The Poly Brewers User Manual

Team Poly Brewers

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Contents

1 Introduction

1.1 Overture

The mission of the Poly Brewers project is a simple one, to make the hobby of home brewing more accessible to beginners and middling groups by providing them with an eclectic amount of simple recipes to help them expand their brewing horizons. We are Poly Brewers for we are many, and it is our hope that after reading this user manual, the reader will become more informed not only on how to use said app, but to also become a better brewer.

1.2 Roadmap of the manual

We begin our exploration of the application with an overview of sections of the application. Then we will explore a bit more in depth the nature of the ingredients used in the brewing process before finally viewing how to create a recipe int the application.

2 Exploring the App

2.1 The home page

The Poly Brewers app is first and foremost a web application hosted at: poly-brewers.firebaseapp.com. The URL provided will link to the homepage as depicted in Figure 1.

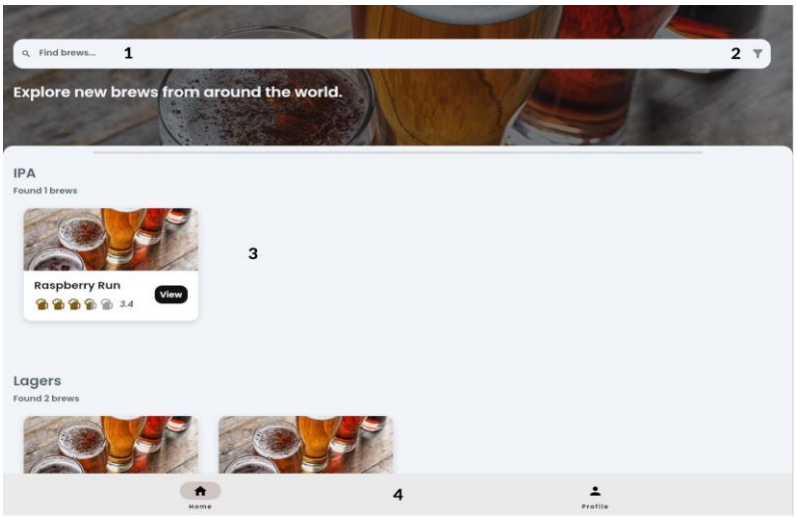

Figure 1: The home page

The numbered labels describe as follows:

1. The search bar: From here a user can query recipes by name
2. Recipe filter: From here the user can filter through which recipes are visible on the page and which recipes show up on queries (more on these categories later).
3. Recipe tiles: Each tile here is one recipe, of which clicking view will take the user to the full description of the recipe. Each recipe is separated by styles of IPA, Lager, and Other.
4. Navigation panel: The primary means by which the user will navigate between the two pages of the website, home and profile.

2.2 The filter menu

Let us explore the filter menu. When the user clicks on the funnel icon, the screen in Figure 2 shall appear.

Figure 2: The filters page

Each section and item in said sections are described as follows:

- Equipment

  - 1-Gal to 5-Gal: This describes the size of the fermenter that is used in the recipe and ingredients are expected to scale as such.
  - Keg and Bottles: These are the two primary means by which we carbonate our beer, either naturally in bottles with a little extra carbon, or forcefully with a keg. The directions will reflect the usage of either/or.

- Difficulty
  - Novice: Relatively easy recipes often including no more than a single malt extract and hop variety.
  - Adept: Somewhat more difficult recipe including many malt extracts, hops, and perhaps specialty grains.
  - Cicerone: An advanced recipe requiring Adept ingredients as well as extras such as wood chips for a more barrel aged flavor (Cicerone is a word in the home brewing world describing a person of expertise, often equated to the Sommelier in the wine world).

- Style
  - Lager: Beers fermented with Lager Yeasts
  - IPA: Beers fermented with Ale Yeasts and a high concentration of hops
  - Other: Styles that don't quite fit into these two categories.

