# Project 3 Design Document

## Section 1 – Problem to be Solved.

* The club roster project should be enhanced to be able to store a collection of members and have more capabilities (such as sorting members by name or years of membership).

## Section 2 – Inputs, Outputs, and Processing

### Inputs

* Username (defaults to “Username”)
* Club Name (defaults to “Kool Kidz”)
* Year Founded (defaults to 1990)
* Create a New Member, Display Members, Find a Member, Edit Members, About [Club Name], End Program (All of these options are button choices in the main menu.)

(Main menu options are bolded)

***Create a New Member***

* First Name (Defaults to “Barney”)
* Last Name (Defaults to “The-Dinosaur”)
* City (Defaults to “Johnson City”)
* State (Defaults to “TN”)
* MemberType (This option does not need a default since it is done via button)
* Date Joined (This option is validated using the java.text.SimpleDateFormat; import and a try+catch method [using the java.text.ParseException; import]. Defaults to “01/01/2000”)
* Picture File Path (Defaults to [First Name + Last Name + “.jpg”]. If the user left the First and Last name fields blank, it would show “.jpg” in the field. If left as “.jpg”, the program automatically corrects it to [First Name + Last Name + “.jpg”] as the program assigns default values.)

***Display Members (Both Options are Button Inputs)***

* Display All Members
* Display Members by Member Type
  + Provisional, Student, Junior, Senior, Lifetime, Officer (All of these are button inputs that shows in the resulting menu when the user picks “Display Members by Member Type”)

***Find a Member***

* First Name
* Last Name
* (If the user closes the window [via ‘X’ on upper right corner], they will be taken back to the main menu.

***Edit Members***

* Sort Members
  + Sort by Name (This sorts by last name, rather than first name. Puts people with last names closest to the letter ‘A’ at the top of the list.)
  + Sort by Years of Membership (Puts people who have been in the club the longest at the top of the list.)
* Edit a Member
  + Alm Rudolf, Chrom Ylisse, Byleth Eisner, Bob Terry, Velvet Crowe, Marnie Jennings, Cancel (Note: All of these are preset members and menu choices will vary based on if the user has already dropped or created another member.)
  + (A member is selected from the button menu)
    - First Name (Defaults to their old First Name)
    - Last Name (Defaults to their old Last Name)
    - City (Defaults to their old City)
    - State (Defaults to their old State)
    - Member Type (Does not Default)
    - Date Joined (Defaults to “01/01/2000”)
    - Picture (Defaults to their old Picture File Path)
    - After editing one attribute (Continue Editing?)
      * Yes (Asks the user which attribute they want to change for the same member)
      * No (Sends the user to the menu asking the user which member to edit)
      * Go to Main Menu (Send the user back to the main menu.)
* Drop a Member
  + Alm Rudolf, Chrom Ylisse, Byleth Eisner, Bob Terry, Velvet Crowe, Marnie Jennings, Cancel (Note: All of these are preset members and menu choices will vary based on if the user has already dropped or created another member.)
* Back (Returns the user to the main menu)

***About [Club Name]***

* No inputs. Only outputs club information

***End the Program***

* No inputs. Ends the program when selected.

### Outputs

Before Main Menu

* “Welcome to Club Membership Roster! This program keeps track of all members for the club.”

(Main menu options are bolded)

Main Menu

* “Welcome, President [Username]! Please select an option.”

**Create a Member**

* Guides the user through the Member creation process. Once done, shows a message saying that the member was successfully created.

**Display Members**

* Display All Members
  + Displays a message containing every member and their attributes.
* Display Members by Member Type
  + Will show every member of a certain Member Type, based on what the user chooses from the button menu (containing all Member Types).

**Find a Member**

* Based on what the user inputted for the First Name and Last Name, will either display the member who matches the user inputted first and last name or will display an error message saying that the member was not found.

