

Summary of Computer Science Projects

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Short Description: ILN Cerybrum Corp. Contract Software Engineer
Programming: HTML, CSS, JavaScript, C#, .Net Framework
Type: Contract
Summary:

- I worked as a 1099 contractor on a per assignment basis as a remote software engineer for Cerybrum Corp. I developed features and addressed bugs as assigned by my supervisor. My normal workflow was the following: I would create an Azure repository feature branch, make the requested changes, and submit the changes as a pull request within the repository. Pull requests were reviewed for formatting and standards by my supervisor. After the pull request was approved, the feature was then submitted to a quality assurance engineer. It was common for a branch to be sent back for corrections and changes. Once the requirements set within each of these steps had been met, the branch was merged into the development branch of the project for beta testing. The majority of the work that was assigned to me was frontend development. Often an understanding of backend processes was essential to completing the frontend work. One major feature that I implemented was a calendar that asynchronously queried several internal data sources that contained records with extendable attributes, transformed the data appropriately, and presented the user with the data as prescribed by the design team.
- Website of that I contributed to: [ILN - Your Life Manager](#)

Short Description: Custom Framework for in-Browser Game Design
Programming: HTML, CSS, JavaScript
Type: Personal Project
Summary:

- I developed a javascript based framework for creating small in-browser games. Most modern browsers support the GamePad API. This API allows for easy game controller integration. The impetus for creating this framework was to assist the local Girl Scout troop to which my children belonged. The goal was to streamline the intermediate steps between design and production. A successful product would allow for the girls to design simple games that I could then quickly produce. The framework simplifies the process of putting together the primary features of small game development (art, sound, and events). This project is on-going and has mostly met the initially set goals. One major bug/issue that is currently under development is an upper limit for the number of object collisions that can trigger events. As the processing power of any given browser is limited, a more efficient algorithm is necessary for detecting collisions between objects. A lag in animation becomes detectable after adding approximately 40 objects with collision detection to the screen.

Short Description: JEM Races LLC Website & Timing Software
Programming: HTML, CSS, PHP, Laravel Framework, Javascript, JAVA
Type: Personal project
Summary:

- I was the Managing Partner of JEM Races LLC. JEM Races LLC was a company that was owned by myself and my wife. We organized, promoted, and directed small foot races. I developed the website that was used to collect participant payment and registration information. The website was adapted from an open source project. One significant adaptation was that the software organized participant information for processing by race officials at race check-in. In addition, custom software running on generic race timing equipment produced race results that was then made available to race officials.
- Photos of a Race: [Photos](#)

Short Description: Demoss House of Cuts Website
Programming: HTML, CSS, PHP
Type: Personal project
Summary:

- I administered a website that I developed for the barber that I used while living in Florida. The website was operational for approximately eight years (October 2015 to August 2023). The website was updated/revised several times. The website provided an admin portal for changing services, prices, and hours. The project was version controlled with Github.
- Photo of last version of website: [Photo](#)

Short Description: Mobile Device Controlled Sprinkler System
Programming: JAVA, HTML, CSS, Javascript, Apache Cordova
Type: Academic project
Summary:

- My graduate research thesis was the creation of a mobile device controlled sprinkler system. The system allows a user to control the state of his or her sprinkler system with an installed app on a mobile device. The project was divided into four design level components each encapsulating a hierarchy of implementation steps. The Mobile Device Controlled Sprinkler System was made up of a custom electrical circuit, a Raspberry PI computer, an Android app, and a communication mechanism between the Raspberry PI computer and the Android app.
- Design Overview: [Sprinkler System Design](#)

Short Description: **The Becoming Company – Information Security Risk Assessment**

Type: **Academic project**

Summary:

- As a final project for Information Security Management (W01) - CIS5600, I produced an Information Security Risk assessment based on the FAIR (Factor Analysis of Information Risk) framework for a fictional company called the Becoming Company. The methodology was based on the information provided by Risk Management Insight LLC regarding the FAIR framework. Four stages were completed. Ten total steps were taken. The first stage consisted of two steps: identifying assets and identifying threats. The second stage that was performed was an estimate of Probable Loss Magnitude (PLM) for each asset. The second stage consisted of two steps: deriving the probable loss associated with each asset given a set of threat actions and loss forms and selecting the highest form of loss that was determined. A probable loss magnitude scale was also used to express probable loss magnitude.
- FAIR Risk Assessment: [Becoming Company Risk Assessment](#)

