# Project 4 Design Document

## Section 1 – Problem to be Solved.

* The club roster project should be enhanced to be able to store and receive data from a data file.

## Section 2 – Inputs, Outputs, and Processing

### Inputs

* Username (defaults to “Username”)
* Club Name (defaults to “Kool Kidz”)
* Year Founded (defaults to 1990)
* Import Data from Text File (Yes or No)
* 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.

## A picture containing diagram Description automatically generatedSection 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.
  + CHOOSE to Import Text File or Skip.
  + 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 All Members”]
    - DISPLAY 5 members per page. Navigate using [Main Menu], [Previous Page], or [Next Page] Button.
  + [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. No changes to the file have been made before running.

|  |  |  |  |
| --- | --- | --- | --- |
| 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 | Would you like to import existing members? | Gives the user the option to import existing members. Selecting yes imports the file and sets the save file to clubMembers.txt. Selecting no sets the save file to clubMembers2.txt. |
|  | Yes | The position of City and State for Member Bob Terry appears to have been switched. Their values have automatically switched. | Oh no! clubMembers.txt has many input errors! Not to worry.  This is one of the algorithms in the club’s fillFromFile method. It’s detected that a 2-letter value is in City and a 2<x letter value in state and switches them. |
| You may ask, why didn’t it prompt JFileChooser? The answer: is the path to the clubMembers.txt file is already defined and has already been pulled up by the program (the error message proves this). This is done to improve user friendliness. JFileChooser only prompts when the file could not be found (FileNotFoundException). By then, the program will ask the user to select a text file. | | | |
|  | OK | The MemberType for Member Byleth Eisner is not a valid Member Type. (Professor) Their Member Type has automatically been assigned as “PROVISIONAL”. | Looks like renowned professor Byleth Eisner can’t be a Professor in this club. He gets demoted to the default value: PROVISIONAL. |
|  | OK | The MemberType for Alm Rudolf is not a valid Member Type. (Deliverer) Their Member Type has automatically been assigned as “PROVISIONAL”. | Alm can’t lead the Deliverance in this club. He gets demoted to PROVISIONAL status. (Celica, his longtime [girl]friend, would be relieved.) |
|  | OK | Alm Rudolf’s Join Date has been detected to be before the club’s founding date.  Founding Year: 1099  Date on Record: 09/30/-675  Their join date has been set to 01/01/2015 by default. | What? -675? Alm is an influential King of Valentia’s far past (Fire Emblem: Shadows of Valentia). Still, this program doesn’t accept that because it’s before the founding of the club (by the way, yearFounded doesn’t accept negative years). |
|  | OK | (Main Menu) Welcome, President Username! | Hurray! We made it to the Main menu! |
|  |  |  |  |
|  | Display Members | Please choose a display option. | Create a New Member, Find a Member, and About Kool Kids are (mostly) unchanged, so this section will skip those options. |
|  | Display All Members | Attributes for: (Jennings, Marnie), (Terry, Bob), (Eisner, Byleth), (Crowe, Velvet), (Rudolf, Alm). | What? There are 11 members and there are only 5 here? You’re right, but that’s intentional! Look down to see [Main Menu] and [Next Page]! |
|  | Next Page | Attributes for: (Ylisse, Chrom), (Lowell, Yuri), (Justice, Apollo), (Wallace, Claude), (Heurassein, Estellise) |  |
|  | Next Page | Attributes for: (Crowe, Laphicet) | Just Laphicet Crowe on this page. |
|  | Main Menu | Welcome, President Username! | Let’s sort by Years of Membership to see if it breaks the pages… |
|  |  | [Sort by Years of Membership] |  |
|  | Display Members > Display All Members | Attributes for: (Ylisse, Chrom), (Terry, Bob), (Rudolf, Alm), (Eisner, Byleth), (Wallace, Claude) | It didn’t break the pages! (Note: if the club’s yearfounded was set higher, Chrom Ylisse may have a date joined error where he joined before the club was founded.) I can also say all the members are sorted past page 1. |
|  | Main Menu |  | I think that’s enough for now. Let’s save our progress. |
|  | End the Program | Would you like to save your changes to the club? | Changes? What changes? Think back to those errors the program found in validation. Those changes. (Also, sorting changes the order of the roster, but this doesn’t count as a change.) |