2.3 The recipe page

The next item to explore is the recipe page as shown in Figure 3. This appears when the user clicks on the view button in the recipe tile. Marked in the figure are as follows:

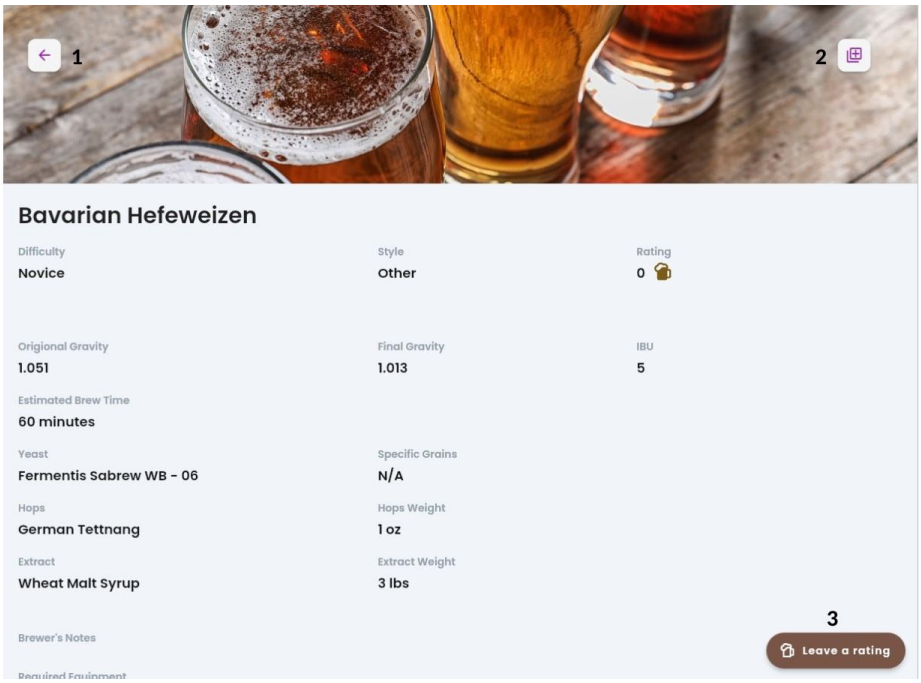

Figure 3: The filters page

1. The back button: Allows the user to traverse back to the page they were previously at before they clicked upon the recipe.
2. The save button: A button which only appears if the user is signed in to an account. Allows the user to save a recipe that they wish to make or just really like.
3. Leave a rating: A basic rating system which allows you to give as many ”mugs” (colloquially known as stars), as they feel the recipe deserves.

2.4 The profile pages

There are two views to the profile page, one when the user is not signed in to an account, and one where they are. We begin with figure 4 where the user is not signed in and we see the sign in page. The marked portions are as follows:

1. Email field: This is where the user puts the email they wish to sign up/sign in with.
2. Password field: This is where the user will put the password they wish to sign up/sign in with.

3. The sign in button: Upon successful completion of the two fields above, the user may press this button to sign in if they have an account.
4. The Sign Up button: Upon successful completion of the two fields above, the user may press this button to sign up for an account.
5. Google sign in/sign up button: Should the user desire to sign up/sign in with their Google account, they may click this button to accomplish this task.

Then upon successful completion, the page shown in figure 5 appears. Its marked portions are as follows:

1. Submit a recipe: This button will take the user to the forms where the creation of a new recipe will occur.
2. View Beginners guide: A link which takes the user to this very document.
3. Log Out: A button which logs the user out of their profile securely.
4. Saved brews and My Brews: two sections which stores the user's saved brews that they favor, and a section below it where the recipes they have made lie.

