**Software Design Document (SDD)**

**1. Introduction**

    a. Project Overview / Problem Statement

The following document will detail the implementation of  a web-based software solution which meets the requirements of the Sacramento State Aquatic Center (SSAC).

In particular, the system being described will effectively automate the customer registration system which had previously been implemented via a manual “paper and pen” process.

This document will outline, describe and illustrate all of the modules, classes, structures and other elements -- including their relationships and interactions -- which encompass the automatic solution that has been developed as a replacement for SSAC’s existing manual system of registration. From this point onward, the name of this automated system shall be the “Aquatic Center Tracking” system, or ACTS.

    b. Team Members, Roles and Signatures  
        While each member had substantial contributions throughout each

phase of the development of the ACTS system, here are the formal roles

which were attributed to each individual:

Chiraag Thakor, Documents Writer/Project Reviewer

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        Darby Hannon, Leader/Project Organizer/Manager

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        Joubin Jabbari, System Coder/Manager/Interface Design

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        Madelyn Bachiller, Documents Writer/Project Reviewer

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        Mike Poku, Technical Writer/Object-Oriented Analysis

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**2. Revised Requirements**

BarCode Reader:

Due to insufficient time and also expense, the barcode reader and printer have been removed from the design and implementation. Initially, inclusion of a barcode reader was listed as a nonfunctional requirement. This barcode reader was supposed to ease and facilitate the process of “checking out” a customer that has returned from a rental trip. Rather than the staff or the customer having to locate information manually, the staff could potentially simply scan the wristband of a returning customer. This requirement, although it has been removed, could conceivably be added to ACTS at a later, more convenient time since -- being a nonfunctional requirement -- it’s removal does not violate the core purpose and main functions of the system.

**3. Data Design**

    a. ERD Diagram  
          
  
    b. ERD Entities and Relationships  
    c. Sequence Diagrams for the most Critical use cases  
        1. Rent Equipment (Typical)  
            -Home Page after the user logs in

-Enter number of people going on the trip

            -Rental Agreement Page: Waiver is shown  
                -Enter Name(s)

-Select if Adult or Minor for each person

-Click on I/We Agree button

-Next Page

    -displays Non-Certified and Certified Equipments

        -User enters quantity of the equipment to rent

        -click Submit button

-Next page

    -Enter names of who will go in which equipment

    -Click Submit Button

        2. Rent Equipment (Alternate)  
        3. End Rental (Typical)  
        4. Generate Report (Typical)  
          
  
Based on the evaluation of the Use Cases, the Sequence Diagrams and the SRS, here are the Classes which were utilized in the design. First we simply list these classes without explanation. The subsequent section will explain in detail the uses of these classes, their interaction and how they are incorporated into the system.

1. Classes  
   1. Person  
   2. Customer  
   3. Guest  
   4. Staff  
   5. Manager  
   6. Login  
   7. Equipment  
   8. Inventory  
   9. Rental  
   10. Database  
   11. Report

Based upon the concepts just discussed, the data dictionary which was initially given in the SRS has been updated as shown below.  
  
**Person Table**

|  |  |  |
| --- | --- | --- |
| **Name** | **Description** | **Type** |
| id | Identification Number of the Person | int |
| first\_Name | Customer’s First Name | var char |
| last\_Name | Customer’s Last Name | var char |
| phone\_Number | Customer’s Phone Number | var char |
| email\_address | Customer’s Email Address | var char |
| cert | What the Customer is certified for | int |
| person\_type | Admin or Staff or Customer | int |
| Adult or Minor | Customer’s Age (Adult if 18 and above or Minor if below 18) | bool |

**Inventory Table**

|  |  |  |
| --- | --- | --- |
| **Name** | **Description** | **Type** |
| id | Identification of the equipment Number | int |
| name | Name of the equipment | var char |
| quantity | How many equipment | int |
| description | Caption to describe the equipment | var char |
| cert\_required | Required certification for specific equipments | int |
| image\_address | Where the image is located for equipment | var char |
| reg\_price | Regular price per hour for the equipment | int |
| alumni\_price | Alumni price per hour for the equipment | int |
| special\_price1 | Special price per hour for the equipment | int |
| special\_price2 | Special price per hour for the equipment | int |
| capacity | Number of possible people for the equipment | int |
| weight\_limit | Weight limit of the equipment | int |

**Trip Table**

|  |  |  |
| --- | --- | --- |
| **Name** | **Description** | **Type** |
| id | Trip Identification Number | int |
| transaction\_id | Transaction Identification Number | int |
| p\_id | Person Identification Number | int |
| total\_price | Calculated total price of the trip | int |
| b\_paid | If the whole trip is already paid or not | bool |

**Transaction Table**

|  |  |  |
| --- | --- | --- |
| **Name** | **Description** | **Type** |
| transaction\_id | Transaction Identification Number | int |
| start\_Time | Starting Time of Rental per equipment | time stamp |
| end\_Time | Ending Time of Rental per equipment | time stamp |
| name | Name for the transaction | var char |
| total\_price | Calculated price for the transaction | int |
| b\_paid | If transaction is already paid or not | bool |
| equipment | Name of the equipment rented | var char |

**4. Architecture Design**

ACTS has the following class diagram, which shows all of the necessary relationships, associations and multiplicities that are involved in the interaction of  the major classes in the system. The diagram illustrates the main objects at play when the customer first logs in, and then all the way up until the customer checks out and generates a final point of sale.  
(in progress …..)

**5. Detailed Class Design**

**6. User Interface Design**

PHP Programming Tools  
    **PHP**: It is an opensource scripting language generally used in web development.

This scripting language allows for the creation of dynamic and original web pages.

    **Mysql**: MySQL is an open source relational database management system.

MySQL is a reliable and safe database management system used regularly in

industry purposes. This platform provides for input of data from multiple users and

can store information such as inventory which you can choose to have visible on

your website. MySQL also allows for storage of customer information such as

phone numbers and addresses for mailing which can be accessed on request.

**8. Restrictions, Limitations, and Constraints**

**9. References or Sources Used**