BeachCS

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	Summary of changes:

	7. Executive Summary 8. Stakeholder Model 9. Goal Model 10. Requirements
Version 3.0	Summary of changes:

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Executive Summary

The CSULB CECS Wiki is an interactive web application that acts as a student's educational guide containing relevant information regarding all aspects of the Computer Science/Computer Engineering field of study.

As it stands, a student studying CECS at California State University Long Beach has numerous resources at their disposal to answer any questions they may have on a wide range of topics. These topics may include but are not limited to: lists of required courses needed to graduate, a degree roadmap to help students map out their path to graduation, and courses currently being offered at the university. The problem that arises with this is that all of this information is scattered throughout different places on the web, making it both difficult and time-consuming for students to find what they are looking for.

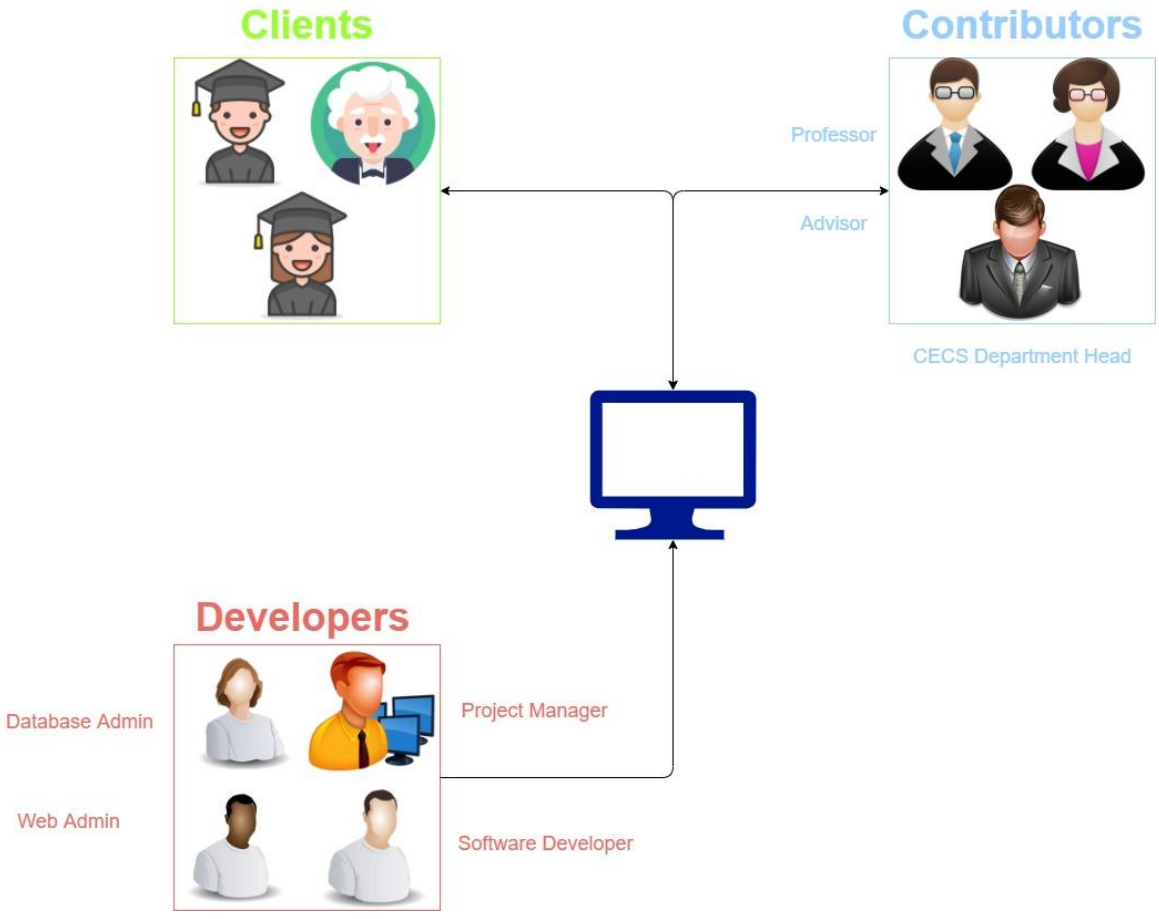
CSULB CECS Wiki aims to fix this problem by providing students with a user-friendly guide that contains all of the information they need in one place to have a successful career as a CECS student at CSU Long Beach. The Wiki will be constantly updated, providing students with real-time updates on course availability, degree requirements, job fairs, tutoring services, and whatever else a student may need to succeed in this field.