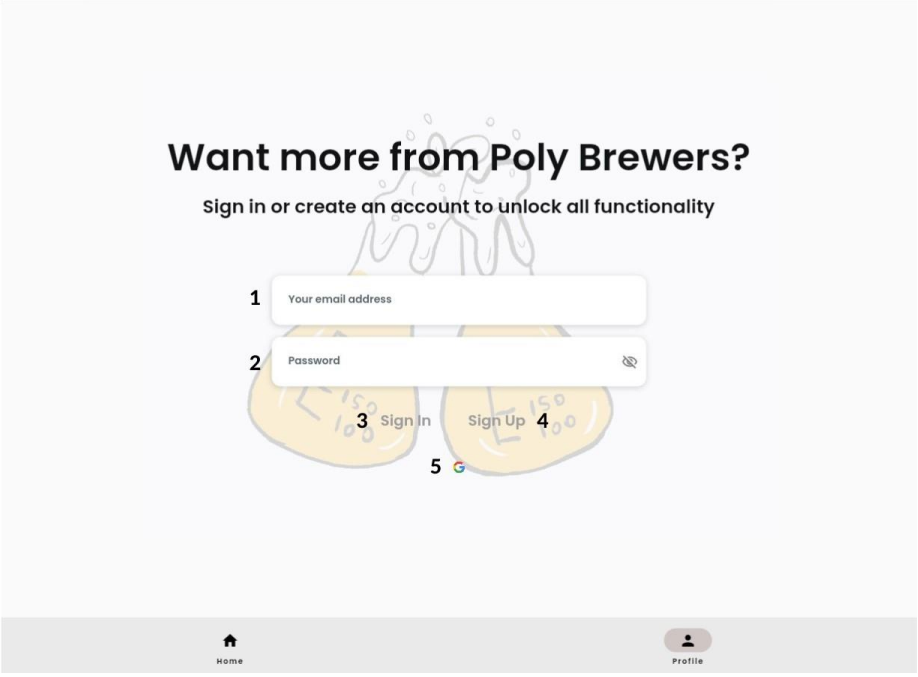

Figure 4: The Sign In page

3 The importance of Ingredients

Now that we have explored the app a little bit, let us take an aside and discuss how to create a recipe. How we go about the preparation of a brew in the broadest perspective really varies little, but it is the details of the process that can vary unless we are doing truly experimental recipes (e.x. making a coffee stout by adding coffee grains into a mid-fermentation phase). The discussion of how to brew really begins then with the ingredients we use.

3.1 The Foundations

An historic rule on the brewing of beer is the Reinheitsgebot, a decree from Duke Wilhelm IV of Bavaria. Said decree enforced only three ingredients to be used in the creation of beer, that being:

- Barley
- Hops
- Water

Though there is technically one ingredient missing here which will be discussed later, this trifecta is considered to be the standard ingredients for the

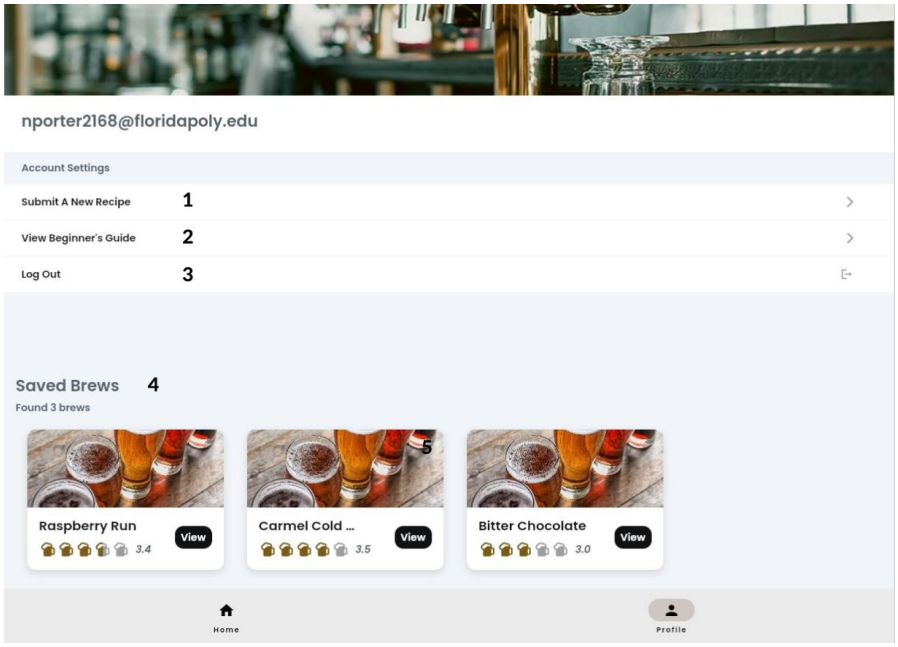

Figure 5: The Profile page

beginner. Thus, it is from these three ingredients that we will begin our look into how to make a recipe.