Short Description: **Children’s Animated Education App**

Programming: **Apache Cordova, Javascript, Processing**

Type: **Academic project**

Summary:

- As a final project for CIS5400 - Mobile Computing, I developed an educational game. The purpose of the game was to help children learn their spelling words. The game was called “Spelling Birds.” The user loaded a list of spelling words into the game and then attempted to spell each of the words by shooting birds carrying the letters with electric bolts. Points were given for getting the correct next letter and subtracted for getting an incorrect next letter. The direction of the antenna that shoots the bolts is controlled by the accelerometer. The media plugin and a text-to-speech plugin are also used. The media plugin is used to play game sounds and the text-to-speech plugin is used to remind the user what word they are trying to spell. The animations were done using the processing.js javascript library.
- Youtube Video of Project: [Spelling Birds](#)

Short Description: **Netflix scraping database - Apache Tomcat, Java, Selenium**

Type: **Academic project**

Summary:

- As part of an academic project for CIS2100 - Database Integration, I developed a Java Program that communicated with an online database to store varying details about Netflix content. The purpose of the project was to create a database of available streaming content that was searchable/sortable by several factors. The program expands the number of factors searchable/sortable on the website (year, words in summary, actors, stars, genre, etc.) The program used a selenium library for automating the Firefox browser. The program instructed the browser to visit a list of URLs collected on the homepage and subsequently extracted the details needed to create the tuples containing the details of each content item. The program/Apache Tomcat Server used URL variables to establish a RESTful interface that was used to communicate.
- Youtube Video of Project: [Netflix Scrapper](#)

Short Description: Contractor Networking Tool
Programming: ASP.net, Microsoft Access, Javascript, CSS, C#
Type: Academic project

Summary:

- As part of an academic project for 5740 - Web Programming, I developed a website used to connect dog walking contractors with customers seeking a dog walker. The website established user accounts with login credentials. Accounts could be either customer, contractor, or admin. A database stored days/times that contractors were available (contractor set) and customers were able to view contractors that were available within a selected time frame. Customers were then able to send a request for a walk. When a walk was accepted by both parties a note was made in the database. A completed walk was closed by the contractor. An invoice was then generated and sent to the customer. If they chose, the customer was then able to dispute the invoice. Customers and contractors were able to view the history and stages of all walks associated with them.

Short Description: Apache Cordova Library for writing/reading to a permanent file
Programming: Javascript
Type: Academic project

Summary:

- As part of an academic project for CIS5400 - Mobile Computing, I developed a javascript library that vastly simplified the process of writing to and reading from a device's permanent storage. The library modified/combined several of Apache Cordova native device functions. Using the library, a device's permanent storage could be accessed with a single function call.

Short Description: Senior Research Paper
Programming: C++, HTML, PHP
Type: Academic project

Summary:

- My undergraduate senior research project was a quantitative study of social judgment. Though the paper itself was not related to computer science, the delivery method I used and the way that I collected the data were both automated by computer programs that I wrote. A participant was registered to participate on a webpage that I created and then was sent a link to download the first program. The first program played an instructional video, and then administered a standard assessment called the Affect Intensity Measure (AIM). The participant was later emailed another link to download the second part of the study. Again, the program played an instructional video. The program then presented the participant with information regarding a criminal case and asked the participant to make a prison term recommendation. The program was written in C++ and collected data in an online database. The program also formatted data for input into SPSS (statistical software). The paper was presented at UT Tyler's annual East Texas Research Conference and won an award for poster presentation.
- Research Overview: [Social Judgement Study](#)

Short Description: **JAVA algorithm for path finding**

Type: **Academic project**

Summary:

- One academic assignment that I completed as an undergraduate was a JAVA program that built a directed graph from an input file. The input file specified a number of locations with each location having a label, a sea-level, and a collection of the labels of locations that were directly connected to it. The program assumed that the user cannot travel uphill. The input to the program was two location labels. The output of the program was a list of possible paths ordered by the least amount of hops (if any existed). I designed the algorithm used to process the data. The algorithm utilized the mathematical relationships expressed with an adjacency matrix.
- Explanation of Algorithm: [Algorithm](#)