How To Use the Camper Assignments Program
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Introduction

Hello to whoever's reading this! This is the program that I wrote at the beginning of the summer of 2022 to help out Jared Tu (one of the PMs at the time) to assign campers to their preferred activities. I had heard that Jared was taking a lot of time at the beginning of the week to prepare for future weeks. So I thought it would help out to automate this process.

From what I understand, CampMinder does activity assignments cabin-wise, instead of camper-wise. While I think it's one of the best formats for camp activities, it does get complicated CampMinder-wise, since you'd need to manually input the activities and such. I'm not sure if this program and its output helps streamline that process, but it does give you accurate and useful results that will at least give you a complete assignment, if you do have to manually input it. Furthermore, it will also give you rosters, if you need them. It should be in the same format as the rosters I saw in the summer of 2022.

Just a few notes about this document. Any future edits will be marked by either color or striking out text, as bugs are bound to arise in the program which might change the instructions or information needed to use the program. If you ever get any errors, or the program doesn't work and give the correct output, then check the **Troubleshooting** section to see if it's an easy problem to fix. If not, contact me by the information provided in the **Contact** section.

Instructions

Downloading the Program

      If you are working at camp as a PM, you should have been issued a camp laptop to use this program on. I assume that it should be somewhere in your files, but I don't know what the Technology Manager does with the laptops once the summer is over, so it could not be on there. If you are also looking for an update version of the program, these are also the steps to take. In order to get the program, then, you can follow these steps:

1. Go to my GitHub repository for this program: https://github.com/cedney97/CamperAssignments

2. Click the green **<> CODE** button
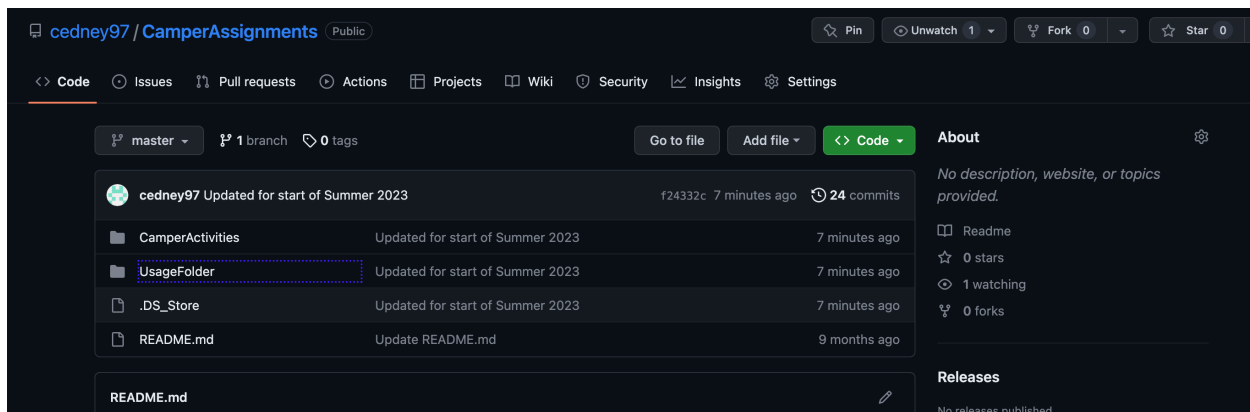
3. In the sub-menu click **Download ZIP**

4. In your local files, unpack this zip folder and look for the UsageFolder folder, which is where the **CamperAssignment.jar** and **run.bat** files are located

Generating Camper Assignments

1. Ensure you have a CampMinder .csv file that contains the camper data. The .csv file should contain the headers **Child Enrollment Effective Date**, **Person ID**, **Last Name**, **First**

Name, **LakefrontPermissionForm Accepted**, and **Activity Preferences**

(see *Figure 1* for example).

> **NOTE:** If the format of the .csv document ever changes because of CampMinder, or because you wanted different information in the .csv, please let me know so that I can change the program. The program is dependent on this order of items in order to parse the data.

