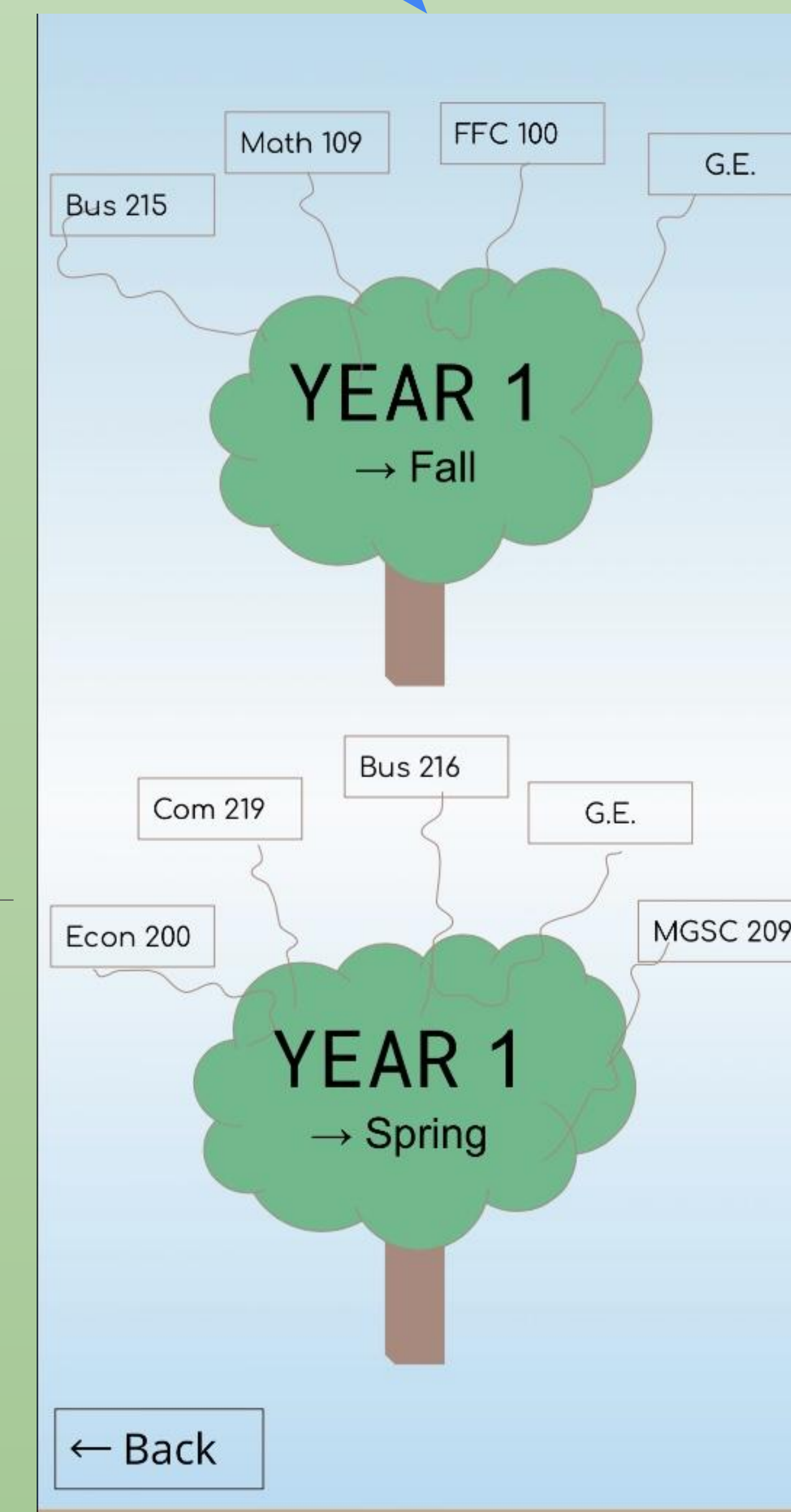


Figure 4. Model of a Freshman's first year courses.

FFC 100 -> Course Description

Grand Challenges in Science and Technology

This course engages students in interdisciplinary, university-level critical inquiry and reflection. The FFC course focuses more on critical engagement, exploration, and communication related to complex issues than on mastering a body of material. This course serves as the first part of the Grand Challenges Initiative, a program designed to engage students in team-based activities focused on solving the most pressing problems facing society.

Prerequisite: First year student in Fowler School of Engineering or Schmid School of Science and technology

Offered: Every Semester

Credits: 3 Units

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Figure 5. Description of course, prerequisites needed, availability, and credit count. If the student has satisfied a course already, the app will let the student know.

Contributions: Davis, Tyler, and Sarah equally contributed to all parts of the poster; Andrew, Annika, Mark, and Max completed the prototype of the mobile application.