This document begins by detailing a brief overview of the stakeholders that are involved in this project. Proceeding this will be a general description of the relationships between the stakeholders and their roles and requirements in this given application. Following that, we will portray the goals this application seeks to accomplish through a model. These goals include: system, usage, and sustainability. After analyzing these goals, we will provide a model of our system vision. The system vision details the agreed-on vision and how the system relates to the stakeholders. After the system vision is laid out, a usage model detailing the more general use cases for each of the stakeholders involved will be provided. Lastly, we will go over the various functional and nonfunctional requirements that will be adhered to throughout the entirety of the development process.

Ultimately, what we hope to achieve in developing CSULB CECS Wiki is to create an application that gathers all of the (supplementary) information a CECS student at CSULB needs to have a successful career both in and out of college.

Stakeholder Model

There are different types of roles for stakeholders with different interests, and differing requirements. In the visual below it models the relationship of each stakeholder in our case we have the Development Team, Contributors, and the Clients. Each stakeholder has a subcategory and with specific responsibilities. The developer category contains the project manager, his role is to manage the entity of the entire development process and ensure that the developer stakeholders are on task and meeting requirements. The Software developers role is to develop the software and maintain the system. The client category contains the end user, in our case our end users will be the students and advisors. The students will be able to access the software from the web. Advisors can use the software to assist students through their education career. The contributors category are for Faculty members, Advisors, and Computer Science department head from the university. These members of the category will provide us with the necessary information to populate the software data.



Stakeholders

Developers

Representative	Parth Chhasatiya, Shujoy Islam, Aaron Ramirez, Rios Rios
Description	Developers of Software
Type(s)	Project designer, Software developer, Database admin, Web admin
Success Criteria	Success by the developers will produce a software that will be available for the use of all CSULB students, faculty and advisors in the CECS department
Deliverable	Software that will collect and provide all necessary CSULB CECS wiki information.

Clients

Representative	Users of the website or its tools
Description	People or groups of people who either use the information and tools present on the Wiki or update it with new information
Type	Users such as Computer Science students, professors, faculty, department members, or advisors
Success Criteria	Users have a significantly easier time finding the computer science related information they need
Involvement	Users take the data and provide feedback on how best to improve the user experience as well as contribute updates to any changes that have happened in the CSULB CS program

Contributors

Representative	Head of department, faculty, and advisors
Description	Any person or group who are creating the curriculum for the CECS department
Responsibilities	Provide the information of the necessary school catalog for the users to obtain information on the curriculum

Involvement	Offers curriculum services to the user through the software
Deliverables	Course catalog, Course description, Road map, Advising

