Department of Computer Science & Engineering
The University of Texas at Arlington

System Requirements Specification
CSE 4316: Senior Design I
Summer 2018

Acorn Interactive Systems
Interactive Degree Planner

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REVISION HISTORY

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1 Product Concept

This Product offers currently enrolled students suggested semester schedules by providing them with a tool to make a plan to finish their undergraduate degree based on their major. Furthermore, students will be able to develop their degree plans all the way up to graduation.

1.1 Purpose and Use

This product is an independent platform which provides undergraduates with an easy to use interface along with added restrictions such as a flow chart to create a set list of classes.

1.2 Intended Audience

Production of the degree planner will target students who are enrolled in the CSE department of the University of Texas at Arlington. Additionally, it would be made publicly free for all students to use.

2 Product Description

This application will allow students from the Department of Computer Science and Engineering at the University of Texas at Arlington to create a possible schedule for each semester remaining in their undergraduate degree plan. These schedules will be created by taking into consideration the difficulty of the classes and distributing this difficulty across the remaining semesters. This will create a schedule that has a distributed load balance and allows the student to complete all the requirements of the degree program.

2.1 Features & Functions

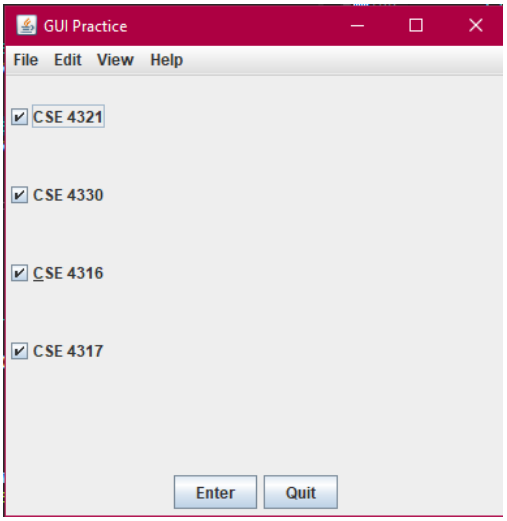
The application will create a schedule based on student input. The student provides information to the application about what classes he or she has already completed. The student will then select desired electives.The application will then create the schedule based on this data. However, since the application will not be linked to the university database it will not be capable of knowing how many classes a student has already taken.

2.2 External Inputs & Outputs

The student will tell the application what classes he or she has already been taken and the desired electives for the major. This will be accomplished by selecting the available classes from a list of options using radio buttons to indicate the selection. The application will then allow its users to print a semester schedule for future reference.

2.3 Product Interfaces

The user interface will be an application that includes all the common interfaces to windows. This includes a file and home buttons in the upper left hand corner. The user can select these buttons to see them expand and select additional options from the expanded menu such as importing an existing schedule, creating a new schedule, saving their work, and printing the worksheet for a desire semester.



☑ CSE 4321

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Figure 1: Interface Mock-up

3 Customer Requirements

The application needs to have an interactive interface that allows users to interactively create their schedule with the classes of their choosing. The application would also take into consideration the difficulty of the classes to build the schedule. Additionally, the application would reliable. That is if the application is closed unexpectedly it should save the user's work so that it can be resumed later.

3.1 Class Difficulty

The class difficulty requirement will be used to determine the average difficulty of multiple classes when planning for class schedules for future semesters.

3.1.1 Description

The application should consider the difficulty of the classes and spread the course load across future semesters.

3.1.2 Source

Product manager (Christopher Conly) of the University of Texas at Arlington

3.1.3 Constraints

A survey will be conducted for all CSE classes in the Computer Science degree plan to determine the difficulty of the classes. We will then be examining and deciding on how accurate the data from our selected test pool will be.

3.1.4 Standards

None

3.1.5 Priority

Class difficulty will be a high priority.

3.2 Prerequisite Structure

The application will take into consideration the requirements of each course to only build schedules that are feasible based on these requirements.

3.2.1 Description

Each class has prerequisites that must be met before a student can attempt to take the class. This application will manage the classes that require these prerequisites in order to restrict students from taking them.

3.2.2 Source

Acorn Team, Product manager (Christopher Conly), and Department undergraduate advisor (Melissa Rose) of the University of Texas at Arlington.

