OPTIMAL ROOMMATE MATCHING ALGORITHM UTILIZING LIFESTYLE PREFERENCES FOR SHARED LIVING SPACES

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OVERVIEW

- Living space and roommates play a crucial role in creating a comfortable and refreshing environment.
- Finding the right roommate and living space can be challenging, especially for those new to a city.
- To address this problem, we have developed an application that makes finding a roommate and living space easy and convenient.
- This application aims to provide a solution to the major problem of finding a room for new users and creating lifelong friendships with the perfect roommates

LITERATURE SURVEY

PAPER-NUMBER	METHODOLOGY	DRAWBACK
Paper-1	Roommate Matching Uncertainty Three Models(lottery, compact indifference, and joint probability.) Theoretical Focus	Theoretical Focus Simplified Models Simplified Models
Paper-2	Fair Room Allocation Heuristic Algorithm Maximizing Happiness	Heuristic Shortcuts Limited Real-World Testing Complex Challenges
Paper-3	Enhanced KNN Neighborhood Size Sensitivity Improved Accuracy	Limited Comparison Outlier Challenges Real-World Applicability Unclear

PROBLEM STATEMENT

- Finding a compatible roommate can be a challenging task, especially for people who are new to an area or do not have a large social network.
- It can be difficult to gauge whether someone will be a good fit as a roommate based on initial interactions or limited information
- A bad roommate can lead to a negative living environment, causing stress, anxiety, and potential conflicts.
- Roommate search websites or classifieds can be unreliable, leading to wasted time and frustration in finding a suitable roommate.

OUR SOLUTION

- Our roommate match website provides a comprehensive and efficient system for finding compatible roommates.
- The website allows users to communicate with potential roommates and get to know each other before deciding to live together.
- The website provides a secure platform for users to search for roommates, reducing the risk of scams or frauds.
- Our roommate match website aims to simplify the roommate search process, save time, and create a positive living environment for users.

EXISTING METHODOLOGY

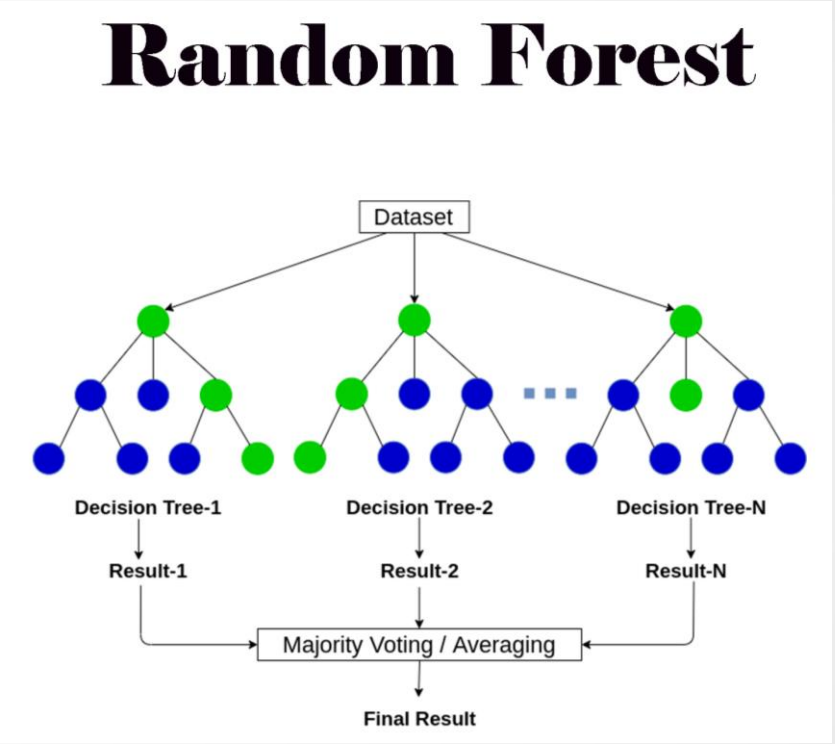
- **COMPLEXITY IN IMPLEMENTATION:** The proposed methodologies might be too complex and require specialized technical knowledge, posing a barrier for smaller or less equipped platforms to implement them successfully.
- **LIMITED COMPATIBILITY:** The fancy new methods might not work with the current website setup or might need big changes, causing problems or delays.
- **INCREASED COMPUTATIONAL BURDEN:** Using fancy algorithms like Generalized Mean Distance KNN and DISKR might slow things down or use up a lot of computer power, especially with big sets of data..
- **POTENTIAL BIAS AMPLIFICATION:** Even though we try to make things fair, the fancy algorithms might make existing biases or mistakes in the data worse, leading to unfair roommate matches.

