Deliverable G - Prototype II and Customer Feedback
Team: C02
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Prototype Test Plan

Why are we doing this test?

*This is an introduction. Capture the reasons for the test, giving enough background information to justify doing **any** prototyping at all. Is the **general** objective one of: learning, communication, de-risking, etc.*

The general objective of the prototype is learning and communication. It's main focus was on prototyping the design of the water reservoir to ensure that it would be possible to be separated in order to provide an easy clean. It was also to take the feedback and make any necessary changes or concerns they had.

Test Objectives Description

*What are the **specific** test objectives?*

When developing the following test objectives were used:

- Ensure the pipes can be separated easily.
- Ensure there is no leaks when the pipes are attached together.
- Ensure that it is easy to clean.

*What **exactly** is being learned or communicated with the prototype?*

For this prototype we are commuting the idea that our design will be able to hold water, and be able to be disassembled and cleaned. We will learn whether or not the design will fail, meaning if it were to leak we will have to find further steps to ensure this is resolved, or we would have to communicate with our idea to decide whether it will be able to succeed. Furthermore, if it is not able to be easily disassembled and cleaned, we would have to take a similar approach.

What are the possible types of result?

There are several possible results for the prototype. The prototype can either hold the water, or it will leak. Also, the water reservoir can either be simple to take apart and put together, or there can be a lot of difficulty. Lastly, the reservoir can be easy to clean, or it will be an issue.

How will these results be used to make decisions or select concepts?

If the results for the prototype are successful, then it means it will be possible to proceed with the design. For it it be successful, it must meet the objectives.
If the results for the prototype are unsuccessful (meaning it leaks, or has issues to be assembled and cleaned) then appropriate measures must be taken. By analyzing the results it will be easier to determine what degree of modifications will have to be taken. For example, if it is found that the reservoir leaks, a method to prevent this will have to be found. A solution could be either using silicon, or a seal. Each unsuccessful result will need to have an appropriate fix if the design is to remain.

What are the criteria for test success or failure?

The criteria for test success or failure are based upon the test objectives.

Objective	**Criteria**	**Method of Testing**
Water/Assembly	No leaks in the system when attached together and filled with water	Visual observations
Assembly	System can be easily taken apart	Experimental testing
Cleaning	System is easy to clean once taken apart/empty	Experimental testing

What is going on and how is it being done?

*Describe the prototype **type** (e.g. focused or comprehensive) and the reason for the selection of this type of prototype.*

This prototype is focused. The reason it focused is because is concentrated on the main component of the design, being the water reservoir. This type was chosen to allow us to see if it will succeed in doing what we designed it to do. That way if there were any large issues to the reservoir's design, we would find out right away, and be able to work out a solution on what to do next. The reservoir is our primary focus of the overall design so it is essential that there are no issues found.

Describe the testing process in enough detail to allow someone else to build and test the prototype instead of you.

1. Assemble the water reservoir
2. Fill the system with water
3. Observe the system to make sure there are no leaking points
    a. Check the entry point
    b. Check the exit point
    c. Check the jointing sections
4. Allow system to empty
5. Test the ability to take apart by disassembling the water reservoir
    a. Make note on the level of difficulty
6. Test the ability to clean by trying to clean the reservoir
    a. Make note on the level of difficulty

*What information is being **measured**?*

The data collected for this prototype is based on observations.

*What is being observed and how is it being **recorded**?*

The following observations were made:

- Checking the possible points of leaking in the system and noting if they are any leaks occurring.
- Ensuring the simplicity of dissembling the water reservoir and rating its level of difficulty.
- When trying to clean it, make note on what is simple and what is not.

What materials are required and what is the approximate estimated cost?

The materials required are 2” x 3ft pipe, 2” caps and 2” adapters. The pipe costs 7.98$ each (2 were used therefore 15.96$), the caps are 1.68$ each (4 were used), and the adapters are 2.79$ each (4 were used). The estimated cost is 33.84$ before tax.

What work (e.g. test software or construction or modeling work or research) needs to be done?

For this prototype, the objectives are the primary focus, meaning that the work that needs to be done will rely on the results of the testing. If the system leaks, we will need to seal the areas that leak with silicone (or another type of sealant) to stop this issue. Also adjustments may have to be made if it is difficult to disassemble and clean.

When is it happening?

*How long will the test take and what are the **dependencies** (i.e. what needs to happen before the testing can occur)?*

The duration of the testing for prototype II will depend on whether the tests are successful or not. The testing also depends on how long it takes to get the materials and construct the prototype. The prototype has to be built in order to do the testing. Each test will have a different duration because one test may meet its objective but others may not. The testing will only be complete, once the objectives are met.

When are the results required (i.e. what depends on the results of this test in the project plan)?

The results being successful for prototype II are essential to prototype III. Prototype II contains the main component of the system. The more issues there are with prototype II the longer we must wait to proceed with prototype III.

Prototype 2

For this prototype, the main focus was to work on constructing the water reservoir on its own, since it in the primary component of the entire system. It was important to ensure that the system will not leak or have any complications when disassembling and cleaning. Overall, the results of this prototype help us see how the overall design is progressing.
On March 9th, 2018, we met with the client and showed them prototype I. They seemed to like the design and asked questions more focusing on how it would work. The feedback was overall positive which encourages us to proceed with our design.