**C868 – Software Capstone Project Summary**

**Task 2 – Section A**



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| **Capstone Proposal Project Name:** | CDUTermTracker- Term Tracking Application for CharDennis University |
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# **Business Problem**

**The Customer**

The customer is CharDennis University, an online university specializing in technical degrees. It has a student body of 10,000 students on average, and predicts growth of 5% this year. The university currently utilizes web-based term tracking for its students, and has no mobile infrastructure. CDU’s mission is to provide a high-quality, student-driven education that is self-paced and comprehensive, and to empower students to take charge of their schedule and learn at a pace which is most appropriate for them.

CDU’s short-term goal is to provide a scalable mobile application that allows students to track their term progress. Their long-term goal is to leverage this mobile application into higher perceived quality by students, leading to future referrals and an increase of 10% in 2022.

## **Business Case**

CDU’s student body currently has no way to track their term progress on mobile devices, as the website used by CDU is not responsive and therefore poorly designed for mobile devices. An increasing number of students have expressed interest in access to term tracking on their mobile devices. The CDUTermTracker application will meet the client’s needs by providing a high-quality application that will allow students to track their term progress.

Due to regulations, CDU’s students are permitted to take no more than 6 courses per term. Each course has two assessments: a Performance Assessment and an Objective Assessment. The application will need to allow students to track their terms accordingly.

## **Fulfillment**

CDUTermTracker is a multi-screen Android mobile application that will allow students to enter:

* Unlimited Terms
  + A term start date
  + A term end date
* Up to 6 courses per term
  + A course start date with optional notifications
  + A course end date with optional notifications
  + A course due date
  + Instructor information:
    - Instructor name
    - Instructor email
    - Instructor phone number
  + Optional, shareable notes
  + The ability to search course names
* One Performance Assessment per course
  + An assessment due date with optional notifications
* One Objective Assessment per course
  + An assessment scheduled date with optional notifications
  + A field for Pre-assessment score
  + The ability to generate reports based on scheduled date of upcoming assessments

Notifications should trigger if the associated date is within one week, and all fields that allow text should have security protections to defend against SQL injection attacks. All fields except notes are required, and should have error handling to prevent poorly formatted entries.

The application will use a SQLite database to store information locally on the user’s mobile device, and will allow students to create, view, update, and delete terms and courses, and view and edit assessments. There will be additional error-handling to ensure that start dates do not occur after due dates.

# **Existing Gaps**

CDU does not currently have a mobile application in place. Their current term tracking utilizes a website, which is not responsive to mobile screens. CDUTermTracker will provide CDU’s students with a mobile application for term tracking.

# **SDLC Methodology and Deliverables**

Considering the nature of your project, select a Software Development Life Cycle (SDLC) methodology that will be used to manage the project. Those may include…………. Be sure to describe the process you select first and why it’s a good fit. Then review the methodology phases and what part of the project will align with each.

Agile methodology will be utilized when delivering this project due to its focus on delivering high-quality deliverables quickly and repeatedly iterating to improve those deliverables. Testing will be paramount and will take place repeatedly throughout the progress.

One benefit of Agile SDLC methodology is that it produces a working deliverable more quickly. This gives the customer an earlier opportunity to provide input to that deliverable, allowing our team to be more responsive to the customer’s needs.

Below is an outline of the phases of Agile software development, the activities that take place in each, a high-level description of deliverables for each phase, and specific deliverables associated with this project.

## **Phases of Agile Methodology**

### Requirements Gathering

This is the phase most recently completed, and occurs when the customer’s needs are discussed and documented. Once the first iteration is complete and the product has been reviewed, this phase will be re-entered based on the results of the review.

**Deliverables:** On the first iteration, documentation of client’s requirements. On later iterations, documentation from the Review phase and any additional requirements from the user.

**Project Deliverables:** Requirements document

### Design

This is the current phase of the project. The client’s needs have been determined, and the requirements documented. The program can now be designed, starting with a wireframe to plan layout and UML to design the program’s structure.

**Deliverables:** Wireframe and UML in the first iteration. The deliverables for future iterations will be dependent on the previous stages’ findings.

**Project Deliverables:** Low-fidelity wireframe and UML, and a test plan

### Development

Based on the layout and UML created in the Design phase, development can begin and classes and functionality of the program implemented.

**Deliverables:** For the first iteration of this project, a fully functional application without fine-tuned design will be delivered. The second iteration’s development phase will deliver a product with a user-friendly design. During this phase, documentation including a user guide is created or updated.

