

# BookCycle Team CSJ

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## SD 2023

Faculty Advisors:

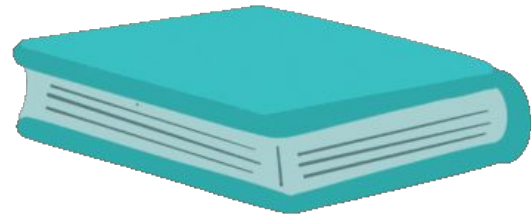
Dr. Yasemin Acar, Dr. Lucy Simko





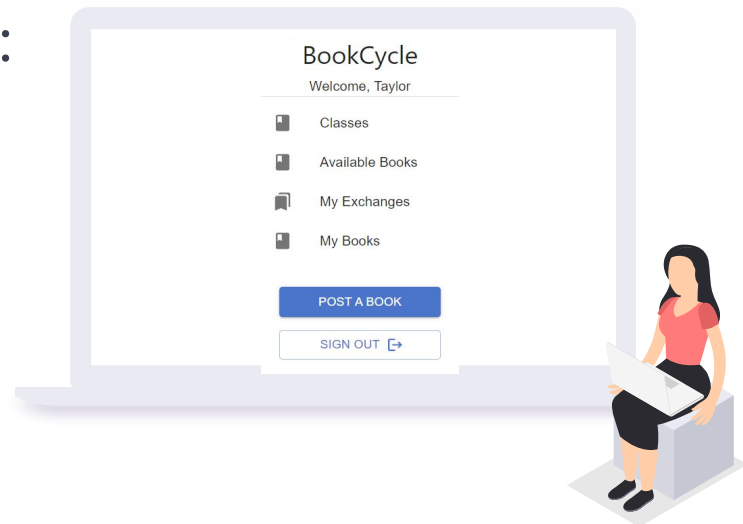
# ► Problem

- ▶ 65% of U.S. college students don't buy required textbooks because they can't afford them<sup>1</sup>



# ▶ Introducing BookCycle

- ▶ The ultimate online resource for GW students to find affordable textbooks and exchange books
  - ▶ A new way to find textbooks:
    - ▶ Save money
    - ▶ Operate in a trusted zone
    - ▶ Reuse and recycle
    - ▶ Succeed academically



# Our Goal:

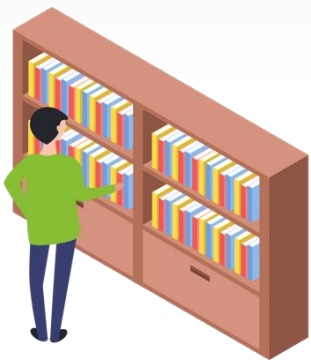


Make education  
accessible to everyone!