2. If you are on a windows computer, double click **run.bat** file, which should run the program. If you are on a Mac computer, double-click **CamperAssignments.jar** to run the program.

3. Choose the **Assignments** button (see *Figure 2*).

4. In the next window, type or use the increment and decrement buttons to input the week number. (see *Figure 3*).

5. Navigate to the folder in which your .csv file is stored and select it (see *Figure 4*).

6. Check the boxes for the activities and their corresponding available periods. For example, if FC Medley is only available 2nd and 4th period, only check the 2nd and 4th period boxes (see *Figure 5*).

7. Enter the capacities for each period available. Each activity should already have a number for its available periods, which was an average I found over the summer of 2022. However, ensure that you have the correct capacities, otherwise you might overbook an activity accidentally (see *Figure 6*).

8. Once you have done this, you should see a new file in the folder that has the **CamperAssignment.jar** file in, called **camperAssignments.csv** (see *Figure 7*).

9. This file contains a table of the camper assignments, which can be used to input data into CampMinder, or to create rosters with the secondary function of this program. Before creating rosters, however, make sure that you fill in any empty assignments into the .csv file. The final column in the .csv file is a field that indicates whether the camper has any

empty slots for their periods. If so, there will be a "Yes", blank otherwise. So, make sure the campers with "Yes" in that column have all four periods filled in with an activity. To learn more about the output generated, go to the subheading titled *Generating Camper Assignments - The .csv File*.

Generating Activity Rosters

1. Ensure you have a valid .csv file generated from the primary function of this program. If you have not done so, generate the camper assignments using the methods described in *Generating Camper Assignments*.

   NOTE: Please make sure that every camper has four activities on the .csv file. This is very important, as you want to make sure the campers get into four, no more and no less, activities, and because the program will break if you don't do this.

2. If you are on a windows computer, double click **run.bat** file, which should run the program. If you are on a Mac computer, double-click **CamperAssignments.jar** to run the program.

3. Choose the **Rosters** button (see *Figure 2*).

4. In the next window, type or use the increment and decrement buttons to input the week number. (see *Figure 3*).

5. Navigate to the folder in which your .csv file is stored and select it (see *Figure 4*).

TO BE CONTINUED WHEN ROSTER FUNCTION WORKS

Analyzing the Algorithm and Output

Generating Camper Assignments - The Algorithm

The algorithm for this program is catered towards Frontier Camp and the process in which Junior Camp organizes its activities. Once again, if you have any questions about the order of operations, or would like to change some of the preferences made in the algorithm, contact me by the methods found in the **Contact** section. So without further ado, here is a English-ified description of the algorithm used:

```
CamperAssignments():
    inputs: CSV file (described in Instructions)
    method =>
```
- Go through each camper in order of enrollment date and connect them to their 6 preferences
- For each camper, assign a priority score to each of their preferences. The first preference is 6, second is 5, etc.
- Look at first 4 activity preferences, prioritizing assigning the camper to the class with less periods
- For each of these activities:
  - If activity is Adventure Challenge 1 (AC 1) or 2 (AC 2):
    - Check if the camper is already assigned to another Adventure Challenge class
      - If not, and the activity is AC 1, check if camper also preferred AC 2. If they did, put them in AC 2. If not, put them in AC 1
      - If not, and the activity is AC 2, the camper will be assigned to AC 2