Barley

Barley makes up the majority of the flavor profile and fermentable sugars needed for our brew. Professional breweries will take raw barley seeds, heat them to into a forced sprouting and create what is now malted barley. This malted barley is then put under a rigorous boiling process where all of the sugars now exposed by the sprouted grains are exchanged into water where it is then immediately used. This process, commonly known as full grain brewing, is completely feasible to the homebrewer, and is considered something to strive for, but is often not recommended for the beginning user who has so much more to learn. It also requires much more equipment overhead, which is not friendly to the beginner who simply wishes to try out this hobby.

Luckily, the beginning brewer does not require the raw barley, but rather in the form of extract. The two forms of which are liquid and dry. The primary difference between the two are shelf-life in that dry malt extract will last longer than liquid malt extract.

Figure 6: Liquid Malt Extract

Figure 7: Dry Malt Extract

Hops

Hops are small green flowers which have historically been used as a preservative. Hence the style IPA, a style which features a heavy amount of hops, stands for India Pale Ale since it was created in Britain and was expected to last the passage between the Isles and India. While they are still a sure means of natural preservative for the home brewer, they also give beer it's distinct bitter flavoring should a recipe call for it. One can purchase whole hops but it often easier and more economical to purchase them in pellet form.

Figure 8: Hop Pellets

Water

It might seem a bit pedantic and silly, but so many great debates have occurred about what type of water to use in our brews. As an anecdote, there are many people who believe a Guinness stout cannot be recreated by anyone properly unless they use the same water which flows through Dublin. It is beyond the scope of this user manual to describe the depths of water chemistry and theories behind mineral flavor enhancement. We personally recommend choosing some prepackaged spring water.

3.2 Beyond Foundations

A few more ingredients to discuss before really getting into using Poly Brewers are worth mentioning here.

Yeast

Returning to the story of the Reinheitsgebot, there is also another part of the story which is that the law was appended almost immediately after its inception, for Duke Wilhelm forgot to include the very material which makes beer alcoholic, and that is yeast. Yeast is the living organism which we "pitch" into our recipes and after usually two weeks, we have an non-carbonated beer. Yeast is an extremely sensitive being, and comes in two varieties which equally can affect the creation, mouthfeel, and flavor of the final product. Namely, we separate our yeast into two generic strains. One is Lager yeasts which are "bottom fermenting" in that they like to live in colder temperatures of 60-65 degrees Fahrenheit and tend to give more crisp and flowery flavors. The second is Ale yeasts which prefer

temperatures more like 60-75 degrees Fahrenheit and tend to give heavier and fruity flavors.

Figure 9: Yeast Packets

The yeast when introduced to the unfermented beer essentially start eating the sugars contained in the barley and hops and produces CO_2 gas as an effect. With this knowledge, we can assume the yeast is also used to carbonate the beer when in a bottle. We merely introduce a ”priming sugar” at the end of fermentation in order to give the yeast more to eat, and then port the newly sugared substance into pressure graded bottles for another two weeks. This process becomes void of course when we use kegs to force carbonate our beers.

Specific Grains

Also known as specialty grains. It is a common practice to steep barley grains in the water one will use to brew for flavoring and extra sugars. One must ensure they do not do so for too long or else they will end up with a burnt aftertaste in the final product.

Figure 10: Muslin Bag with Grains

3.3 Other ingredients

It is a general rule of thumb that if it has sugar, the yeast will use it. Using this philosophy, we have dozens of unique recipes such as peanut butter porters, coffee stouts, and even honey flavored pilsners. It is advisable that one gain experience in the brewing process before trying different combinations themselves, but should a recipe call for it, one should not be afraid to broaden their horizons in this regard.