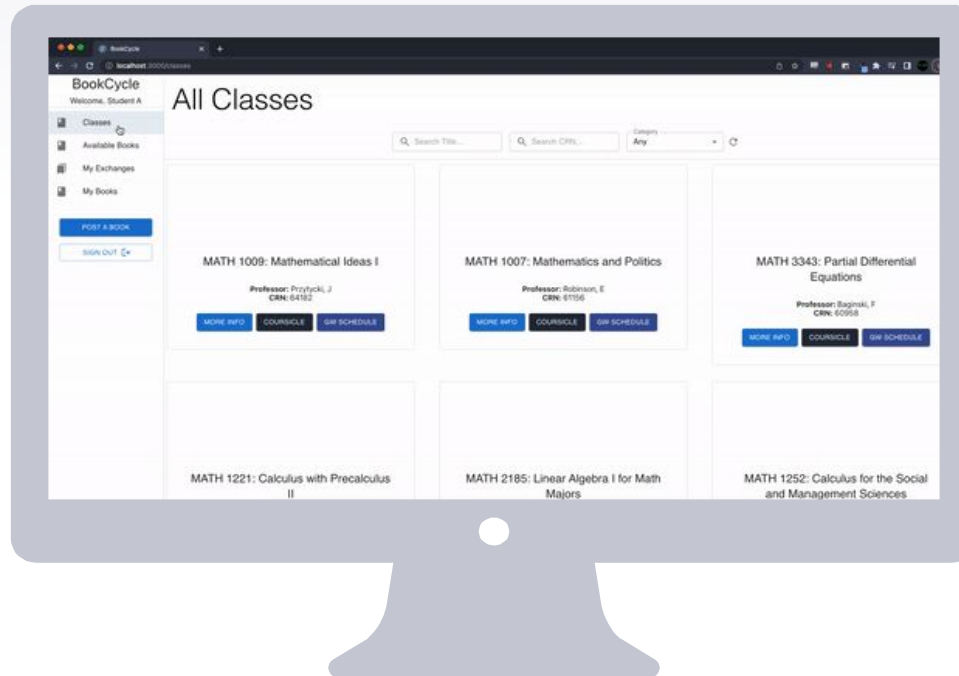


# ▶ Using Our Platform Is Easy!

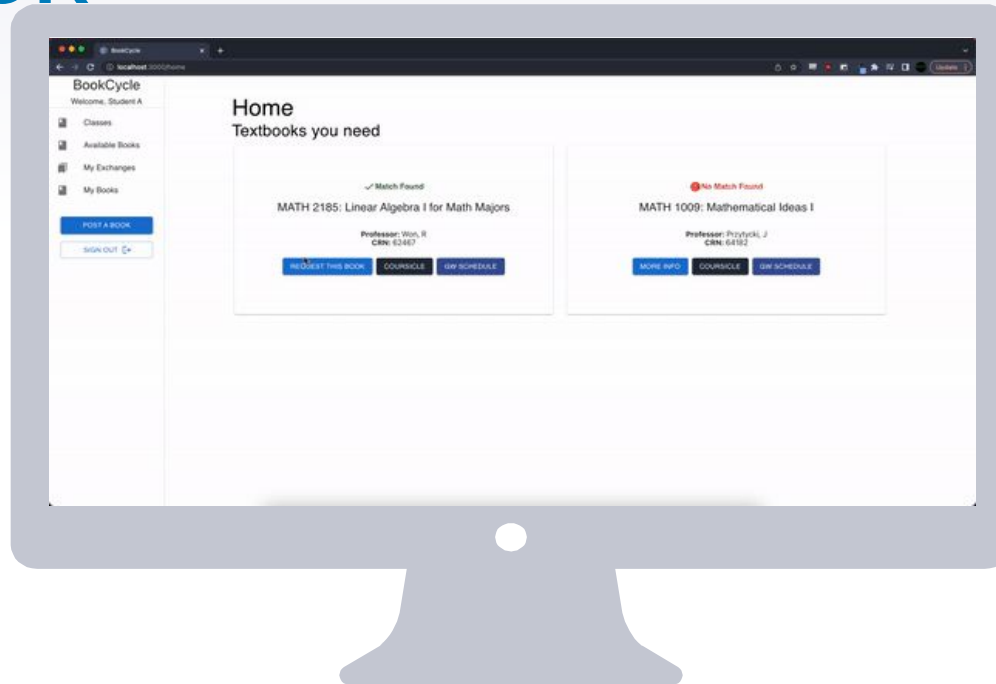
1. Sign up using your verified GWU email
2. Report your financial aid information
3. Donate any old textbooks you have
4. Select classes and request textbooks
5. Get matched by our algorithm
6. Start exchanging textbooks and information!