- - - If so, this activity is skipped
  - If the activity is Horsemanship - Beginner, Intermediate, or Advanced
    - A similar method to AC 1 & 2 is done. If the camper preferred multiple Horsemanship classes, the camper will be assigned in order of priority score, not level of Horsemanship.
      - Ex: If little Susan preferred Horsemanship - Beginner, AC 1, Horsemanship - Intermediate, and Wakeboarding, Horsemanship beginner would be prioritized for assignment
  - If the activity is Wakeboarding or Waterskiing
    - A similar method to Horsemanship is done. The program will prefer which has the highest priority score. Only one of these can be assigned to a camper.
- After these checks, the camper will be enrolled in one of the activity's periods, with priority towards periods with less campers.
  - If the period is full, the camper will not be assigned to that period
  - If every period is full, the program will move on to the next activity
- If the camper is assigned to a period of that activity, the activity is added to their schedule
- In addition, the priority score for the activity is added to the camper's overall Quality Score
  - This score is the accumulation of the priority scores of all the activities they are assigned to. This score, as well as a percentage out of 18 (the best Quality Score), will be recorded

in the final .csv file returned and denotes how successful the

algorithm was in assigning the camper to their preferred

activities.

Generating Camper Assignments - The .csv File

The .csv file generated from the Camper Assignments function of the program has many different fields. It includes the assignments, as well as an analysis on the the quality of the assignments generated. Here is an example of a .csv that is the product of the program:

camperAssignments									
Enroll Date	Last Name	First Name	Activity 1	Activity 2	Activity 3	Activity 4	Quality Score	Quality Score as %	Has Empty Activity?
6/6/2021	Fine	Crosby	Waterskiing	FC Medley	Adventure Challenge 2	Riflery	18	100.0%	
6/6/2021	Fine	Sky	Horsemanship - Advanced	Waterskiing	Crafts	Adventure Challenge 2	18	100.0%	
6/6/2021	Gourlay	William	Archery	Riflery	Kayaking	Adventure Challenge 2	18	100.0%	
6/6/2021	Oram	Clara	Crafts	Archery	Horsemanship - Intermediate	Adventure Challenge 2	18	100.0%	
6/6/2021	Urbani	Matthew	Horsemanship - Intermediate	Sports	Outdoorsmanship	Woodworking	18	100.0%	

The fields, in order of left-to-right, are **Enroll Date**, **Last Name**, **First Name**, **Activity 1**, **Activity 2**, **Activity 3**, **Activity 4**, **Quality Score**, **Quality Score as %**, and **Has Empty Activity?** Each row past the blank row after these headers correspond to a camper, with each field as described below:

Enroll Date: The date the camper or camper parent signed their child up for camp. This is used to prefer assigning campers who enrolled earlier, and is the natural order of the final .csv file.

Last Name: Last name of the camper

First Name: First name of the camper

Activity 1 - 4: The assigned activities for the camper. If the camper was unable to be assigned an activity for all four periods, some of these fields may be blank.

Quality Score: This is the overall score of the activity assignments for this camper. The number

has a range of 0 to 18, where 0 is the situation in which the camper doesn't get

assigned to any of their preferred activities, and 18 is the situation in which the camper

gets assigned the first four activities listed in their preferences. This is calculated as the

sum of the priority scores (see *Generating Camper Assignments*), in which the most

preferred activity has a priority score of 6 and the least has a priority score of 1. The

sum of the four most-preferred activities is therefore 6 + 5 + 4 + 3 = 18.

Quality Score as %: The number in the previous field, divided by 18 and multiplied by 100.

This gives a percentage of quality or satisfaction in preferring activities, as opposed to

just a raw number. It just makes the quality of the assignment a little more legible and

understandable.

Has Empty Activity?: This field is only filled in if the program was unable to assign the given

camper to all four activity periods. In this case, you should see some blank spaces

within the **Activity** fields to the left for this camper. Fill those in with your best

judgement.

Troubleshooting

Sometimes, there may be errors in the code, or computers can just be buggy sometimes. So I've compiled some of the issues I've run into and how they could be fixed

- **Program just doesn't launch**
  - If the program doesn't pop up with the Program Usage window, close or quit the program. Go to Activity Monitor (for Mac) or Task Manager (for Windows) and locate a process called something along the lines of JavaLauncher. Quit or Force Quit this process, and try running the program again.
- **Program stops running after Week Input window**
  - If the File Selection window does not appear after inputting the week, close the program and rerun it. If you are doing assignments for week 1, increment the number to 2, then decrement back down to 1. I'm not sure why this works, but it does.
- **More items will be added as I discover more issues that can be fixed on the user's end**

Contact

If there are any other questions, regarding the program not working, or having any suggestions for making the algorithm better with different decision-making protocols, please feel free to reach out. I developed this program to help the PMs and PDs, so if you still want to use it but it stops becoming helpful, let me know how I can fix it!