3.2.3 Constraints

Prerequisites will not have any constraints.

3.2.4 Standards

None

3.2.5 Priority

Prerequisites will have a critical priority.

3.3 GUI Ease of Use for Degree Planning

The application will take into consideration simplicity and easy to use for any end user.

3.3.1 Description

The application should provide an easy to use interface with graphical presentation of features to help users create schedules for courses needed to fulfill their degree requirements. For current students, the application should take into account courses that have already been taken in calculating the remaining courses required by the degree. The degree plan will be covering Computer Science.

3.3.2 Source

Acorn Team, Product manager (Christopher Conly), and Department undergraduate advisor (Melissa Rose) of the University of Texas at Arlington.

3.3.3 Constraints

Since this is a standalone application, the information provided might not reflect future rules and regulations put in place by the department and the University. The accuracy of degree requirements and courses is based upon information given by the department degree guidelines and the University 2018-2019 course Catalog as of summer 2018.

3.3.4 Standards

None

3.3.5 Priority

Ease of use will have a high priority.

3.4 Adaptability

The suggested schedules will be adaptable to any changes necessary.

3.4.1 Description

The program application shall allow users to make changes to schedules at any time and as often as needed. The application should make adjustments and perform requirements and prerequisites rule check accordingly. The user would also be notified of discrepancies in his or her schedule if it occurs.

3.4.2 Source

Acorn Team.

3.4.3 Constraints

Requirements and regulations are based on information published after the beginning of summer 2018. The accuracy of the requirements and co-requisites is not guaranteed after the application's release date.

3.4.4 Standards

None

3.4.5 Priority

Adaptability will have a medium priority.

3.5 Planning/Scheduling recommendation

Schedule recommendations will be provided to each user.

3.5.1 Description

The program application shall offer users scheduling recommendations that fit their situation based on their preferences. This recommendation can be based on departmental suggested schedules or computer generated ones.

3.5.2 Source

Acorn Team.

3.5.3 Constraints

One suggestion might be the result of selecting randomly and not considering the course difficulties during selection.

3.5.4 Standards

None

3.5.5 Priority

Schedule recommendations will have a low priority.

3.6 Saving capability

The system will have saving capabilities to save and reopen at another time.

3.6.1 Description

The application shall allow users to save his or her work in a removable drive for later retrieval. The backup copy should be relatively small in size (less than 1GB) and the work should be retained in a way the user can possibly reprint or continue his or her work at a later time.

3.6.2 Source

Acorn Team.

3.6.3 Constraints

Since the application is intended to work on Windows platform, it might not be accessible, modifiable, and transferable under non-windows systems. Attempts might result in files being corrupted.

3.6.4 Standards

None

3.6.5 Priority

Saving capabilities will have a critical priority.

4 Packaging Requirements

This requirement specifies how the application is distributed to users.

4.1 Accessibility

Users will be able to access the file at any given time.

4.1.1 Description

The distribution of this application takes into consideration the obtaining of a copy of this application so that it is easily accessible and available to all students. For example, the application copy could be placed on public domain share storages such as GitHub or freely distributed among students using flash drives. The application should be in ready to run format without the need to install, unpack or enter protection key.

4.1.2 Source

Acorn Team.

4.1.3 Constraints

Even though the application package is in its ready to run form, the user will need Java VM installed in order to utilize it. On other hand, since software application version control and maintenance mechanism are not implemented, the user will not be able to get support or update for fixes and patches should bugs or deficiency be discovered after the release date.

4.1.4 Standards

None

4.1.5 Priority

Accessibility will have a medium priority.

5 Performance Requirements

This section addresses the performance requirement of the application such as how effective the application should be and how fast the application should react to user inputs.

5.1 Reasonably Responsive

5.1.1 Description

Given that minimum hardware requirements are met, the application should show no lagging. The waiting time for data processing should be minimal in seconds. Besides a standard mouse, keyboard and a typical monitor, the application should work normally on system with the minimum peripherals and without a network connection.

5.1.2 Source

Acorn team.

5.1.3 Constraints

This requirement is contingent upon changes that might occur in the system software and hardware over time. This includes operating system update and many software applications running concurrently which might degrade system performance and ultimately the application performance.