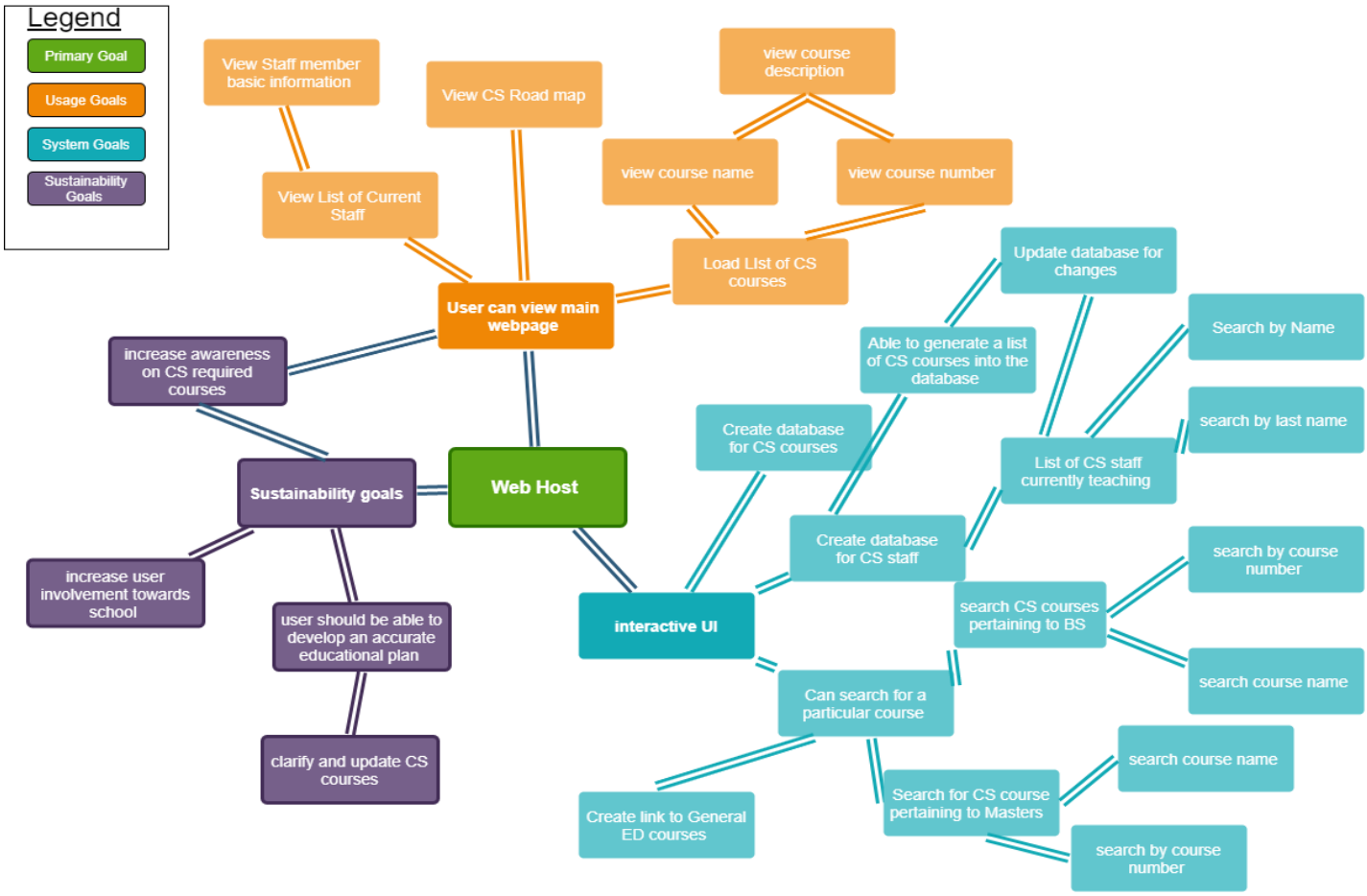
Owners

Description	Any end user that will own the software product
Type(s)	CSULB students, faculty, advisors, and other users.
Responsibilities	Providing a clear visual documentation of the necessary requirements and data for all CECS related at the university.

Goal Model

Goal model defines the main objectives for which the software is being designed. The goal model will help define structure and relationship between goals. Three states are define within the goal model:

1. Usage goals: Describe functional aspects of our software and how the user will utilized the software functions
2. System Goals: Identify software we need to implement in order to achieve usage goals, and describe how the software will be utilized by the user.
3. Sustainability Goals: any requirements for sustainability that the software will need, and or what the user will accomplish.



List of Goals

Primary Goals:

- Have an accessible website for the computer science department to record information to assist students with their academic goals.
- Implement a user friendly web application that will be obtainable for computer science.

Usage Goals:

- Research and collect data provided by the website
- User can view and create an academic map based on provided data
- User can view current Computer Science courses number, name, prerequisites and a brief summary of the selected course
- Users can also view a brief list of General Education courses that fulfill multiple required categories.
- Able to view a list of full-time and part-time faculty.

System Goals:

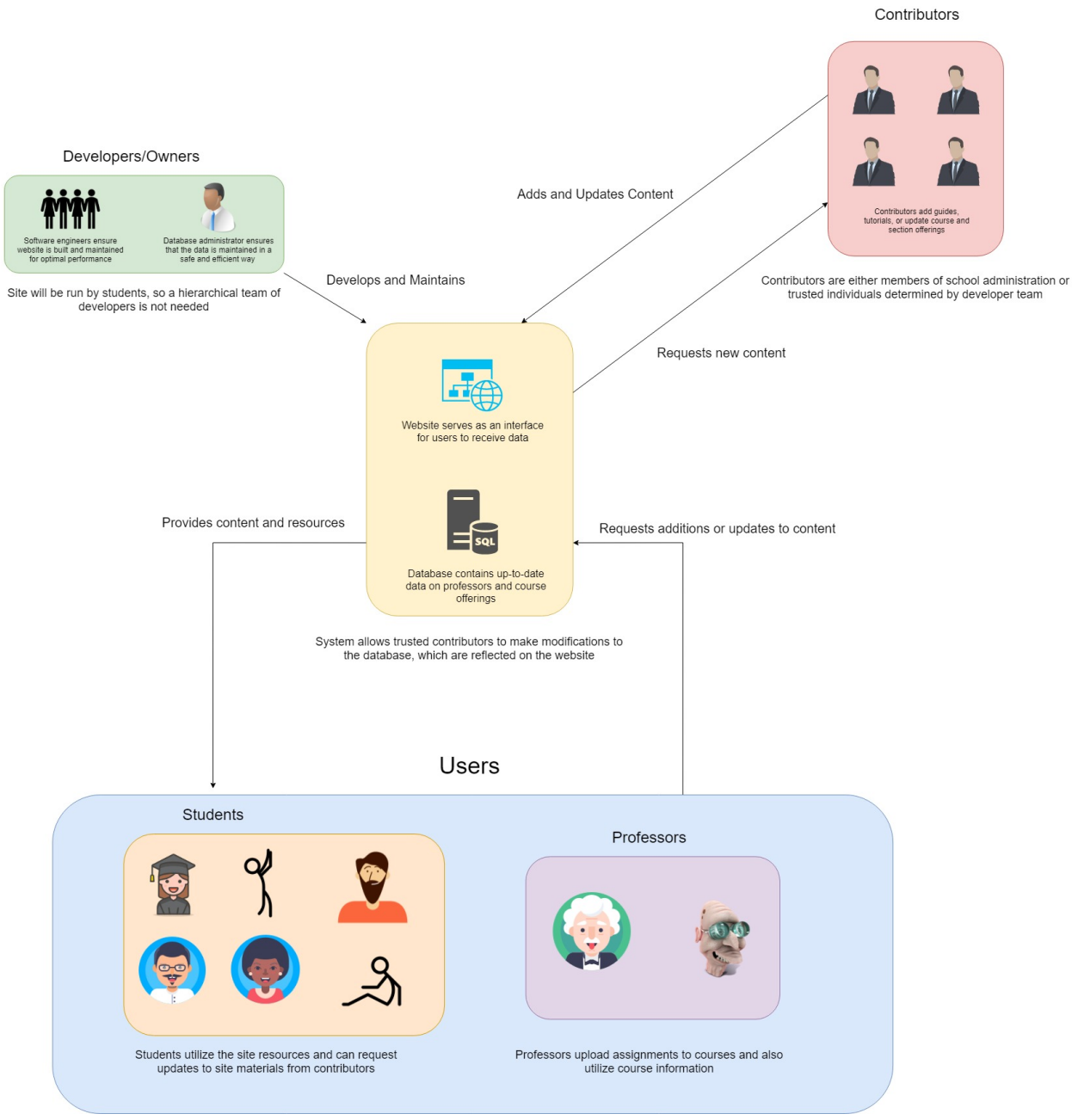
- Implement a graphical interactive Computer Science road map
- Implement a detail guide relevant to obtaining a Masters degree in CS
- Collect data and store data of CS courses and faculty
- Implement a database with CS courses
- Update data and CS road map over time

Sustainability Goals:

- Increase awareness on CS required courses
- Develop an accurate education plan
- Decrease confusing with courses required for graduation
- Increase student involvement towards school

System Vision

The system vision details the relationships between stakeholders and the system as well as any concerns stakeholders may have regarding the system. The system vision below models how each stakeholder interacts with the system by taking in information or adding and updating information.



Usage Model

The Usage Model details the relationships between Client, Contributors, and Developers all interaction with the software and how each of them individually affect the software.Each actor plays a significant role in the Usage Model that impacts the software.The Use Case diagram below models how each client connection to the software and specific Use Cases that provide further elaboration on the complexity of each case.

