Lab 1 - BabyBites

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1 Introduction

It is a challenging undertaking to care for a child at the early stages of life while trying to maintain the day to day routine. The stress can be quite overwhelming, especially for new parents. Writing things down in a notebook, sticky notes, or just memorizing what the child was fed and was there a reaction seems like that is the way it was always done. While there are paid options to choose from to alleviate that burden, there has to be a better option. BabyBites is that option.

1.1 Societal Problem

The process of transitioning a child's eating habits is a challenging undertaking, yet a necessary one. The challenges vary from child to child, making it hard for parents and caregivers to accommodate the child's development.

The typical age for babies to begin the transition is roughly around six months. The transition starts with puréed foods. The process is slow and eventually, with time, textured foods are introduced[1]. The process can be overwhelming for both parents and caregivers, often leading to frustration when determining which foods are safe, how to prepare the portions, and teaching the use of utensils.

The transition in general goes beyond feeding the child. The goal is to create a paradigm of safe eating habits, skills, and well-balanced nutrition to foster proper development of eating skills and independence.

1.2 Solution

Introducing BabyBites, the ultimate mobile-first web application designed to safeguard your child's feeding journey and simplify your job at ushering your child's healthy growth. From the first spoonful of purées to every masterful bite with utensils, BabyBites will alleviate the stress from making the transition from milks to solids and beyond. With this application healthy eating habits and skills can be developed.

This challenging transition is made easier with BabyBites, complete with the following features: personalized baby profiles, food tracking, food database, alert notifications, and our unique feature of providing daily reports to summarize your child's feeding journey.

BabyBites will also provide parents and caregivers with expert-backed resources, preparation tips, alerts about allergies, choking hazards, and development milestones that will give parents and caregivers peace of mind and the confidence to nurture their child's growth.

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2 Product Description

    BabyBites is an application that will help parents and caregivers create an environment for their child that embraces adequate nutrition and develop good eating habits along with great eating skills. Through the use of this application, parents and caregivers can also track and receive daily reports that summarize the progress made on the feeding journey.

2.1 Key Product Features and Capabilities

BabyBites will:

- ❖ Guide Parents/Caregivers through food transitions

- ❖ Offer food database and nutrition information through FoodData Central API

- ❖ Track food/milk intake

- ❖ Provide food preparation guidance

- ❖ Provide access to expert resources

- ❖ Send alert notifications

- ❖ Generate daily reports

BabyBites will not:

- ❖ Prepare or Deliver Meals

- ❖ Create Personalized Meal Plans

- ❖ Provide Real-Time Emergency Support

- ❖ Identify or Diagnose Medical Conditions

- ❖ Track Non-Feeding Related Milestones

- ❖ Provide Communication with Healthcare Providers

See Table 1 for a complete overview of this application's features amongst its competitors.

Features	BabyBites	Baby Tracker	Huckleberry	Solid Starts	Glow Baby	Baby Connect
Create Baby Profile	✓	✓	✓	✓	✓	✓
Track Food Intake	✓	✓	✓	✓	✓	✓
Food Database	✓	✗	✓	✓	✓	✗
Food Nutrition Information	✓	✗	✗	✓	✗	✗
Utensil Usage Guide	✓	✗	✗	✓	✗	✗
Meal Preparation Guide	✓	✗	✗	✓	✗	✗
Expert Resources	✓	✗	✓	✓	✓	✗
No Ads	✓	✗	✓	✓	✗	✓
Mobile Website	✓	✗	✗	✗	✗	✓
Mobile App	✗	✓	✓	✓	✓	✓
No paywall	✓	✗	✗	✗	✗	✗
Choking Hazards	✓	✗	✗	✓	✗	✗
Allergen Information	✓	✗	✗	✓	✗	✗
Daily Reports	✓	✗	✗	✗	✗	✗
Alert Notifications	✓	✓	✓	✓	✓	✓

Table 1:Competition Matrix

2.2 Major Components (Hardware/Software)

This application will aim towards meeting its goals with tools that enable completion of key application features. The following hardware and software components will reflect that.

2.2.1   Hardware

A computer or mobile device with internet access will be all that is necessary.

2.2.2   Software

The development of this application will be performed primarily in VSCode, an IDE that supports a wide variety of languages. The project management will be handled through GitHub Issues which will provide a means of tracking user stories, as well as any development issues that may arise during the development process. GitHub Issues will also allow the creation and tracking of Milestones to further aid progress. Version control will be handled through GitHub, allowing for code review, pull requests, and version distribution.

The front end of the application will be built using React to take advantage of its modularity. This will allow for the creation and maintaining of an interactive user interface. The back end of the application will be implemented through the use of Django. With the scalability it offers, its built in features for user authentication and ORM for databases, it provides the necessary components to create the foundation of this application. While Django inherently has database capabilities, there will be a migration towards SQLite/PostgreSQL for database design to allow greater scalability with full inclusion of the FoodData Central API.