**Project Deliverables:** Functional prototype based on the UML in the first iteration, in the second iteration a functional prototype with design implanted based on the wireframe. A user guide, updated if necessary with each iteration.

### Testing

As functionality is implemented, testing occurs. If any test(s) reveal a problem, the development phase can be reentered to address that failure.

**Deliverables:** Results from testing.

**Project Deliverables:** A unit testing summary

### Deployment

The initial deployment will be to a small group of internal testers for testing of functionality, and subsequent iterations’ deployment phases will be to increasingly large subsets of all users. 25 in the second iteration, 500 in the third, 1,000 in the fourth, and finally to the general student body.

**Deliverables:** The results of UAT testing, including bug reports and user input.

**Project Deliverables:** Bug reports and user input reports.

### Review

The results of the user acceptance testing are reviewed, and based on those results the requirements gathering phase is entered once again. Then the project enters the maintenance phase (which also follows the Requirements Gathering, Design, Development, Testing, Deployment, and Review phase structure).

**Deliverables:** The input from the previous phases and action items to address in the next iteration.

**Project Deliverables:** Documentation from previous phases that will guide the next iteration.

# **Implementation**

As this application is not replacing an existing system and the client’s priority is user experience, implementation will occur in a series of iterations as set forth in the Agile Software Development Life Cycle. This will allow us to rapidly response to tester and user feedback with minimal frustration that frequent updates can cause.

Initial implementation will occur after the Testing phase of the lifecycle, during which validation and verification take place by internal testers and developers. This first iteration’s deployment implementation will involve a small group of internal testers who will focus on functionality.

The SDLC then starts a second iteration, including additional validation and verification in the Testing phase, based on the findings of that first iteration. This iteration’s implementation will be a beta release to a small subset of 25 students who will begin initial End User Acceptance testing and offer input into design and functionality.

Their UAT results and reviews are used as input to the third iteration, which culminates in a larger release to 500 students for end user acceptance testing.

Based on their input, the fourth iteration is entered, and its deployment implementation will be to 1,000 students for additional UAT testing as well as load testing with a larger subset of users. The fifth iteration will implement deployment to all users, and additional iterations will be in response to user reported bugs or routine software maintenance.

Throughout each iteration of the SDLC lifecycle, all UAT test results and user input will be made available to stakeholders to facilitate stakeholder engagement and ensure their needs are being surfaced and addressed as quickly as possible during implementation.

# **Validation and Verification**

Testing early and often is a central tenant of Agile software development. We want to surface potential problems early and address them as soon as possible. Functional, unit, and integration tests are written in the design phase and internal developers and testers will use these tests during the Testing phase to verify that each unit of code works on its own and as part of the whole.

After the tests are passed and output is validated in the Testing phase, the deployment phase is entered to verify End User Acceptance. If tests do not pass, the development phase is reentered. As outlines in the previous section, user acceptance is validated first among a small group of internal testers, and then gradually larger groups of students. Buts or issues reported during user acceptance testing will be addressed in the next iteration.

# **Environments and Costs**

## **Programming Environment**

Provide a clear picture of what hardware and software are required to complete the project.

For example:

* Windows 2016 Server running IIS 7.5 or higher
* Microsoft SQL Server 2012 or higher
* …etc..

## **Environment Costs**

Provide an explanation of the costs associated with the software application. Some might be startup, first-time costs while others might be a percentage of licensing costs. Environment costs are relatively minimal. The environment where the system resides in a shared environment where costs are shared by the organizations. There is a nominal fee associated with maintaining the database of $500 a year that allows for unlimited storage size and 99.8% uptime. The web server is another fee of $300 a year that includes maintenance and upgrades of the following; Windows Server, IIS, and ColdFusion. The final cost is based on the thick or thin clients utilized by the customer. Each device that is attached to the network has a $40 annual fee which covers Operating System and Network upgrades.

## **Human Resource Requirements**

What is the time and cost for the labor to complete the application?

For example: The larger share of human resource is by the developers of the project followed by the PM. Developers consume approximately 75% of the hours and dollars associated with …etc.

# **Project Timeline**

For this section, you'll need to look at the phases of the project and provide information about the time required to complete each phase.

For example:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Phase | Milestone/Task | Deliverable | Description | Dates |
| Pre-development | Task 1 | Requirements | Meeting with customer and procedure review | 6/1/2018 – 6/30/2018 |
| Design | Task 2 / Design files | Low fidelity wireframe  High fidelity mockup | Create the UI that relates the look and feel of the project | 7/1/2018 – 7/15/2018 |
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