Phone Number: (936) 661 - 4915

NOTE: If you want to use this avenue, please text me so we can set up a call, as opposed to calling directly. I'm shy and don't like answering numbers I don't have saved in my phone

Email: Personal - cadeedney@gmail.com   School - c.edney@wustl.edu

Address: Just kidding, there's no way I'm letting you mail things to me when we live in 2023 (at the time of writing this)

Appendix

List of Figures

Child Enrollment Effective Date	PersonID	Last Name	Nickname	LakefrontPermissionForm Accepted	Activity Preferences
5/23/2022	1	Doe	John	Yes	Horsemanship - Intermediate, Crafts, Kayaking, Waterskiing, Wakeboarding an
5/19/2022	2	Doe	Jane	Yes	Adventure Challenge 1, Outdoorsmanship, Waterskiing, Riflery, Sports and Wild
5/18/2022	3	Doe	Jack	Yes	Archery, Wilderness Survival Skills, Riflery, Horsemanship - Beginner, Adventur

Figure 1: An example .csv file, in the proper order of headers and data
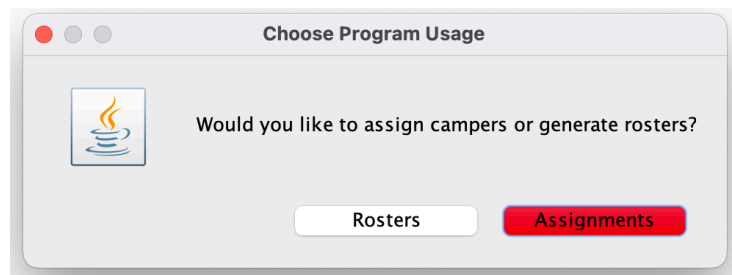
Figure 2: The Program Usage window, for selecting the program's function
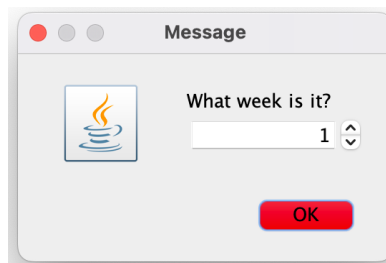
Figure 3: The Week Input window, for inputting the week of
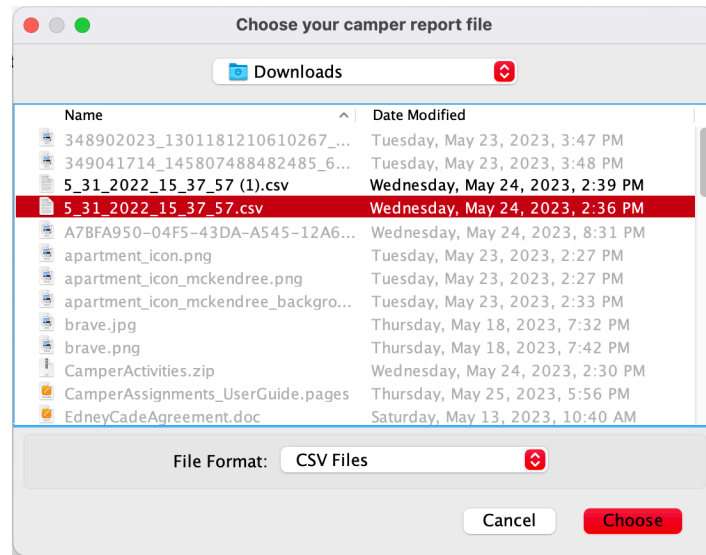
camp for which you are generating assignments