**Edit a Member**

* Sort Members
  + After sorting the members by user preference, shows a message prompting that the sorting was successful, along with the method it was sorted.
* Edit Member
  + Shows the member’s attributes when selecting a member. After editing an attribute, opens a message prompting that the change was successful, and if the user would like to continue editing this member.
* Drop a Member
  + Asks the user which member they would like to drop. After selecting a member, a message prompts prompting that the member has been deleted.

**About [Club Name]**

* Displays a message about the club’s name, president, and the year it was founded.

**End the Program**

* The program thanks the user for using the program and exits the program.

### Processing

* Most processing revolves around the Member ArrayList named roster in the Club class. This processing includes adding, removing, editing, and displaying members.
* Some default values and comparisons to validate user input are used in processing as well.

## Section 3 – Responsibilities for each Class

### Club.java

* Keeps track of all members in the club, as well as the club’s name, president, and its founding year.

### Member.java

* Contains attributes of each Member and allows the user to edit their individual attributes.

### MemberType.java

* An Enum class that holds constants for Member Types.

### MemberDriver.java

* The main class that runs the program. Takes in user input and displays output based on input.

## UML DiagramSection 4 – UML Diagram and Relationships

* The MemberDriver class relies on the Club class to perform most of its own functions.
* The MemberDriver class is associated with the Member class only so it can add members to the Club class’s Member ArrayList.
* The MemberDriver class uses MemberType constants from the MemberType enum class.
* The Club class is not required to affiliate with the Member class and can have 0 members stored in its Member ArrayList.

## Section 5 – Major Algorithms

### MemberDriver.java

Operation: main()

START

* + Define String username, clubName, and Int yearFounded.
  + INPUT username, clubName, and yearfounded.
  + Show menu. CHOOSE options (button input for “Creating a Member”, “Display Members”, “Find a Member”, “Edit Members”, “About [clubName]”, “End the Program”).
* **When choosing “Create a Member”:**
  + INPUT firstName
  + INPUT lastName
  + INPUT city
  + INPUT state
  + INPUT memberType (button choice)
  + INPUT dateJoined (This input is validated)
  + INPUT pictureFilePath
  + IF(firstName is Blank), firstName = Barney
  + IF(lastName is Blank), lastName = The-Dinosaur
  + IF(city is Blank), city = Johnson City
  + IF(state is Blank), state = TN
  + IF(dateJoined is Blank), dateJoined = 01/01/2000
  + IF(pictureFilePath is Blank), pictureFilePath = firstName + lastName + “.jpg”
  + Create new member(firstName, lastName, city, state, memberType, dateJoined, pictureFilePath)
* **When choosing “Display a Member”**
  + CHOOSE options (button input for “Display All Members”, “Display Members by Member Type”)
  + [When choosing “Display Members by Member Type”]
    - * + CHOOSE options (button input for “PROVISIONAL”, “STUDENT”, “JUNIOR”, “SENIOR”, “LIFETIME”, “OFFICER”)
  + DISPLAY All Members or All Members of a Member Type
* **When choosing “Find a Member”**
  + INPUT firstName, lastName
* **When choosing “Edit Members”**
  + CHOOSE options (button input for “Sort Members”. “Edit a Member”, “Drop a Member”, “Back”)
  + (User Chose Sort Members)
    - CHOOSE options (button input for “Sort by Name”, “Sort by Years of Membership”)
    - SORT Member ArrayList by chosen method. DISPLAY confirmation message.
  + (User Chose Edit a Member)
    - CHOOSE Members (button options for all members in arraylist. Displayed by Firstname and Lastname. A “Back” option is the last option.)
    - (User Chose a Member)
      * CHOOSE options (button input for all Member’s attributes, with “Cancel” as the last option.)
      * After editing, DISPLAY confirmation dialog.
  + (User Chose Drop a Member)
    - CHOOSE Members (button options for all members in arraylist. Displayed by Firstname and Lastname. A “Cancel” option is the last option.)
    - (User chose a Member)
      * DISPLAY confirmation dialog (The selected member is deleted from the roster ArrayList.)
* **When choosing “About Kool Kidz”**
  + DISPLAY club attributes (Name, President, Year Founded)
* **When choosing “End the Program” or X**
  + Display the message “Thank you, “ [Username] “, for using Club Membership Roster!”
  + Ends the Program.