Use Case Diagram

Use Cases

View Course Descriptions

Description	View relevant information regarding CS and GE courses.
Used by	User
Preconditions	N/A
Success End Condition	The user is able to view information regarding CS and GE courses.
Failed End Condition	The user is unable to successfully view information regarding CS and GE courses.
Actors	Users who wish to view course descriptions to answer questions they may have.
Trigger	User selects the view course descriptions link on the webpage.
DESCRIPTION	Step Action
	1. User accesses wiki
	2. System takes User to home page
	3. User clicks on “Course Explorer” button
	4. System takes User to course descriptions page
	5. System accesses database and displays all course information
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - High priority Performance Target - 2 - 5 seconds Frequency - Every semester Channel to Primary Actor - Web form

Open Issues	1. How do we validate that the courses are updated?
Schedule	Dec 2020

View Student Help

Description	View information on Faculty and hours of tutoring
Used by	User
Procondition	N/A
Success End Condition	Users are able to view the list of all faculty and hours of tutoring.
Failed End Condition	User is not able to view the list of all faculty
Trigger	User selects the “View Student Help” link on webpage
DESCRIPTION	Step Action
	1. User accesses Wiki
	2. System takes user to home page
	3. User clicks on “View Student Help”
	4. System take user to faculty listing and tutoring hours
	5. System accesses database and displays all faculty and tutoring hours
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - High priority Performance Target - 2 - 5 seconds Frequency - As requested Channel to Primary Actor - Web form
Open Issues	1. What other fields could we include? 2. How can we ensure quick searches?

Schedule	Dec 2020

View Relevant Clubs

Description	View resources regarding various student and faculty-run clubs that relate to the CS field of study
Used by	User
Procondition	N/A
Success End Condition	Users are able to successfully view detailed information regarding different clubs that are available to students
Failed End Condition	Users are unable to successfully view detailed information regarding different clubs that are available to students
Trigger	User selects the “CSULB Clubs” link on webpage
DESCRIPTION	Step Action
	1. User accesses Wiki
	2. System takes user to home page
	3. User clicks on “View CSULB Clubs”
	4. System take user to clubs available at CSULB
	5. System displays information about various clubs that are a part of the CSULB campus
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - Low priority Performance Target - 2 - 5 seconds Frequency - As requested Channel to Primary Actor - Web form
Open Issues	1. What information should be included about each of the clubs?
Schedule	February 2020

View Career Opportunities

Description	View relevant information regarding CS career opportunities
Used by	User
Preconditions	N/A
Success End Condition	The user is able to view information regarding CS Career opportunities.
Failed End Condition	The user is unable to successfully view information regarding CS career opportunities
Actors	Users who wish to view CS career opportunities
Trigger	User selects the view career opportunity link on the webpage.
DESCRIPTION	Step Action
	1. User accesses wiki
	2. System takes User to home page
	3. User clicks on “Career Opportunity” button
	4. System takes User to CS Career Opportunities page
	5. System provides the user with links of CS career opportunities
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - High priority Performance Target - 2 - 5 seconds Frequency - As requested Channel to Primary Actor - Web form
Open Issues	1. How do we obtain Career opportunities?
Schedule	Jan 2020

Guides

Description	View relevant information regarding guidance on CS related information
Used by	User
Preconditions	N/A
Success End Condition	The user is able to view guidance information regarding CS related topics.
Failed End Condition	The user is unable to successfully view guidance information regarding CS topics
Actors	Users who wish to view CS guidance information
Trigger	User selects the view guide link on the webpage.
DESCRIPTION	Step Action
	1. User accesses wiki
	2. System takes User to home page
	3. User clicks on “Guide” button
	4. System takes user to the guide section
	5. System provides the user with information from the guide
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - High priority Performance Target - 2 - 5 seconds Frequency - As requested Channel to Primary Actor - Web form
Open Issues	1. How do we obtain guidance for CS topics?
Schedule	Jan 2020

Web Developer

Description	Developer can manage website status
Used by	Web administrator
Preconditions	Web admin has access to the website
Success End Condition	The web administrator is successfully able to verify that the website is functioning properly
Failed End Condition	The web administrator is unsuccessful in verifying whether or not the website is functioning properly
Actors	Web admins who wish to maintain the site
Trigger	Web admin accesses the server mainframe
DESCRIPTION	Step Action
	1. Admin accesses mainframe
	2. Mainframe loads server status information
	3. Admin verifies website is functioning as intended
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - Top priority Performance Target - 5 - 10 seconds Frequency - When necessary Channel to Primary Actor - Web form
Open Issues	1. What contingencies are there for the admin losing access to the mainframe?
Schedule	November 2020