Figure 4: The File Chooser window, currently highlighting the .csv file to be selected
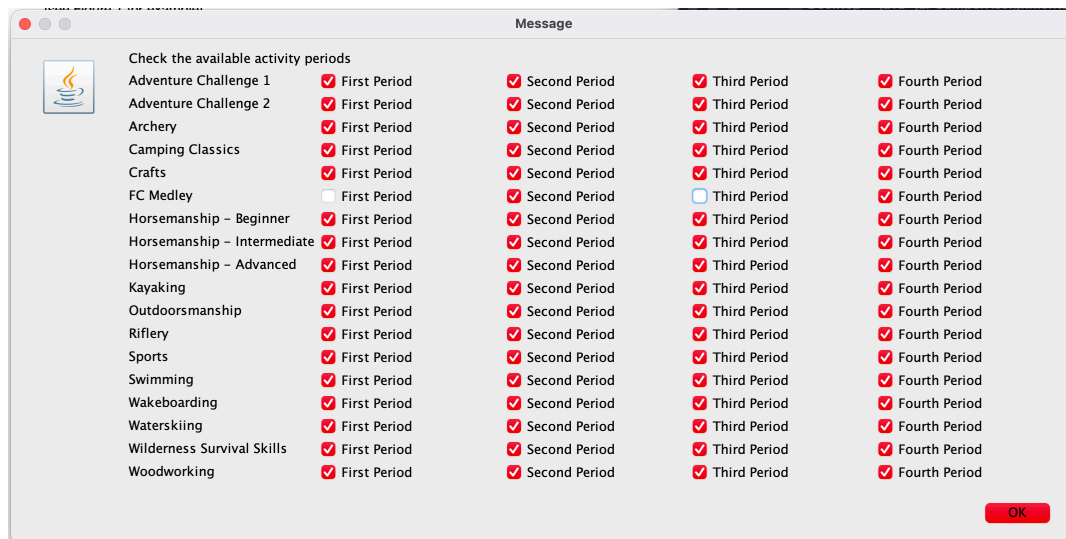

Figure 5: The Activity Availability window, with all activities available during all periods except

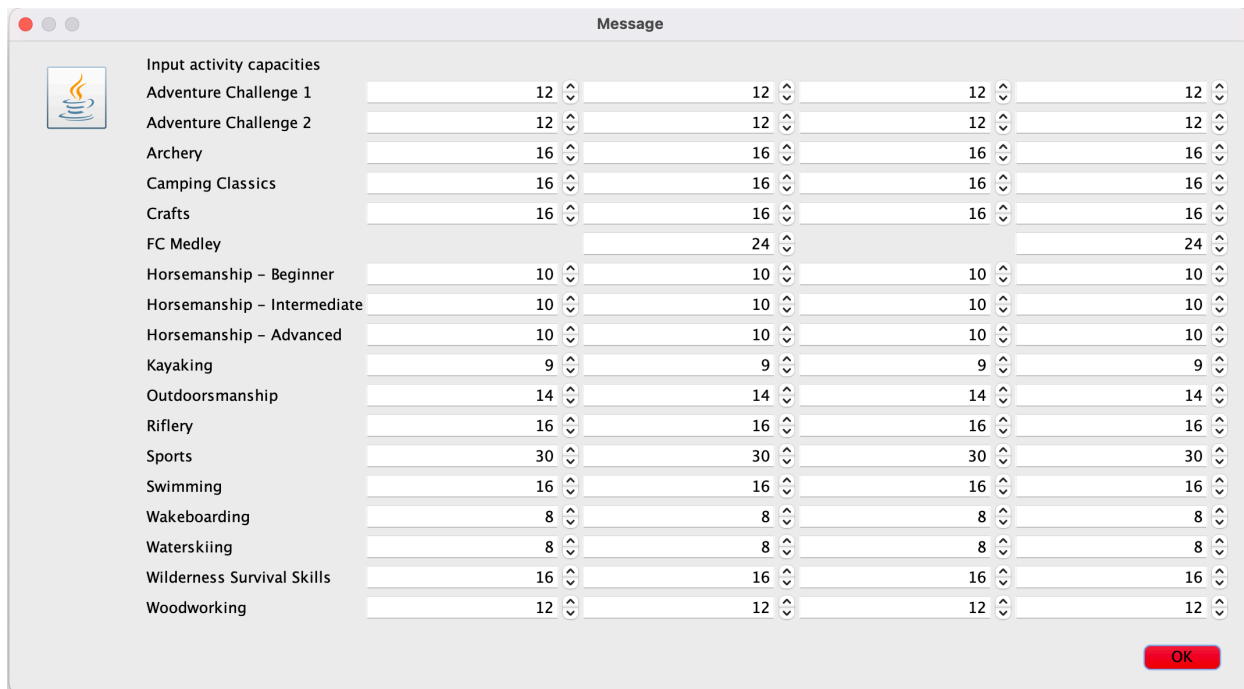for FC Medley, which only has 2nd and 4th period available