5.1.4 Standards

None

5.1.5 Priority

Responsiveness will have a medium priority.

6 Safety Requirements

The application should allow students to have the best experience possible when designing their semester class schedule where they feel it is the optimal schedule available for them in terms of course load. We are planning to gather and preserve the information about each class students need to take or have taken in order to handle situations when generating the different types of schedules possible in the application. We are still researching for the best possible way to avoid any inconvenience that might occur in these type of situations and working on an approach to take when users provide their information in the application.

6.1 Personal Information

6.1.1 Description

Personal information can be easily misinterpreted while seeking advice to get an optimal class schedule if not saved properly. The application will store information provided by the students in an efficient manner so that all the information required to create their schedule is stored properly. The application would then notify the student in response to the information provided to and imported by the system. Furthermore, the application will not harm any other files on the user's host system.

6.1.2 Source

Acorn Team.

6.1.3 Constraints

None

6.1.4 Standards

Acorn Interactive Systems ethical standards

6.1.5 Priority

Personal information will have a medium priority.

7 Maintenance & Support Requirements

The team believes that the interactive degree planner will be able to help students craft an efficient schedule throughout their undergraduate career. The team wishes to continue developing this application once it is launched if there is funding available to do so. However, information regarding how the product will be maintained and supported will be discussed once it is completed and delivered. Important details include information on how regularly the product will be updated and how students might find the documentation needed necessary for understanding.

7.1 Application Features

7.1.1 Description

After the first launch of the application, the team could integrate other undergraduate degrees under the University of Texas at Arlington, department of Computer Science and Engineering so that more students can access the application.

7.1.2 Source

Acorn Team, Product manager (Christopher Conly), and Department undergraduate advisor (Melissa Rose) of the University of Texas at Arlington.

7.1.3 Constraints

None

7.1.4 Standards

None

7.1.5 Priority

Application features will have a low priority.

7.2 User manual

7.2.1 Description

The product will be delivered with an updated simple and easy to follow user manual in order to provide guidelines on how to use the product. Additionally, it will have sections such as table of content, system overview, getting started and glossary

7.2.2 Source

The source of this requirement are future students and undergraduate academic advisors.

7.2.3 Constraints

User manual will be available only in English language.

7.2.4 Standards

Standard American English

7.2.5 Priority

User Manual will have a critical priority.

8 Other Requirements

The software will be functional and applicable for Computer Science majors at the University of Texas at Arlington. The product will also contain features which will allow any user to quickly understand how to use the product as well as to have the ability to obtain extra helpful information if necessary.

8.1 Help Access

8.1.1 Description

The software will contain an accessible screen which will provide the user with helpful information on how to use the program correctly.

8.1.2 Source

Acorn Team.

8.1.3 Constraints

The screen must always be accessible throughout the program session and must be easily understood by a wide range of users. The information provided must undergo a study beforehand to locate where most users have trouble understanding the software process.

8.1.4 Standards

None

8.1.5 Priority

High

8.2 Legend

8.2.1 Description

The software will contain a legend which can be shown and hidden anytime to help the user understand common symbols used throughout the program.

8.2.2 Source

Department undergraduate advisor, Melissa Rose of the University of Texas at Arlington.

8.2.3 Constraints

The information provided alongside the symbols in the legend must be carefully worded to ensure the user understands the purpose.

8.2.4 Standards

None

8.2.5 Priority

Legend will have a High priority.

9 Future Items

The requirements listed below will be extra features which have a possibility of being applied to the project once all the necessities have been implemented. The chance of the extra features becoming implemented will depend on the time, skill, funds, and technology available to the team.

9.1 Web Application

9.1.1 Description

The interactive degree planner will be ported onto a web based application which can be run on the current version of Chrome. The interactive degree planner will have a web page version which will use the same database resources from the standalone Java application version.

9.1.2 Source

Acorn Team.

9.1.3 Constraints

Time available and skills of our current members are the two largest constraints which prevent this implementation. Depending on when the minimum requirements are accomplished for the product, it might not be feasible to learn and implement the code/languages required for the web based application.

9.1.4 Standards

None

9.1.5 Priority

Web Application will be a future plan and hence low priority.

References