PyTest and Jest will be utilized for testing the application's Python and JavaScript components, ensuring that the software developed will meet testing requirements and mitigate the impact of software bugs. PyDoc and JSdoc will respectively provide documentation for Python and JavaScript components.

Hosting will be done locally for a majority of the development process. For demonstration purposes, ODU servers will provide hosting. Any future desires for this application may consider AWS as a potential host.

For a broad overview of user interaction, refer to the Major Functional Components Diagram, shown in Figure 1.
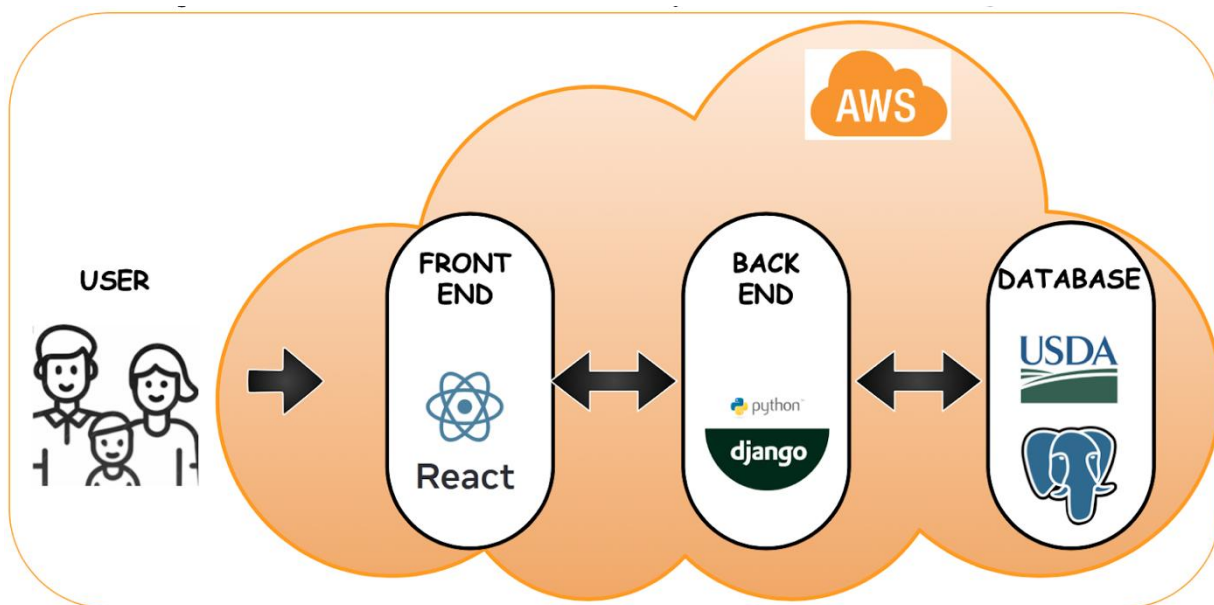

Figure 1: Major Functional Components Diagram

3 Identification of Case Study

The functionalities of the BabyBites are based around the problem that new parents and caregivers face, the transitions of food types for their child.

3.1 Case Study Group

The intended users will be new parents and caregivers who are trying to transition their child's diet and eating habits. The target transition points are milk-to-purees, purees-to-solids, and foods requiring the development of utensil usage. By isolating those specific transitions, the focus of the applications features (See section 2.1, "BabyBites will") can be narrowed down and refined to address the issues faced by parents and caregivers.

3.2 What will it be used for

The intent of the application is to provide essential resources for news parents and caregivers to aid in child nutritional development. The following resources will accommodate that need:

- ❖ A food database to search for relevant information on chosen foods,

- ❖ A food tracking log.

- ❖ Daily reports to summarize information pertinent to the child.

- ❖ Preparation tips to assist feeding different types of food.

- ❖ Supplemental expert-backed resources.

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4 Glossary

Baby Profile - A user-created profile to categorize their children within the application.

Daily Report - A summary of user milestones and pertinent information regarding their child (i.e. food consumption, milestones, allergies).

Dashboard - The home page of the user. It features shortcuts to relevant pages and displays daily reports.

Filter - A sorting function that will allow specific items to be displayed based on input.

Food Database - A comprehensive database that allows users to look up various food, view nutritional information and access preparation tips.

Food Tracker - A log the user can modify to maintain a history of foods given to the child.

FoodData Central API - USDA's database for food that will be used as a source of information for the BabyBites' food data table.

IDE (Integrated Development Environment) - A software application, such as VSCode, that provides tools for writing, testing, and debugging code.

Notification - An alert that will notify the user of important information (i.e. allergies, choking hazards).

Search - BabyBites' food search feature.

User - Any person who has created an account and utilizes the application.

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