Database developer

Description	Developer can manage database
Used by	Database developer
Preconditions	Developer must have access to the website
Success End Condition	Developer is able to add/remove course or update data currently stored in the database
Failed End Condition	Developer is unable to update database or is unable to access the website
Actors	Developers who wish to maintain the database
Trigger	Developer access database server
DESCRIPTION	Step Action
	1. Developer access database mainframe
	2. Updates current stored data
	3. Maintain database
	4. Links updated data to main website
EXTENSIONS	Database mainframe
EXCEPTIONS	N/A
Related Information	Priority - Top priority Performance Target - 30 seconds Frequency - When necessary Channel to Primary Actor - Web form
Open Issues	1. How do we secure our data and load the appropriate data? 2. How many developers will have access to the database ?
Schedule	November 2020

View CS Minors

Description	View detailed information regarding the necessary steps and requirements to obtaining a Minor degree
Used by	User
Preconditions	N/A
Success End Condition	The user is able to successfully view information regarding Minor degrees
Failed End Condition	The user is unable to successfully view information regarding Minor degrees.
Actors	Users who wish to learn more about CS related Minors offered at CSULB
Trigger	User selects the CS Minors link on the webpage
DESCRIPTION	Step Action
	1. User accesses wiki
	2. System takes User to home page
	3. User clicks on “CS Minors” button
	4. System takes User to CS Minors page
	5. System displays all pertinent information regarding CS Minors
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - Medium priority Performance Target - 2 - 3 seconds Frequency - When requested Channel to Primary Actor - Web form
Open Issues	1. How can we answer student questions regarding non-CS related Minors
Schedule	March 2020

Site theme

Description	User is able to change website theme from Day mode to night mode and vice-versa
Used by	User
Preconditions	N/A
Success End Condition	User is able to change theme when theme button is clicked
Failed End Condition	Website fails to change theme when user clicks theme button
Actors	Users who want to change the website theme
Trigger	User clicks the Day/Night button
DESCRIPTION	Step Action
	1. User accesses wiki
	2. System takes User to home page
	3. User clicks on “Day/Night” button
	4. Website theme is switched from Day to night mode or vice-versa
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - Low priority Performance Target - 1 - 2 seconds Frequency - When needed Channel to Primary Actor - Web form
Open Issues	1. Should there be any other modes besides day/night
Schedule	April 2020

Enhance coding skills

Description	View relevant information regarding programs that will help users enhance coding skills.
Used by	User
Preconditions	N/A
Success End Condition	The user is able to view information regarding programs that are able to enhance their coding skills.
Failed End Condition	The user is unable to successfully view information regarding programs that are able to enhance their coding skills.
Actors	Users who wishes to enhance their coding skills
Trigger	User selects the view guide link on the webpage.
DESCRIPTION	Step Action
	1. User accesses wiki
	2. System takes User to home page
	3. User clicks on “Guide” button
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - Medium priority Performance Target - 5 - 10 seconds Frequency - When requested Channel to Primary Actor - Web form
Open Issues	1. What are free and purchasable enhancing coding skills, tutorials or academies?
Schedule	Feb 2020

View Accredited Courses

Description	View information about websites and businesses that offer accredited CS courses via virtual classes
Used by	User
Procondition	N/A
Success End Condition	Users are able to successfully view information about where to find accredited CS courses
Failed End Condition	Users are unable to successfully view information about where to find accredited CS courses
Trigger	User selects the “View Accredited Courses” link on webpage
DESCRIPTION	Step Action
	1. User accesses Wiki
	2. System takes user to home page
	3. User clicks on “View Accredited Courses”
	4. System take user to accredited courses available to CS students
	5. System displays information regarding companies and businesses that offer accredited CS courses
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - Medium priority Performance Target - 2 - 5 seconds Frequency - When requested Channel to Primary Actor - Web form
Open Issues	1. How can we verify CSULB accredits the classes we display?

