P04: Makers Makin' It, Act II -- The Seequel
TNPG: The Bluest Berries
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TARGET SHIP DATE: 2025-04-25
SHIP DATE: 2025-04-23

Berriest Blues by The Bluest Berries v.4

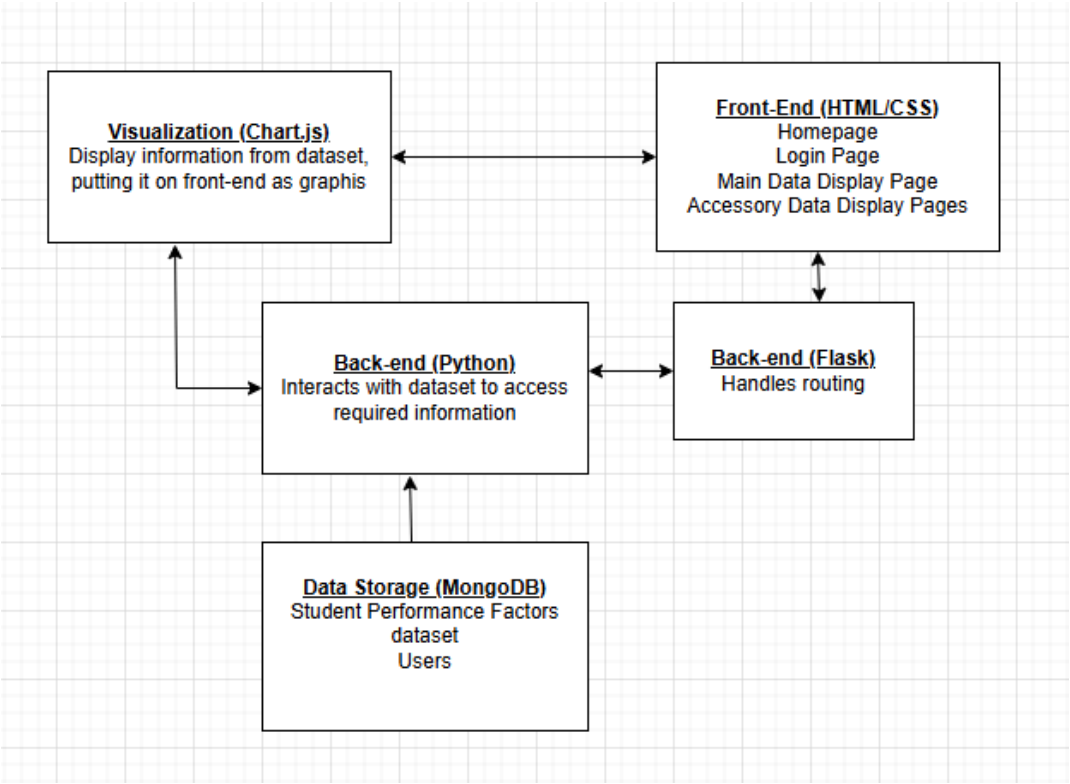
Description

We aim to create a website that displays data for student academic performance and the factors impacting said performance. The dataset we are referencing provides us with a wide variety of factors. We want to discover and visually demonstrate any correlations between the data. To start, we are particularly interested in learning about any relationships between student performance and attendance.

Program Components

1. Backend
    a. Flask/Python
    b. Handles user authentication, session management, and redirection
    c. Interaction with databases to access required attributes
    d. __init__.py
2. Data Storage
    a. MongoDB
    b. Dataset to pull from(student test scores, attendance, etc.)
3. Front-End
    a. HTML/CSS
    b. FEF: Bootstrap
    c. Creates displays for different pages
4. Visualization
    a. Chart.js
    b. Display data using appropriate graphs
    c. Demonstrate proposed correlations

Component Map



Database Organization

- ***users*** table to store login information
    - ***_id*** - unique identifier for each user (also required Mongo field)
    - ***username*** - username selected by user
    - ***password*** - hashed password
- ***student_data*** table to store information gathered from dataset
    - ***_id*** - automatic Mongo-generated id for each student
    - ***study_hours*** - amount of time spent studying per week
    - ***attendance*** - matches *Attendence* attribute in dataset (Percentage of classes attended)
    - ***sleep_hours*** - average amount of sleep per day
    - ***previous_scores*** - (average) score from past exam(s)
    - ***tutoring_sessions*** - number of sessions per month
    - ***physical_activity*** - average number of activity per week
    - ***score*** - matches *Exam_Score* attribute in dataset (Final Exam score)

*note: tables do not include **_id** field all MongoDB tables have*

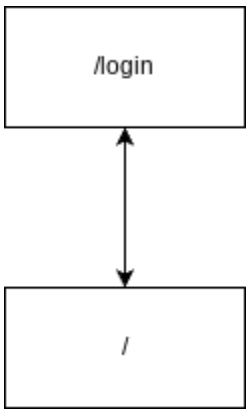
users

user	pass
String	String

student_data

study_hours	attendance	sleep_hours	previous_scores
Integer	Integer	Integer	Integer
tutoring_sessions	physical_activity	gender	score
Integer	Integer	String	Integer

Site Map



minimalism is our current state of being

1. /
    a. Full Page and Data accessible only to logged-in users.
        i. Non-logged-in users will be redirected to the login/registration page
    b. Displays scatter plot graphs correlating two variables at a time
        i. Contains two featured graphs: attendance-score and sleep_hours-score
        ii. There is a 3rd graph on the bottom where users can select which factors they wish to compare
            1. The x-axis has access to all remaining factors except *score*

        2. The y-axis has access to the same factors as the x-axis, but also including *score* (only shows ever shows up on the y-axis)
2. /login
    a. Username and password fields
    b. Registration for first-time users
    c. Successful login redirects to the home page
    d. Displays error messages for incorrect login attempts or invalid registrations
    e. Has bcrypt for user security

APIs

We do not plan on using any APIs in our project.

Front-End Framework

We plan to use Bootstrap as our front-end framework due to its intuitive use and simplicity. As stated above, minimalism (with a dash
of blue) is our current state.

Data Visualization Library

We plan to use Chart.js as our data visualization library because of its simplicity and ease of use compared to the other libraries. Our goal is to achieve visualization early on, so we believe using a simpler library will allow us to achieve greater functionality, especially considering our lack of experience with any of the libraries.

Task Breakdown

1. **Project Manager Leon Huang**: Visualizing Viper
    a. Keep devos updated and on top of work
    b. Display data graphically using Chart.js
    c. Create a hospitable environment
    d. Nap detector: will be on alert of any devos slipping into the sweet lull of senioritis sleep
    e. Flask
2. **Amanda Tan**: Database Management Mouse
    a. Writing database infrastructure
    b. Managing and accessing dataset

3. **Jason Chao:** Database Management Mongoose
    a. Writing database infrastructure
    b. Managing and accessing dataset
    c. Bcrypt security
4. **Nia Lam:** Frontend Framework Frog
    a. HTML/CSS template development
    b. Maintaining a bluest and berriest site appearance
    c. Flask