## Section 6 – Test Cases

* Tests here are done chronologically. ***Assume that preset members are included.***

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Input | Result/Output | Notes |
|  |  | Welcome to Club Membership Roster! […] What is your Name? |  |
| UserName | “Username” | What is the name of the club? |  |
| ClubName | “Kool Kidz” | When was this club founded? |  |
| yearFounded | 2017 | Sorry, but this club must be at least 6 years old. Please try again. | yearFounded cannot be after 2015 because it will conflict with member datejoined variables. |
| yearFounded | 1099 | (Menu) Welcome, username! Please select an option. | Preset Members are added right before the main menu pops up.  (Yes, there were clubs back in 1099.) |
|  | Create a New Member | Member’s First Name | Mostly the same as Project 1 until dateJoined. I will skip to memberType. |
|  |  | ***Assume default values leading up to MemberType…*** | ***Assume default values leading up to MemberType.*** |
| MemberType | - | What is the member’s classification? | Because of button input, MemberType cannot be invalid. The only other button, the X, takes the user back to the main menu. |
|  | PROVISIONAL | When did the member first join the club? Enter as mm/dd/yyyy. |  |
| dateJoined | “asdf” | Sorry, this is an invalid date format. Please try again. | This example would throw an error from SimpleDateFormat, but it is caught and an error message is shown instead. |
| dateJoined | -1/10/2016 | Sorry, this is an invalid date format. Please try again. | In this example, month is below 0. SimpleDateFormat does not throw an error here, so an if statement catches this mistake. |
| dateJoined | 01/01/1084 | Sorry, but this date is before the founding of the club. Please input a number after this date. | The program can detect if the member’s date joined is before the club’s founding date. This error message is shown in that case. |
| dateJoined | 01/01/2000 | What is the filepath to the member’s photo? | 01/01/2000 is a sufficient date format. |
|  |  | … |  |
|  | Display Members | Please choose a display option. | Button input: “Display All Members”, “Display Members by Member Type” |
|  | Display All Members | Attributes for: (Jennings, Marie), (Terry, Bob), (Eisner, Byleth), (Crowe, Velvet), (Rudolf, Alm), (Ylisse, Chrom), (The-Dinosaur, Barney) | Displays attributes for the characters here, in this order. ***Is the list too tall for the “OK” button to show? Press the ‘X’ on the upper-right hand corner!*** |
|  | Display Members > Display Members by Member Type | Show members of what type? | Button input: (PROVISIONAL, STUDENT, JUNIOR, SENIOR, LIFETIME, OFFICER) |
|  | Student | Attributes for: (Jennings, Marnie) |  |
|  | Officer | Attributes for: (Eisner, Byleth) |  |
|  | Provisional | Attributes for: (Crowe, Velvet), (The-Dinosaur, Barney) |  |
|  |  |  |  |
|  |  |  |  |
|  | Find a Member | What is the person’s first name? |  |
|  | (blank) | What is the person’s last name? |  |
|  | (blank) | Sorry, but the member could not be found.  Please validate your input.  First Name: “”  Last Name: “” |  |
|  | Find a Member | What is the person’s first name? |  |
|  | “ Byleth” | What is the person’s last name? | Space is added before the name. |
|  | “Eisner “ | Attributes for: (Eisner, Byleth) | Space is added after the name. This works because a trim() method is used. |
|  |  |  |  |
|  | Edit Members | Please Select an Option. | Button Input: (Sort Members, Edit a Member, Drop a Member, Back) |
|  | Sort Members | How should the members be sorted? | Button Input: (Sort by Name, Sort by Years of Membership) |
|  | Name | All members have been successfully sorted! | Confirmation message. (Sorted by last name) |