4 Making a recipe

Now that we have some basic knowledge about the ingredients used in the creation of beer, let us begin by discussing the recipe creation process on the Poly Brewers app.

4.1 The first page

The first page as seen in figure 11 includes the following marked sections:

1. Name: This is where the user places the name of the recipe.
2. Difficulty: This is where the user chooses the difficulty of the brew based upon the earlier discussion in the first section about the filtering tool in the search bar.
3. Style: This is where the user chooses the style of brew the recipe is which may fall into the category of Lager, IPA, or Other.
4. Bitterness: A rating of the International Bitterness Units of the recipe. This is determined by the types of hops used as well as how long they are brewed.
5. Brew Time: The approximate amount of time required to complete the initial brewing process.

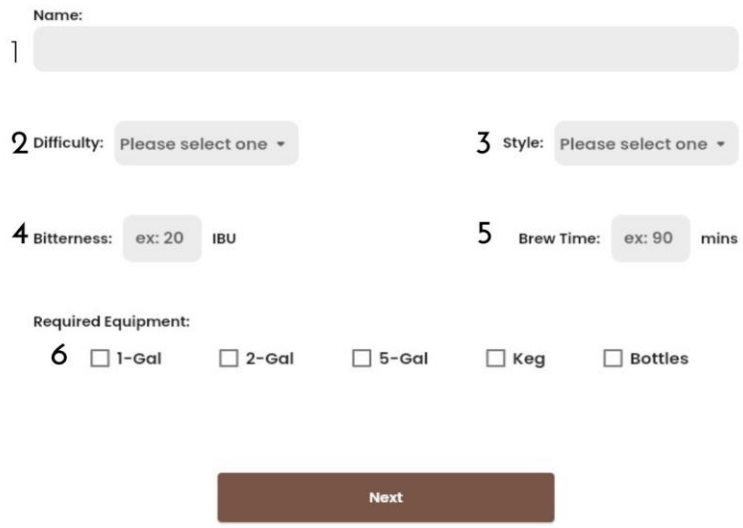

Figure 11: The First Recipe Entry Page

4.2 The Second Page

The second page as seen in figure 12 includes the following marked sections:

1. Original Gravity: This is the initial specific gravity measurement taken after the initial brewing process often taken by a hydrometer.
2. Final Gravity: This is the specific gravity measurement taken after the fermentation process. The rationale for doing this is that when the yeast consumes the highly dense sugars and produces gas, there will be a decrease in the specific gravity, and when this decrease stops, we assume fermentation is done. A good rule of thumb for this is that the decimal positions of the final gravity should be 75 percent less than the original gravity.
3. Extract: The names of the extracts used in the recipe as well as their poundage. Must be entered in list format: ”extract name 1, extract name 2 ... etc”
4. Hops: The variety of hops used in the recipe as well as how many ounces for each. Must be entered in list format: ”hop name 1, hop name 2 ... etc”
5. Yeast: The name of the yeast strain we are using for this brew.
6. Specific Grains: The grains we will steep in the initial boil. Must be entered in list format: ”grain name 1, grain name 2 ... etc”

