

Lab 1 – BabyBites

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1 Introduction

The first 1000 days of life have been identified as a sensitive period during which children are most vulnerable to behavioral and cognitive deficiencies (Roberts et al., 2022). The foundation for long-term health, cognitive development, and healthy eating habits is established by adequate nutrition during early childhood. However, 25-35 percent of new parents and caregivers find it difficult when transitioning their little ones from milk to solid foods (Norlyk et al., 2019). Typically, babies begin this transition around six months, starting with pureed foods before gradually moving to more textured solids (Kuo et al., 2010). This transition can be overwhelming for parents and caregivers, as it can be difficult to know which foods are safe at various stages, how to prepare them, and when to introduce certain utensils. According to the World Health Organization (WHO), in 2022 undernutrition was alarmingly associated with 45 percent of child deaths globally (WHO, 2023).

To address this gap, BabyBites, a mobile-first web application is designed to guide parents and caregivers through the transition from milk to solids and eventually, to more complex meals appropriate for toddlers. This challenging transition is made easier with BabyBites, complete with features such as: a personalized baby profile, a food tracker, a food database, daily reports, and alert notifications. Designed to reduce overwhelm, BabyBites ensures balanced nutrition and helps babies and toddlers develop healthy eating habits. BabyBites provides parents and caregivers with expert-backed resources, meal preparation tips, alerts about allergies, choking hazards, and developmental milestones that will give parents and caregivers the peace of mind and the confidence to nurture their child's growth.

2 Product Description

BabyBites is a mobile-first web application designed to support parents and caregivers as they guide their children through the critical transition from milk to solid foods. BabyBites provides expert-backed nutritional resources along with features such as personalized baby profiles, a food tracker, a comprehensive food database and daily reports. By offering clear guidance on safe food introductions, preparation tips, and potential allergy or choking hazards, BabyBites helps reduce the stress and uncertainty often associated with early feeding transitions. The objective of BabyBites is to simplify decision-making, promote balanced nutrition, and give parents and caregivers peace of mind throughout the transition from milk to solid foods.

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

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- Track Non-Feeding Related Milestones
- Provide Communication with Healthcare Providers

A comparison of BabyBites to existing solutions is shown in Figure 1.

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	✓	✓	✓	✓	✓	✓

Figure 1: Competition Matrix

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2.2 Major Components (Hardware/Software)

2.2.1 Hardware

A computer or mobile device with internet access will be required.

2.2.2 Software

As shown in Figure 2, BabyBites requires the following software components to function effectively:

- **IDE:** VSCode
- **Project Management:** GitHub Issues
- **Version Control:** GitHub
- **Front End:** HTML, CSS and JavaScript
- **Back End:** Python and Django
- **Database:** SQLLight, PostgreSQL and FoodData Central API
- **Testing:** Django
- **Documentation:** PyDoc and JSDoc
- **Hosting:** Local (Dev/Text) and ODU (Demo)

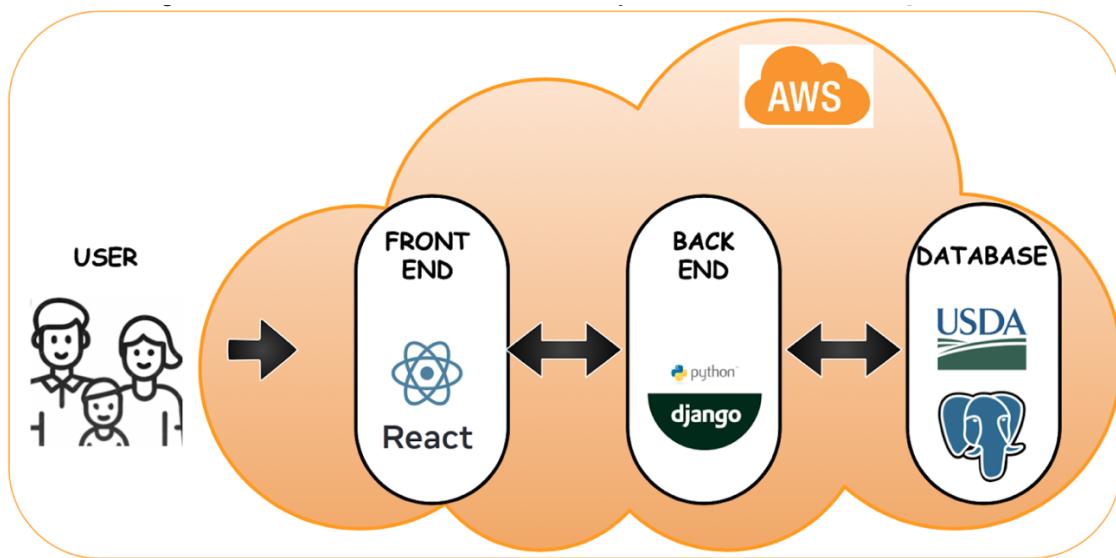


Figure 2: Major Functional Components Diagram

3 Identification of Case Study

BabyBites is being developed for new parents and caregivers who often struggle with the transition from milk to solid foods and need guidance to ensure their child receives safe, balanced nutrition. This group was chosen because early feeding decisions impact long-term health and often cause stress for parents and caregivers. While the primary focus is on supporting new parents and caregivers, BabyBites could also benefit experienced parents seeking to track their child's nutrition more closely and childcare providers, such as daycares, who are responsible for feeding multiple children and maintaining consistency in their diets.

3.1 Case Study Group

New parents / caregivers who are trying to transition their child's diet and eating habits:

- Milk to purees
- Purees to solids
- Utensil usage

3.2 What it will be used for

Provides the following essential resources to new parents / caregivers:

- A food database to search relevant information on chosen foods
- A food tracker to log what has been fed to the child
- A daily report to summarize information pertinent to the child
- Preparation tips to assist feeding different types of food
- Supplemental expert-backed resources

3.3 Future Use

In the future, BabyBites has the potential to expand its user base beyond parents and caregivers to include daycares.

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 BabyBite's food datable.

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 searching feature.

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

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