PROPOSED METHODOLOGY

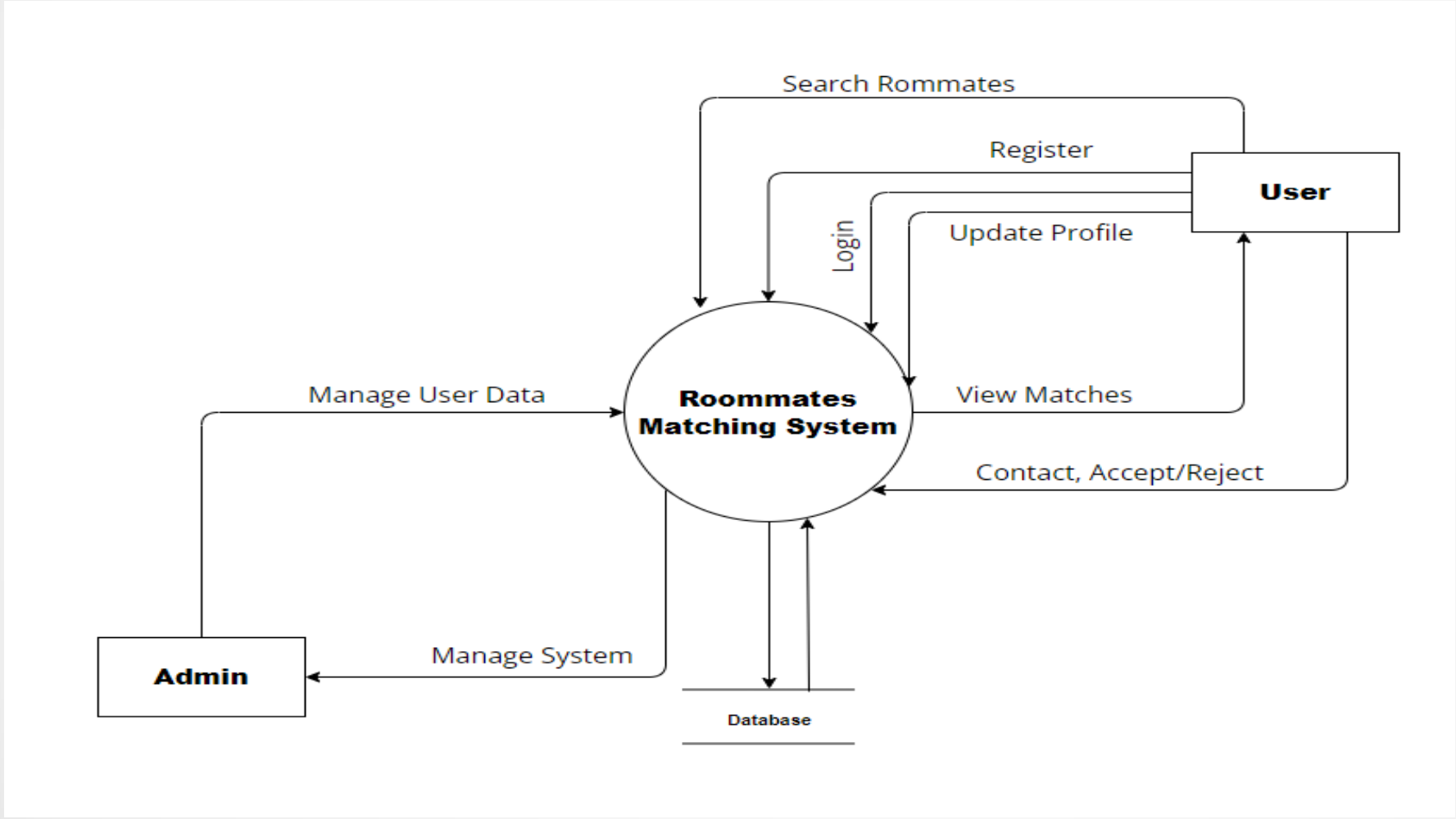
- **MIX OF WEB TOOLS:** It uses basic website-making tools like HTML, CSS, and JavaScript, along with more advanced ones like Python with Django.
- **SMART TECH ADD-ON:** By adding smart tech called AIML, especially a Random Forest model, it makes the website smarter and better at making choices.
- **MAKING MOVING EASIER:** Its main job is to help people, especially newbies in a city, find good places to live and roommates they'll like.
- **EASY CONNECTION:** It's like a simple website where you can easily look for rooms and roommates, making it simpler to find a place and make friends.
- **GUESSING PREFERENCES:** It uses smart math to guess what you'd want in a roommate or place to live, so it can suggest good matches for you.

