Senior Capstone Project

CSI-4999

September 5th, 2019

**Introduction**

* Name
  + Donovan Cummins
* Strengths
  + HTML
  + CSS
  + SQL
  + JAVA
* Experience with
  + Python
  + PHP
  + JavaScript
  + Shell Scripts
  + Other Vendor Dependent Languages and Libraries
* My Passion
  + Design and Architecture
  + UI/UX Design

**Team**

Donovan Cummins

[dcummins@oakland.edu](mailto:dcummins@oakland.edu)

**Project**

TBD

Personal Ideas

* Wireless Sensor Network for Monitoring Soil (Moisture, Temperature, etc)
* WSN for Monitoring Pedestrian Traffic (How many, how fast, time, etc)
* Biometric and Behavioral Wearable Sensors for Monitoring a Patients Well-Being
* Skittles Sorting Machine
* Friend Book (Like facebook without the centralized database of users, their activities and connections.)
* WSN of Weather Stations that relay data between each other and store on the cloud via access point nodes.

All Require Backend, Frontend and Mobile.

::For sensor networks

Sensors Collect Data → Store on Cloud

Web Interface → Aggregates Data from Cloud

Mobile → Aggregates Data from Cloud

**Individual Responsibilities**

Sprint Logbook

Github (Shared with TA)

Evidence of 16-24 hours of work per sprint

(Documents, Research Report, Source Code, etc.)

**Presentations**

* Microsoft Power Point
* All Students must attend and present their project contribution.
* 12-15 minutes for presentation

**Project Documentations:**

1. Project Vision
   1. Backgrounds
   2. Socio-economic Impact, Business Objectives and Gap Analysis
   3. Security and Ethical Concerns
   4. Glossary of Key Terms
2. Project Execution and Planning
   1. Team Information
   2. Tools and Technology
   3. Project Plan
   4. Best Standards and Practices
3. System Requirement Analysis
   1. Function Requirements
   2. Non-functional Requirements
   3. On-Screen Appearance of Landing and Other Page Requirements
   4. Wireframe Designs
4. Functional Requirements Specification
   1. Stakeholders
   2. Actors and Goals
   3. User Stories, Scenarios and Use Cases
   4. System Sequence / Activity Diagrams
5. User Interface Specifications
   1. Preliminary Design
   2. User Effort Estimation
6. Static Design
   1. Class Model
   2. System Operation Contracts
   3. Mathematical Model
   4. Entity Relation
7. Dynamic Design
   1. Sequence Diagrams
   2. Interface Specification
   3. State Diagrams
8. System Architecture and System Design
   1. Subsystems / Component / Design Pattern Identification
   2. Mapping Subsystems to Hardware (Deployment Diagram)
   3. Persistent Data Storage
   4. Network Protocol
   5. Global Control Flow
   6. Hardware Requirement
9. Algorithms and Data Structures
   1. Algorithms
   2. Data Structures
10. User Interface Design and Implementation
    1. User Interface Design
    2. User Interface Implementation
11. Testing
    1. Unit Test Architecture and Strategy/Framework
    2. Unit Test Definition, Test Data Selection
    3. System Test Specification
    4. Test Reports per Sprint
12. Project Management
    1. Project Plan
    2. Risk Management
13. References

**First Sprint**

* Sprint Presentation
* Demonstration
* Risk and Challenges
* Mitigation Plan
* Sprint Objectives
  + Project Requirements
  + Project Plan
  + Tool chain, language, config. management, server setup, development environment, etc.

**Second Sprint**

* + Must be completed by Sprint 2
    - Registration
    - Login/Logout
    - Role assignment and Access control rules
    - Password modification / Forgotten functionality
    - Email verification
    - User management (Create / Delete / Update / Search)
* Sprint Presentation
* Demonstration
* Risk and Challenges
* Mitigation Plan
* Sprint Objectives
  + User Account Creation
  + Registration
  + Role Management
  + Profile Update
  + Locking/Unlocking of User Accounts
  + Email Verification

**All Other Sprints Until End of Semester**

* Sprint Presentation
* Demonstration
* Risk and Challenges
* Mitigation Plan
* Sprint Objectives
  + Complete All User Stories for Next Sprint
  + Must complete all UI/UX for Next Sprint
  + Must complete QA for all prior sprints and create new tests cases for current

Presentation Flow for Thursday

1. Introduction (Olivia)
2. Operational Concept (Austin)
3. Project Requirements (Austin)
4. Use Case Flow Charts (Joe)
5. Project Plan (Donovan)
6. Tool Chain (Loi)
7. Server Setup and Development Environments (Marcel)
8. Risks and Challenges (John)