Figure 6: The Activity Capacities window, with total capacities
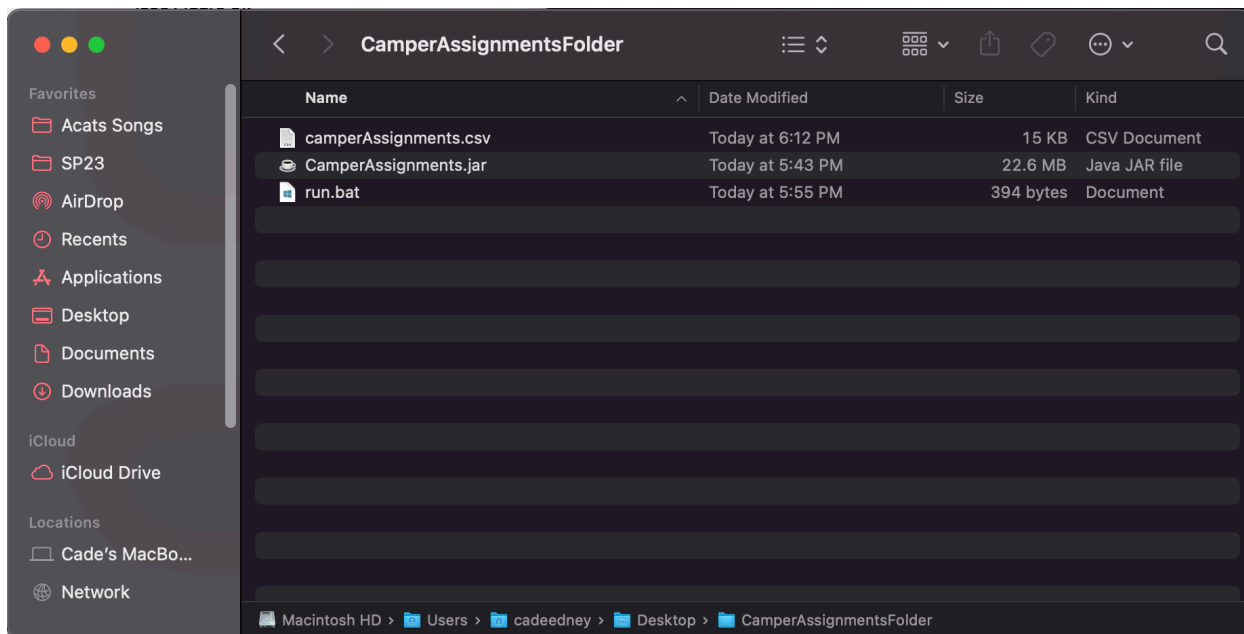
filled in automatically in each available period

Figure 7: An example File Explorer, with the **camperAssignments.csv**

file in the same folder as the .jar and .bat file