MACHINE LEARNING MODEL

- **BETTER MATCHES:** The Random Forest algorithm finds roommates who are a good fit by looking at many things at once.
- **HANDLING MESSY DATA:** It's good at dealing with messy data, so even if there's some wrong or useless information, it still finds good matches.
- **PERSONALIZED MATCHES:** It finds roommates based on what you like and don't like, making sure you get along well.
- **QUICK FOR EVERYONE:** It works fast and can handle lots of people using it at once, so you get your roommate suggestions quickly, even if there are many users.



CONTEXT MODEL DIAGRAM



SOFTWARE REQUIREMENTS

1) Django framework

2) Python

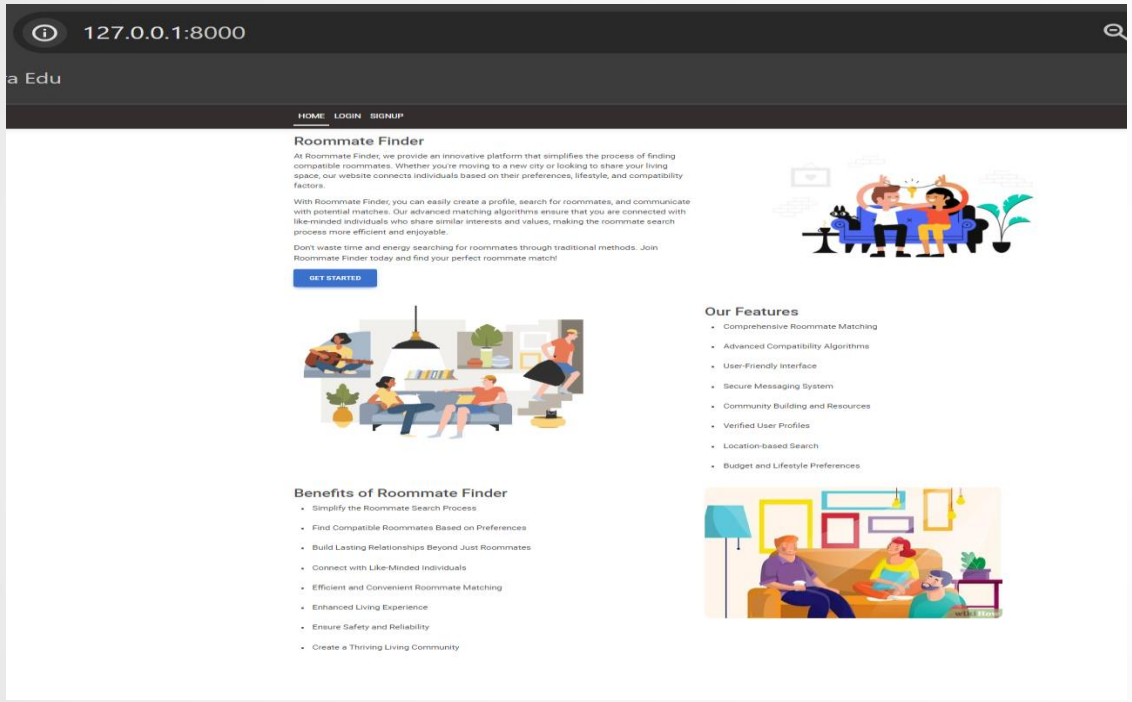
3) SQL Server

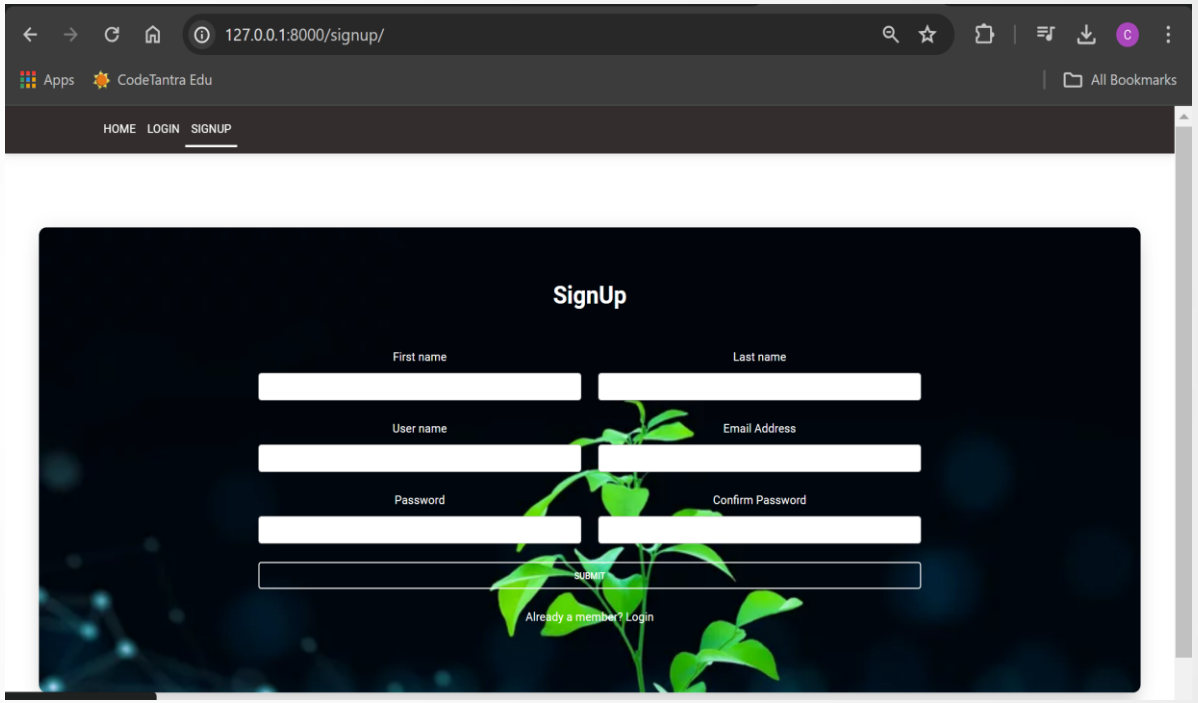
4) Pycharm