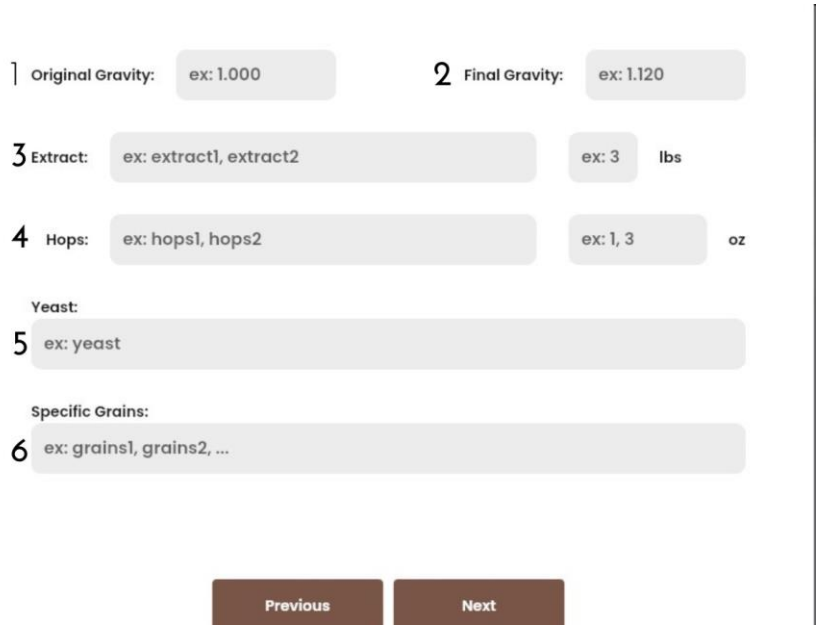

Figure 12: The Second Recipe Entry Page

4.3 The Third Page

The second page as seen in figure 13 includes the following marked sections:

1. Notes: A place to put flavor notes or other ingredients used.
2. Instructions: The section we place the actual directions on how to go about making this recipe. It is recommended to place this into a numeric list and put any notes that would be of use.

After hitting submit, the recipe will be available for all of the world to see!

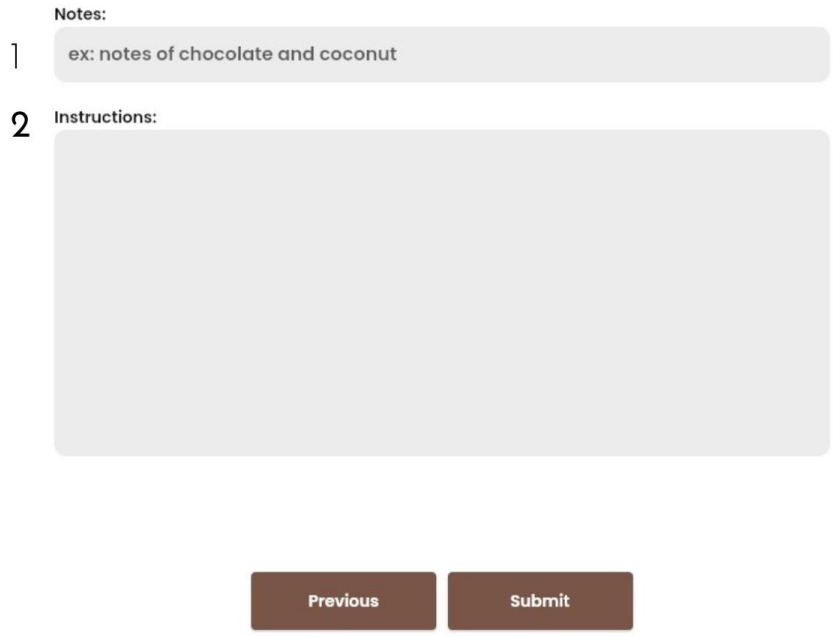

Figure 13: The Third Recipe Entry Page

5 Conclusion

Here ends a short overview of the Poly Brewers application. One should not stop here though as there is much left unstated on the depths of this extremely interesting hobby. To that end, we shall place a few resources below which hopefully will give even further context outside the scope of this application. We hope that you enjoy using poly brewers as much as we have enjoyed making it.

Cheers,

Team Poly Brewers Greg, Nicholas, Tomas

6 Resources

6.1 John Palmer's How To Brew

A compendium of Knowledge on the basics of brewing to the most niche of subjects written by John Palmer, an avid homebrewer and Metallurgical Engineer. The book is availible online for free from the author:

http://www.howtobrew.com

6.2 The American Homebrewers Association

A society of Passionate homebrewers with many resources and discounts availible: https://www.homebrewersassociation.org/

6.3 The Cicerone Certification Program

Not purely a homebrewing program, but one that teaches the art of beer tasting and style recognition. The American Homebrewers Association offers a discount on the program for members. https://www.cicerone.org/

6.4 Northern Brewer

A one stop shop for ingredients and equipment for all of your homebrewing needs. They even offer paid courses as part of their Northern Brewer Academy.
https://www.northernbrewer.com/