

Research Paper Draft

1. Introduction

- a. Title - Dart in Flutter
- b. Author list - Brian Dell, David Tang, Jaclyn Wirth
- c. Abstract
- d. Describe the general topic and any particular aspects you will be examining, including a list of the upcoming sections and what each will cover.

2. Main Text (Describe what you have done, how you did it, and what we learned)

- a. Introducing the language
 - i. An open-source language developed in Google
 - ii. Dart was designed with the goal of making the development process as comfortable and fast as possible for developers
 - 1. built-in tools such as its own package manager, various compilers / transpilers, a parser, and a formatter
 - 2. Can compile to native code, and javascript to run on any platform
 - iii. Widget-based framework for building user interfaces (everything in Flutter is a widget)
 - iv. Dart utilizes garbage collection for memory management
- b. How the language addresses list of language features studied
- c. Highlighting features, and how they compare to other languages
 - i. Type-safe: has strong typing with type inference (greatly improves writability)
 - ii. Dynamic type to constantly change the type of a variable
 - iii. Null safety
 - iv. Required, optional, and named parameters parameters
 - v. Advanced object-oriented programming features
 - 1. Mixins

2. Automatic assignment of instance variables
 3. Initializer list
 4. Named constructors, default constructor, constant constructor, factory constructor
 - d. Describe software developed
 - i. A To-do list application using Flutter. This app will act as a simple tool that helps users add and organize tasks to remind them what they must do later. Users will be able to mark tasks as completed when they have finished their task(s).
 1. Has features such as organizing tasks into categories
- 3. Conclusion**
 - a. Ideas for future investigation into your topic which were beyond the scope of your paper.
- 4. Citations**
 - a. A complete list of citations. Citations of web pages are acceptable in some circumstances, but books, articles in conference proceedings or journals, or technical reports are preferred.
 - i. <https://dart.dev/overview>
 - ii. <https://renato.athaydes.com/posts/interesting-dart-features.html>
 - iii. *Flutter and Dart Cookbook*. (2022). O'Reilly Media, Inc.

Grading

- Proposal: 7.5%
- Progress report 7.5%
- Paper Draft: 10%
- Presentation: 15%
- Final Paper: 30%
- Software: 30%

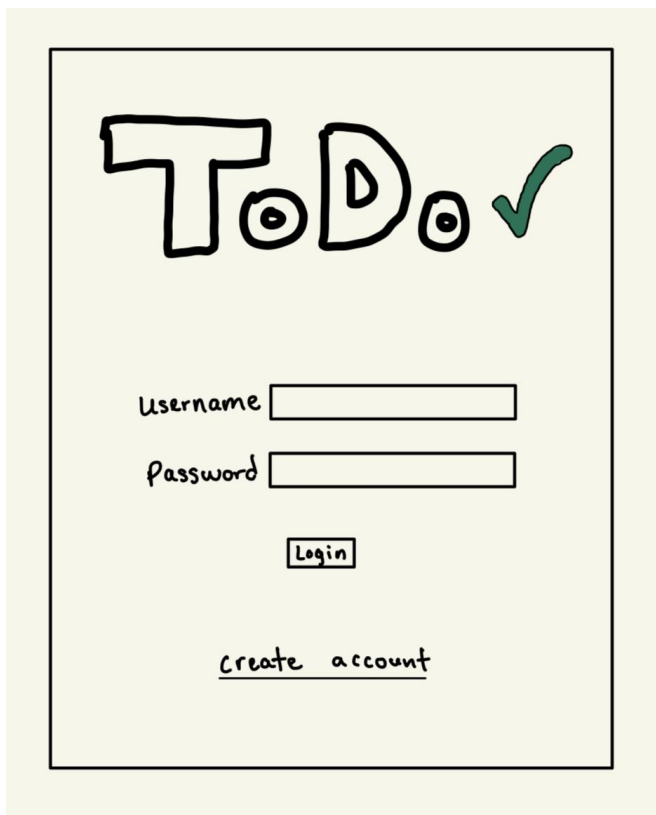
For our assignment, we should allocate 30% of the coding portion and reduce the weight of the paper to 30%. We think this is a reasonable distribution because

the topics covered in our paper will be implemented in the code. Our application will showcase our deep understanding of the topics we researched.