# Sign-In, Courses, Your Exchanges and Books

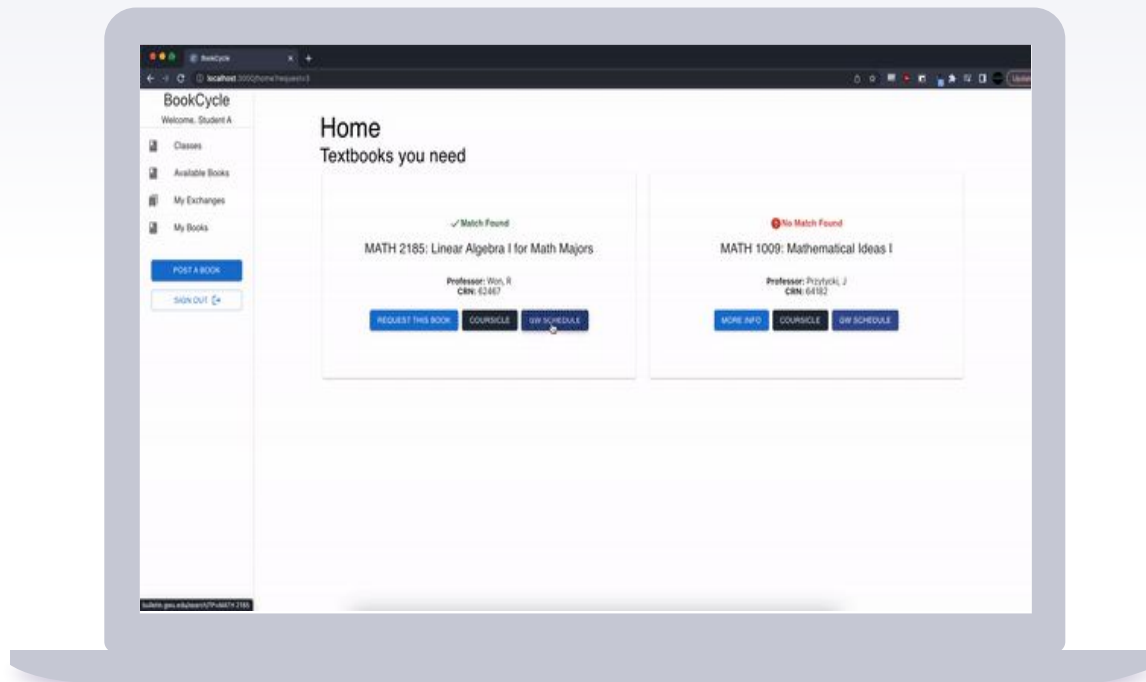


# Matches and Requesting a Textbook

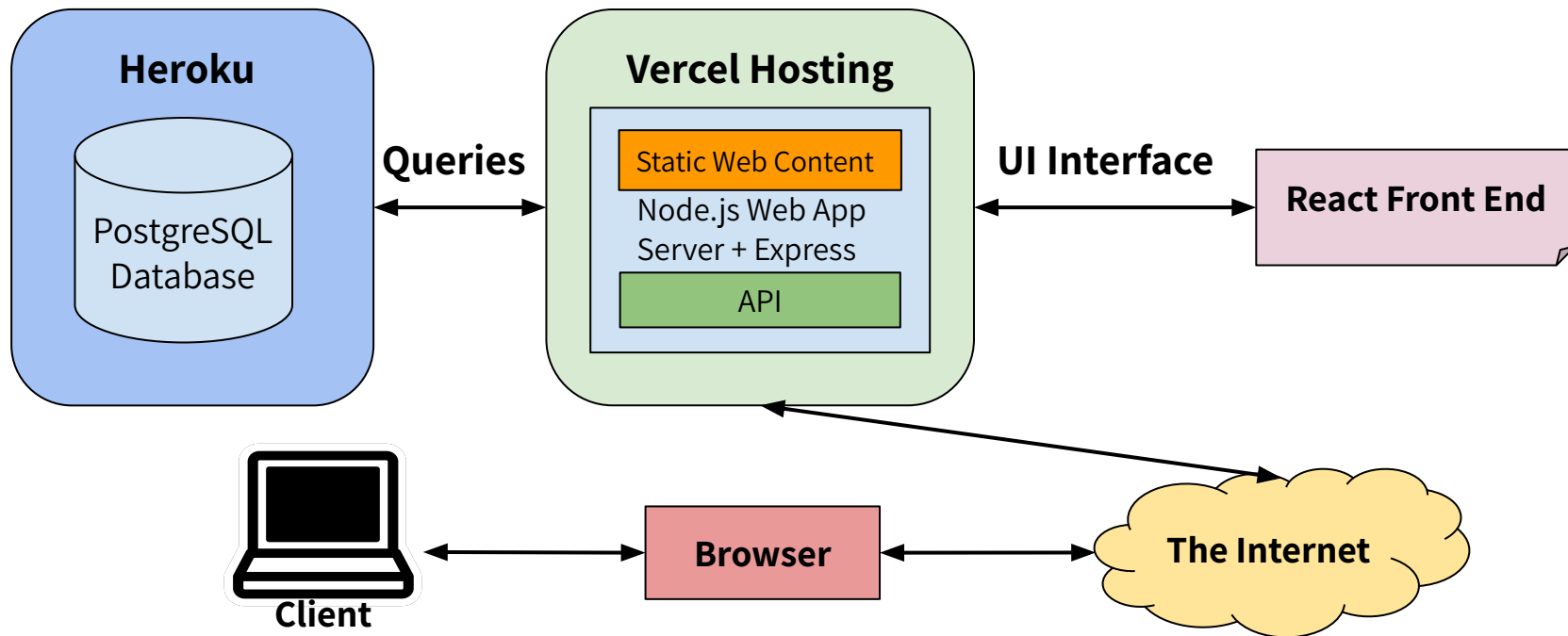




# ► More Info, Ratings, Forum



# System Architecture Diagram



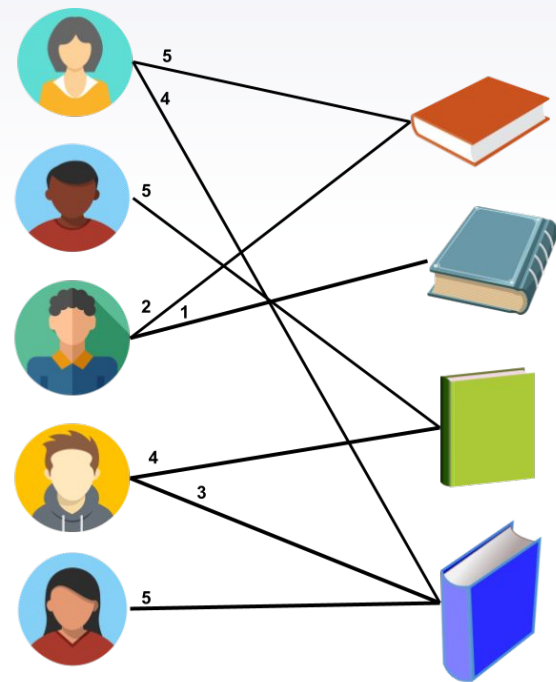
# ▶ Matching Algorithm

- ▶ **Goal:** Ensure students obtain a similar number of matches, while prioritizing students in higher financial need
- ▶ The Weighted Bipartite Matching
  - ▶ Bipartite graph with two sets
    - ▶ Student set
    - ▶ Textbook set
- ▶ Construct edges between students and books they need



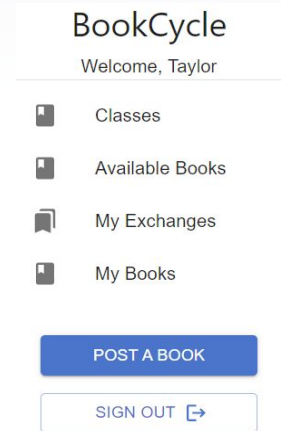
# Matching Algorithm Cont.

- ▶ Incorporate constraints to calculate the cost matrix values/edge weights based on following:
  - ▶ Number of textbooks a student has received
  - ▶ Financial need of each student
- ▶ Each Textbook is assigned to the Student with the lowest cost
- ▶ Edge weights are altered after a student is assigned a book



# UX/UI Design and Front-end

- ▶ React - Frontend JavaScript framework
- ▶ Axios - JavaScript library to make HTTP requests to the API
- ▶ Material UI - framework for React



# ► Backend/API

- ▶ Node.js - JavaScript runtime environment
- ▶ Express - Framework to build REST API
- ▶ PostgreSQL - Relational Database
- ▶ TypeORM - Connect Node and Postgres





# Sign up for BookCycle!

Your wallet (and GPA) will thank you!

# Thank You! Questions?