|  | Yes | Changes have been saved. Thank you, Username, for using Club Membership Roster! | This ends the code. Navigate to the clubMembers text file in the ClubData folder and notice that the values changed. (Assuming that you are using a Windows computer), press CTRL+Z and CTRL+Y to see the changes. Notice that they have been sorted by Years of Membership. |
|  |  |  | Also, note that Bob Terry’s City (on line 2) has switched the places of State and City. |
|  |  |  | To make sure I don’t turn in the wrong version of this sheet, I’ll revert to the older version of the sheet with errors. |
| [What happens if we don’t import a file?] | | | |
|  |  | 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 | 1099 | Would you like to import existing members? | Gives the user the option to import existing members. Selecting yes imports the file and sets the save file to clubMembers.txt. Selecting no sets the save file to clubMembers2.txt. |
|  | No | (Main Menu) Welcome, President Username! | This way, we haven’t imported any members to the roster. Let’s check that. |
|  | Display Members | Sorry, there are currently no members. Please create a new member! | As expected, there are no members. Let’s add one and edit them. |
| [Create a new member. Assume all default values by pressing OK for each dialog box that appears.] | | | |
|  | Display Members > Display All Members | Attributes for: (The-Dinosaur, Barney) | Just to be sure they are there. Let’s edit Barney now. |
|  |  |  |  |
|  |  |  |  |
|  | Edit Members > Edit a Member > Barney The-Dinosaur | Attributes for: (The-Dinosaur, Barney)  What would you like to edit? | Any attribute may be changed. The goal is to have this show on the clubMembers2.txt file. We can make city stand out, perhaps. |
|  | City | Please input the member’s new City. |  |
| City | Arendelle City | Change complete! Continue editing? | Hopefully, this stands out in the text document. Let’s check that the change was implemented by pressing [Yes]. |
|  | Yes | Attributes for: (The-Dinosaur, Barney)  What would you like to edit? | Note that Barney’s city has changed to Arendelle City. Let’s save this change. |
|  | Cancel | (Main Menu) Welcome, President Username! |  |
|  | End the Program | Save your changes to the club? |  |
|  | Yes | Change have been saved. Thank you for using Club Membership Roster! | Navigate to the clubMembers2.txt file in the ClubData folder. Note that all the members that were previously in it has been replaced with Barney The-Dinosaur, who lives in Arendelle City. |
| [One final test to see if the program can handle being unable to find the text file.] | | | |
|  |  |  | Rename the clubMembers.txt file to clubMember.txt, then run the program and assume default values for the club’s starting attributes (yearFounded would be 1990). |
|  |  | Import existing members? | Selecting “yes” would save to clubMembers.txt, but it has been renamed so that text file no longer exists. What will happen? |
|  | Yes | The selected file was not found. Please manually select the text file. | Looks like the program could not find it. We’ll have to manually search for it. |
|  |  | [JFileChooser Pane] | Any of the 3 text files can be saved to, but in this one, we’ll be sticking to the clubMember.txt. |
|  | clubMember | The position of City and State for Bob Terry appears to have been switched. | Hey! We’re back to the errors we found! Let’s skip this and get to the Display. |
|  |  | … |  |
|  | Display Members > Display All Members | Attributes for: (Jennings, Marnie), (Terry, Bob), (Eisner, Byleth), (Crowe, Velvet), (Rudolf, Alm) | It’s the same display as if we originally pulled up the text file without the system error. |
|  |  |  | I think that’s enough for today! Let’s end the program. |
|  |  | Would you like to save your changes to the club? | What if we decided not to save the changes? |
|  | No. | Are you sure? All changes made in this session will be lost. | Looks like the program has caught the user’s tongue if they mis-clicked. In this situation, we haven’t, so select [Yes]. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  | Yes | Thank you, Username, for using Club Membership Roster! | Navigate to clubMember, and notice that no changes were made. Bob Terry still has his city and state in the wrong places, and Alm has still joined in 09/30/-675. This means our changes were not saved (just what we want!). |
|  |  |  |  |
|  |  |  |  |
| Navigate to clubMember, and notice that no changes were made. Bob Terry still has his city and state in the wrong places, and Alm has still joined in 09/30/-675. This means our changes were not saved (just what we want!). | | | |
| Remember to rename clubMember.txt back to clubMembers.txt if you want to conduct more thorough testing. Have a great day! | | | |
|  |  |  |  |
|  |  |  |  |