Implementation Status

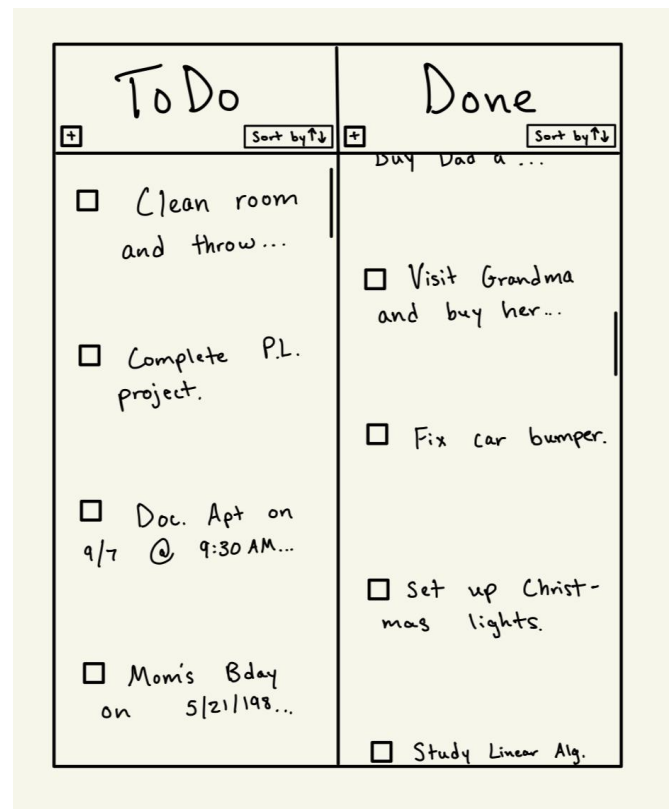
Wireframes

Login Page



A hand-drawn wireframe for a login page. At the top, the word "ToDo" is written in a large, bold, hand-drawn font, followed by a green checkmark. Below this, there are two input fields: "Username" and "Password". Below the "Password" field is a "Login" button. At the bottom, there is a link that says "create account".

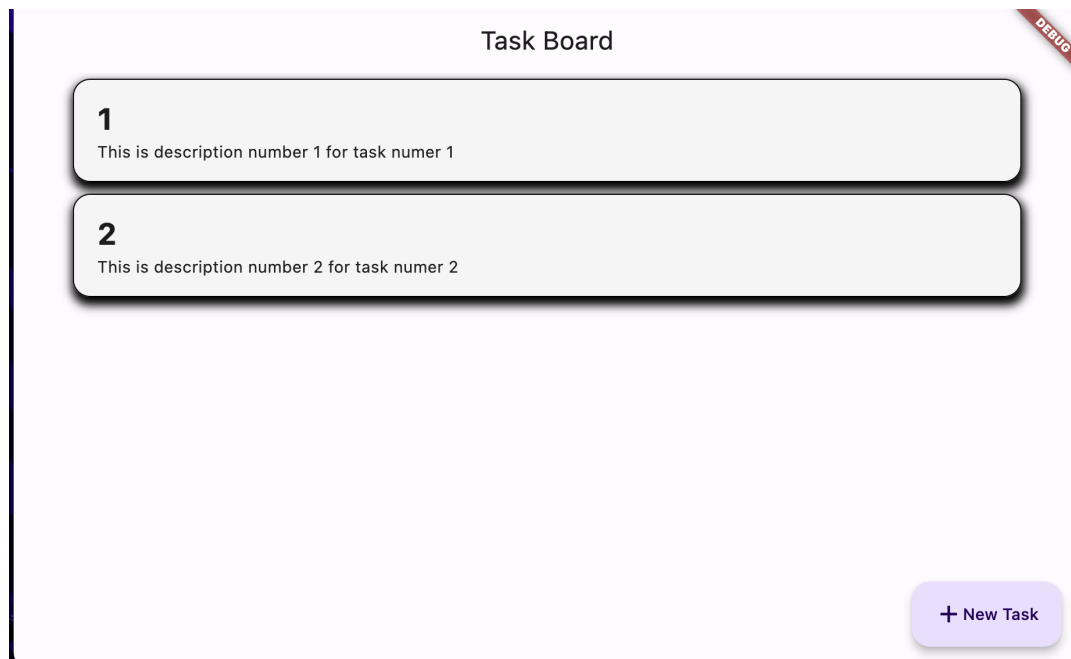
Main Page



A hand-drawn wireframe for a main page, divided into two columns: "ToDo" and "Done". Each column has a header with a "+" icon and a "Sort by ↑↓" dropdown menu. The "ToDo" column contains a list of tasks, each with a checkbox: "Clean room and throw...", "Complete P.L. project.", "Doc. Apt on 9/7 @ 9:30 AM...", and "Mom's Bday on 5/21/198...". The "Done" column contains a list of completed tasks, each with a checkbox: "Buy Dad a ...", "Visit Grandma and buy her...", "Fix car bumper.", "Set up Christmas lights.", and "Study Linear Alg.".

Code

So far we have a basic list that lists out a few tasks on the to do list, and a button that allows you to add more tasks.



Updated Timeline

- ☐ **Monday 11/20 IMPORTANT:** Progress report. Includes outline for paper and outline for design of app
- ☐ **Wednesday 11/22** Design login page, and tab bar for switching between to-do doing, done tabs
- ☐ **Friday 11/24:** Design backend logic for user authentication, and how tasks are stored
- ☐ **Tuesday 11/28** Finish front-end implementation of the app.
- ☐ **Friday 12/01 IMPORTANT:** Finish back-end implementation of the app. At this point, app should be mostly finished
- ☐ **Saturday 12/02** Update research paper according to implementation of app
- ☐ **Monday 12/04 IMPORTANT:** Finish the research paper draft & organize the final presentation
- ☐ **Thursday 12/7 IMPORTANT:** PRESENTATION
- ☐ **Monday 12/11 IMPORTANT:** Final paper and code due