Schedule	Feb 2020

View information on Masters

Description	View relevant information about pursuing a Masters degree in the field of CS
Used by	User
Preconditions	N/A
Success End Condition	The user is able to successfully obtain information about pursuing a Masters degree in CS
Failed End Condition	The user is unable to successfully obtain information about pursuing a Masters degree in CS
Actors	Users who wish to learn more about obtaining a graduate degree
Trigger	User selects the CS Masters link on the webpage.
DESCRIPTION	Step Action
	1. User accesses wiki
	2. System takes User to home page
	3. User clicks on “CS Masters” button
	4. System takes User to CS Masters page
	5. System displays all relevant information regarding the obtainment of a Masters degree
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - Low priority Performance Target - 2 - 5 seconds Frequency - Yearly updates or when requested Channel to Primary Actor - Web form
Open Issues	1. How do we obtain relevant information regarding different universities that offer a Masters program in CS

Schedule	February 2020

User Authentication

Description	Grants actors, different type of access to the web site
Used by	Web admin, database developers, users
Preconditions	N/A
Success End Condition	Certain key actors will have special permission to the web ie web amnin can modify website, developers can add modify database and student user can view and select options from the finish website
Failed End Condition	No one can have access to the website
Actors	1. Web developers 2. Database developers 3. Users
Trigger	Actor logs in to the website depending on permission level
DESCRIPTION	Step Action
	1. User accesses wiki
	2. System takes User to home page
	3. User clicks on “Guide” button
	4. System takes User to CS guidance information page
	5. System provides the user with links of guidance on CS topics
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - High priority Performance Target - 2 - 5 seconds Frequency - When necessary Channel to Primary Actor - Web form

Open Issues	1. Who is going to have special permissions to the site? 2. How many web admins do we need? 3. How many database developers do we need ?
Schedule	Dec 2020

CS major roadmap

Description	Grants users the ability of an interactive Computer Science major planner roadmap.
Used by	User
Preconditions	N/A
Success End Condition	The user is able to successfully obtain an interactive Computer Science major road map.
Failed End Condition	The user is not able to successfully obtain an interactive Computer Science major road map.
Actors	Users who want to view the Computer Science major roadmap.
Trigger	User clicks the scheduling roadmap
DESCRIPTION	Step Action
	1. User accesses wiki
	2. System takes User to home page
	3. User clicks on “CS major roadmap” button
	4. System takes User to CS major roadmap
	5. System displays all an interactive CS major roadmap
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - Medium priority Performance Target - 2 - 5 seconds Frequency - As requested

	Channel to Primary Actor - Web form
Open Issues	1. Where will we obtain the current, and older cs roadmaps? 2. How will we develop a dynamically changing roadmap?
Schedule	May 2021

Interactive planner

Description	Grants users the ability of having their own unique interactive planner that will give the user ability of registering deadlines and test dates.
Used by	User
Preconditions	N/A
Success End Condition	The user is able to successfully obtain their own unique interactive planner
Failed End Condition	The user is not able to successfully obtain their own unique interactive planner.
Actors	Users who want to view their own unique interactive planner
Trigger	User clicks the interactive planner
DESCRIPTION	Step Action
	1. User accesses wiki
	2. System takes User to home page
	3. User clicks on “Interactive planner” button
	4. System takes User to interactive planner
	5. System displays interactive planner
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - Medium priority

	Performance Target - 5 seconds Frequency - When requested. Channel to Primary Actor - Web form
Open Issues	1. We will need to implement accounts for the users to have their own interactive planner.
Schedule	May 2021 (Stretch Goal)

Dynamically Updating course list

Description	Grants users the ability of having their own unique interactive planner that will give the user ability of registering deadlines and test dates.
Used by	User
Preconditions	N/A
Success End Condition	The user is able to successfully obtain their own unique interactive planner
Failed End Condition	The user is not able to successfully obtain their own unique interactive planner.
Actors	Users who want to view their own unique interactive planner
Trigger	User clicks the interactive planner
DESCRIPTION	Step Action
	1. User accesses wiki
	2. System takes User to home page
	3. User clicks on “Interactive planner” button
	4. System takes User to interactive planner
	5. System displays interactive planner
EXTENSIONS	N/A
EXCEPTIONS	N/A
Related Information	Priority - Medium

	Performance Target - 5 seconds Frequency - When requested. Channel to Primary Actor - Web form
Open Issues	1. We will need to implement accounts for the users to have their own interactive planner.
Schedule	May 2021 (Stretch Goal)

Requirements

Functional Requirements:

- Home page where users can view course info and career guides
    - Clients can access all content from home page
- Day/Night mode to change UI color scheme
- Course info page
    - Clients can view detailed course information, such as
        - Course Number
        - Course Description
        - Prerequisites needed to take a course
        - Prerequisites to other courses fulfilled by a course
        - Courses needed to complete a Computer Science Major
        - General Education requirements a course fulfills
    - Contributors can add or update and course information
- School and Career Guides
    - Guides detailing relevant clubs and resources
    - Information to help with school or certain classes
    - Domain specific technical knowledge to help with skills growth
    - Career advice to help with long-term professional growth
- Interactive degree planner (stretch goal)
    - Visualization of general recommended course path for a timely graduation in the Computer Science major
    - Tree components will be responsive
        - Can view course details directly from the tree
    - Contributors can edit the roadmap to reflect changing courses or degree requirements
    - Ability to save the road maps of previous years
- Login Page (stretch goal)
    - Allow contributors to log into accounts with special permissions

Quality Requirements:

- All useful information must be placed in as few places as possible without congesting the page
    - Reduced time and effort to get all information a client may be looking for
- Site must be secure and have a near constant uptime

    - If website is unsafe, unavailable, or information on site cannot be trusted, this greatly reduces its effectiveness for clients
- All applications on website must be responsive and smooth
    - Easy user interaction with the website addresses the previous difficulties in finding information on slow, laggy, unappealing sites
- Information on site must always be up to date
    - Clients using the site must be confident that the site will provide trustworthy and relevant information

Constraints:

- Tech stack
    - MySQL database
    - Java Spring Boot backend
    - React frontend
    - Run on either AWS or GCP
- Little money (unless the school wants to throw some our way :( )
    - Cloud platform could cost money to maintain

Development Process:

- Development will utilize an Agile methodology
    - Working product over documentation
    - User experience over processes and tools
    - Verified and valid system over mindlessly satisfying requirements
    - Flexible plan over rigidity
- Gather requirements to address existing course catalog pain points
- List features the website will utilize
- Create requirements documentation to track plan and desired output
- Design and model system
- Develop web application
- Test web application
    - Check for bugs
    - V&V Testing
    - User acceptance tests
- Deploy web application
    - May use cloud services for hosting
- Maintain web application

Appendix

Amendment 1: Stakeholder Model

- Replace professors, advisors and CECS department head from the Contributors role with the project developers, our BeachCS team

Amendment 2: Stakeholders

- Remove contributors: Change the representative by removing the head of department, faculty, and advisors
- Update contributors: Representative will remain to BeachCS team

Amendment 3: System Vision

- Remove contributors: school administration or trusted individuals
- Update contributors: BeachCS team

Amendment 4: Use Case Diagram

- Course Explorer
    - Remove View Information on Masters
    - Remove View CS Minors
- Guides
    - Add Enhancing coding skills
    - Add interview practice questions
    - Add Study guide page
    - Add IDE's page
- Career
    - Career replace View Career Opportunities with View Interactive event calendar for workshops
    - Career update View resume & cover letter
    - Career update View how to succeed at your job
    - Career update View conquering the career fair
- Academics
    - Add View Information on Masters
    - Add View CS Minors
    - Remove enhancing coding skills
    - Add View Applying to Graduate School (MS/PhD)
    - Add View CECS Faculty

- Interactive Planner
    - Remove from application

Amendment 5: Use cases

- Interactive Planner
    - Remove interactive degree planner use case

Amendment 6: Requirements

- Functional Requirements
    - Remove Interactive degree planner
    - Add Interactive RoadMap
- Constraints
    - Tech Stack
        - Remove Java Spring Boot backend
        - Add Node.js
        - Add Express.js

Amendment 7: Executive Summary

- Replace all instances of “CSULB CECS WIKI” with “BeachCS Wiki”
- We finally decided on the name of our application and registered our domain with that name, so need to replace our former application name with our current one

Amendment 8: Stakeholder Model

- Add Students to the Contributors role in the model
- Although students at CSULB are also our clients, they will also act as contributors due to the feedback functionality we have implemented into our web application

Amendment 9: Goal Model

- Remove database for CS staff, as information is now shown through a table
- Remove link to General Education courses
- Add links for information pertaining to Cybersecurity minor
- Add link to calendar showing important workshop and career event dates

Amendment 10: Requirements

- Functional Requirements
    - Add Interactive RoadMap
    - Remove login page as stretch goal
    - Add Masters page
    - Add Cybersecurity minors page
- Constraints
    - Tech Stack
        - Confirm that AWS is used
        - Add Amazon EC2
        - Add Amazon RDS
    - Money issue
        - Small machine can be hosted for free for a year
        - Domain cost $15/year