|  | Display Members > Display All Members | Attributes for: (Crowe, Velvet), (Eisner, Byleth), (Jennings, Marnie), (Rudolf, Alm), (Terry, Bob), (The-Dinosaur, Barney), (Ylisse, Chrom) | Compared to the list above, this one has been sorted via last name. (The name that comes before the comma, to be precise) |
|  |  |  |  |
|  | Edit Members > Sort Members > Sort by Years of Membership | All members have been successfully sorted! | Confirmation message. (Sorted by years of membership) |
|  |  |  |  |
|  | Display Members > Display All Members | Attributes for: (The-Dinosuar, Barney), (Eisner, Byleth), (Rudolf, Alm), (Jennings, Marnie), (Ylisse, Chrom), (Terry, Bob), (Crowe, Velvet) | Compared to the list above, this one has been sorted via years of membership. |
|  |  |  |  |
|  | Edit Members > Edit a Member | Which member would you like to edit? | Button inputs: (Barney The-Dinosaur, Byleth Eisner, Alm Rudolf, Marnie Jennings, Chrom Ylisse, Bob Terry, Velvet Crowe) |
|  | Chrom Ylisse | (Attributes for Chrom Ylisse)  What would you like to edit? | Button inputs: (First Name, Last Name, City, State, Member Type, Date Joined, Picture, Cancel) |
|  | Member Type | Old Classification: Junior  What is the member’s new classification? | Button Inputs: (PROVISIONAL, STUDENT, JUNIOR, SENIOR, LIFETIME, OFFICER) |
|  | Lifetime | Change complete! Would you like to continue editing Chrom Ylisse? | Button Inputs: (Yes, No, Go to Main Menu) |
|  | Yes | (Attributes for Chrom Ylisse)  What would you like to edit? | Button inputs: (First Name, Last Name, City, State, Member Type, Date Joined, Picture, Cancel) |
|  |  |  |  |
|  | First Name | Old First Name: Chrom  Please input the member’s new first name. |  |
|  | Cancel (Button) | Change complete!  Would you like to continue editing Chrom Ylisse? | Although cancel is pressed, this confirmation dialog still shows, asking the user if they want to continue editing Chrome Ylisse. |
|  | Go to Main Menu | Welcome, President Username!  Please Select An Option. | Since Chrom is no longer a JUNIOR member, we should Display members of the Junior class and see what happens. |
|  | Display Members > Display Members by Member Type > JUNIOR | Sorry, there are currently no members that are juniors. | This error message will display when there are no longer any members in a certain member type. |
|  |  |  |  |
|  | Edit Members > Drop a Member | Which member would you like to delete? | Button Input: (Barney The-Dinosaur, Byleth Eisner, Alm Rudolf, Marnie Jennings, Chrom Ylisse, Velvet Crowe, Bob Terry, Cancel) |
|  | Bob Terry | Bob Terry has been successfully deleted. | This deletes Bob Terry from the Member Arraylist. |
|  |  |  |  |
|  | Display Members > Display All Members | Attributes for: (The-Dinosaur, Barney), (Eisner, Byleth), (Rudolf, Alm), (Jennings, Marnie), (Ylisse, Chrom), (Crowe, Velvet) | There are now 5 members instead of 6. Bob Terry is no longer in the club! |
|  | Edit Members > Drop a Member | Which member would you like to delete? | Let’s see what happens when everyone is gone from the club. |
|  | {User deletes all members} | Welcome, President Username!  Please Select An Option. | What happens if Display Members is selected? |
|  | Display Members | Sorry, there are currently no members.  Please create a new member! |  |
|  | Find a Member | Sorry, there are currently no members.  Please create a new member! |  |
|  | Edit Members | Sorry, there are currently no members.  Please create a new member! | All these 3 options will not work. At least 1 member must be in the club for these to begin working again. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  | About Kool Kidz | Kool Kidz  Club President: Username  Year Founded: 1099 | This displays information about the club. |
|  |  |  |  |
|  | End the Program | Thank you, Username, for using Club Membership Roster! | The program ends once “Ok” is pressed. |
|  |  |  |  |