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Assets > Scripts > HomeScreen.cs
1 using System.Collections;
2 using System.Collections.Generic;
3 using UnityEngine;
4 using UnityEngine.SceneManagement;
5
6 public class HomeScreen : MonoBehaviour
7 {
8     // Start is called before the first frame update
9     public void OnCourseTreeButtonPress()
10    {
11        SceneManager.LoadScene("CourseTree");
12    }
13
14    public void OnHelpHotlineButtonPress()
15    {
16        SceneManager.LoadScene("HelpHotline");
17    }
18
19    public void OnQuitButtonPress()
20    {
21        Application.Quit();
22    }
23
24 }
25
26

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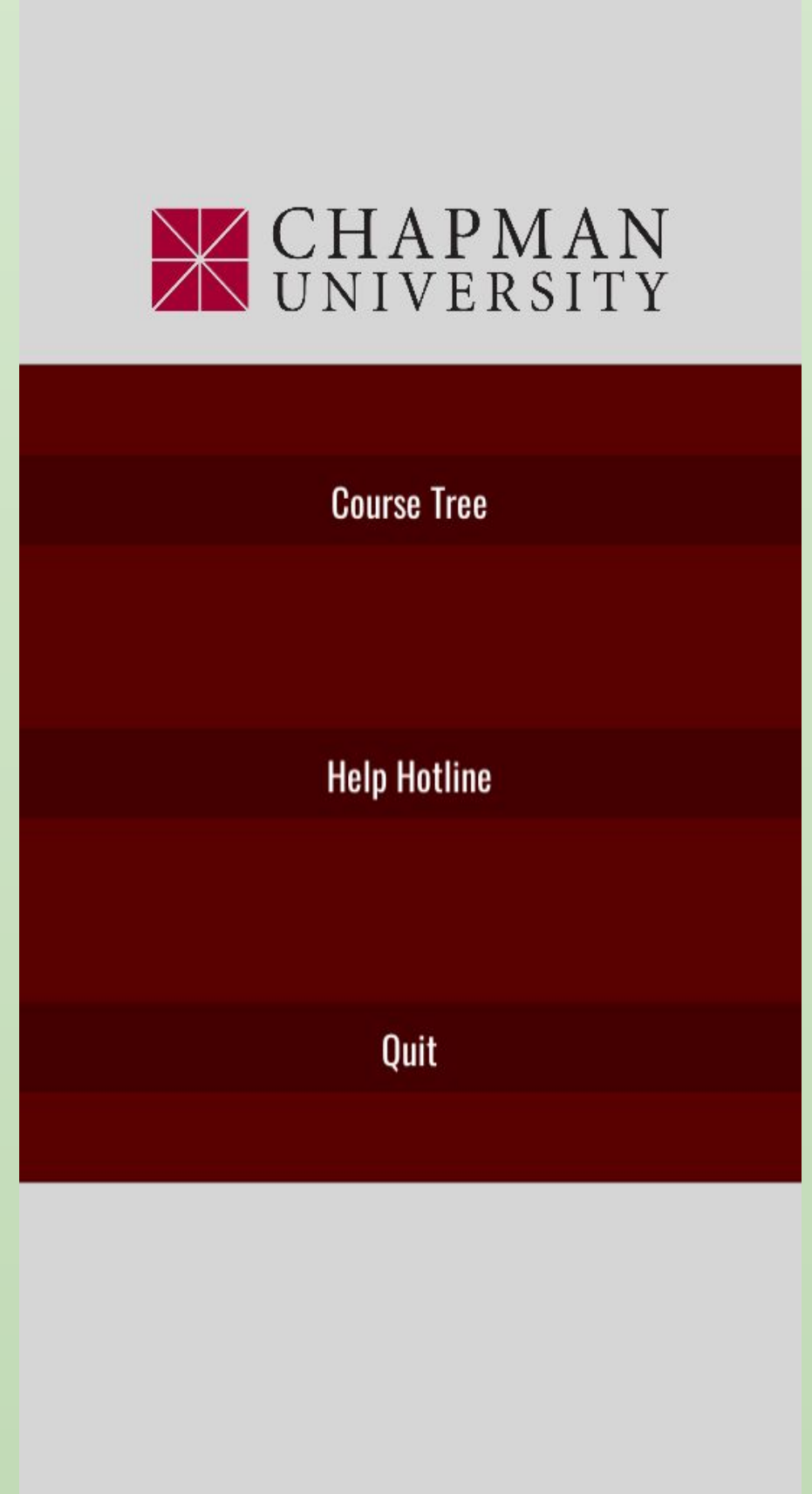


Figure 2. The Code that Produces the Interface

The above flow chart displays the coding written in Unity by the Technical Team. The written code in the image is the foundation of what produces the User Interface Design as seen in the picture on the right.

Future work

- Application can include:
 - All major course trees
 - Campus map
 - Ability to sign up and enroll in courses
 - School announcements and news
 - Photos of campus events (food/cafeteria, piazza events, etc)
 - Information on Chapman sports
 - Information on IFC (Greek life), school clubs, and extracurriculars
 - Possible continuation of application

What have we learned?

- Learning is not a linear process
 - Each person has a unique learning experience and pace
- Technology = invaluable resource in education
 - Abundant and can provide access and opportunity to students of all backgrounds
- Communication with large groups is crucial for success
 - Both the technical team and the design team had to communicate to address feedback and issues of the application
- Designing and developing an effective application takes time
 - Our technical team required more time than anticipated

Literature Cited

1. Tang, X., Chen, Y., Li, X., Liu, J., & Ying, Z. (2019). A reinforcement learning approach to personalized learning recommendation systems. *British Journal of Mathematical and Statistical Psychology*, 72(1), 108–135. <https://doi.org/10.1111/bmsp.12144>
2. Parrish A. H., Sadara W. A., Teaching Competencies for Student-Centered, One-to-One Learning Environments: A Delphi Study. *Journal of Educational Computing Research*. 2020;57(8):1910–1934. doi:10.1177/0735633118816651
3. Johnson J. R. 2020. "Many Factors Affect Learning." *Designing with the mind in mind: simple guide to understanding user interface design guidelines*. Morgan Kaufmann Publisher. p. 134.