**Proposer:** Caroline Budwell

**Project Title:**CS 23-313 Elementary School Computer Science Engagement

# **1. Understand why the project was initiated (Brianna):** Among the Virginia school systems, we as a group are looking to implement fun and engaging activities that make students want to learn computer science. On the internet today, there are numerous different fun and engaging activities for computer science, however, there is not one place that holds all of these activities together with formulated lesson plans that teachers can follow. Our hope by the end of the fall semester is to make a website that holds a place that stores lesson plans that teachers can quickly gain access to and implement in their classrooms. How the lesson plans will be structured is one in which an instructor with a non-technical background will be able to comprehend the lesson and teach with no outside research. The website will also host exercises that do not require technology in order to supply school systems without technology to be able to teach fun and engaging computer science concepts as well. In the Spring, we will pilot these exercises with teaching the lessons ourselves and observe teachers implementing our lessons using just the website as a source.

# **2. Define the key objectives of the project (Mason):** This project serves to increase interest in computer science amongst elementary and middle school students. We are creating a website to house engaging activities that teachers and ourselves can implement within actual classrooms in the Spring. Our intent is to introduce the kids to some basic, relevant topics in computer science in hopes that some of them may decide to pursue further education in computer science in the future. We are developing activities and lesson plans that blend the Virginia SOL’s with these topics to ensure students have fun but also are learning things that are meaningful at the same time.

# **3. Outline the project statement of work (Kiersten):**

Computational thinking will be a fundamental skill set used by everyone in the world by the middle of this century. The study and introduction to computer science is the first step to the development of these computational thinking skills.

In some schools the teachers are not provided with adequate resources to help them understand and expose computer science problems to the students in elementary and middle school. This makes it more complex for these students to grasp the concept when they get to higher grade levels. Therefore, equipping the teachers with necessary resources to alleviate the fear most teachers may have when faced with computer science topics and providing fun and engaging activities for middle schoolers in early years will help them succeed in their college, careers and civic life.

# **4. Identify major deliverables (Jared):**

* Source code comments & banners
* Project scope
* Project requirements
* Wireframe /storyboard
* Project proposal
* Full list of activities for the website
* Working website on local device
* Make website live
* Fine tuning website (next semester)

# **5. Select key milestones (Brianna):**

The two documents that are most important in the early stages of our senior capstone project are the scope and the requirements documentation. Specifically, the project scope is a high level formulized document that includes the premise of why our capstone project is being created and the rationale behind our project as a whole. The requirements document is used to describe the process of establishing the services that the teachers require from the website and the constraints under which the website operates. A storyboard will be used in place of a high level architecture to illustrate the user interaction that will occur with our website and the hopes of what the website will provide for teachers. A working prototype of our project will be completed by the end of the semester that will host the lesson plans that teachers can utilize who have limited knowledge on computer science concepts. In the spring we plan to implement these lessons in the schools all across Richmond along with using data gathered by teachers' experience with the website to develop the website even more.

**6. Identify major constraints (Mason):**

While our project does not necessarily have many major constraints in general, there are a few things we have to keep in mind while designing the website and activities. The first thing, and most important constraint, is that we must do our best to give credit where it's needed and not violate copyright laws. The second constraint we must pay attention to is the simplicity of our lesson plans and assignments. We have to make sure that all activities and lesson plans are easily understood by the students and teachers. We also have to account for implementation of our assignments amongst those with no technical background.