FUTURE DEVELOPMENTS

- **Integration with smart home technology:** Roommate match websites may be integrated with smart home technology to provide additional features, such as automated rent payments or remote security monitoring.
- **Virtual reality (VR) home tours:** Roommate match websites may offer VR home tours, allowing users to experience potential living spaces virtually before committing to a lease.
- **Expanded demographic targeting:** To cater to a wider audience, roommate match websites may expand their demographic targeting beyond college students and young adults to include older adults, families, and international students.

EXPERIMENT RESULTS





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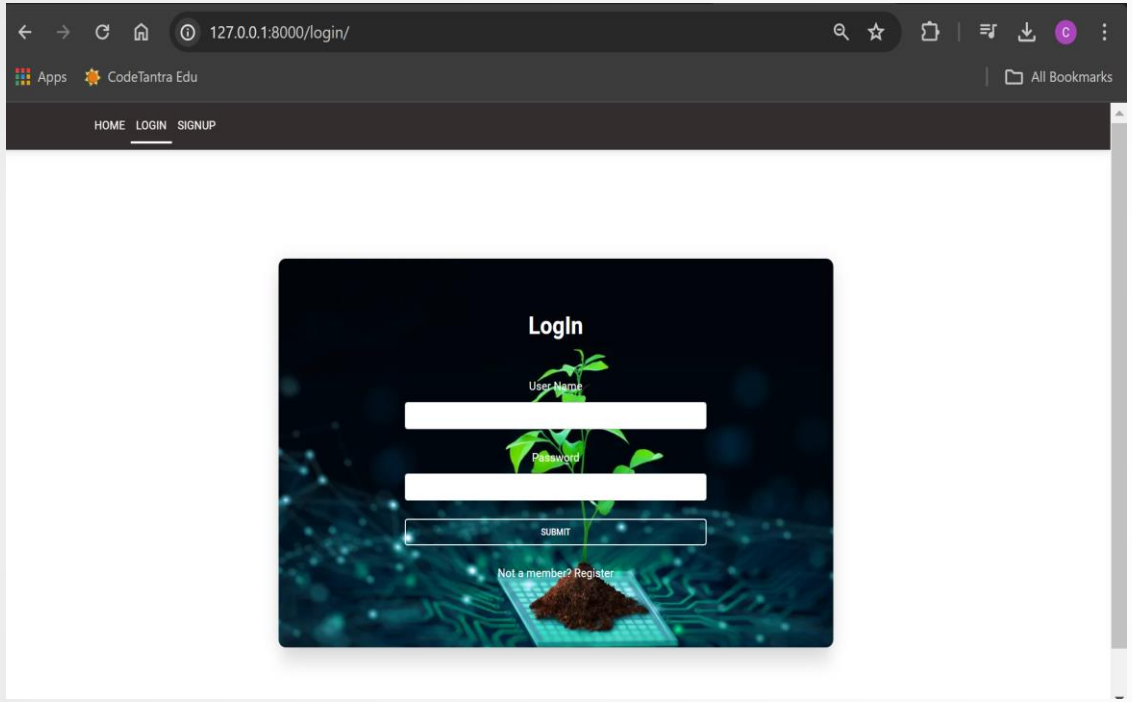

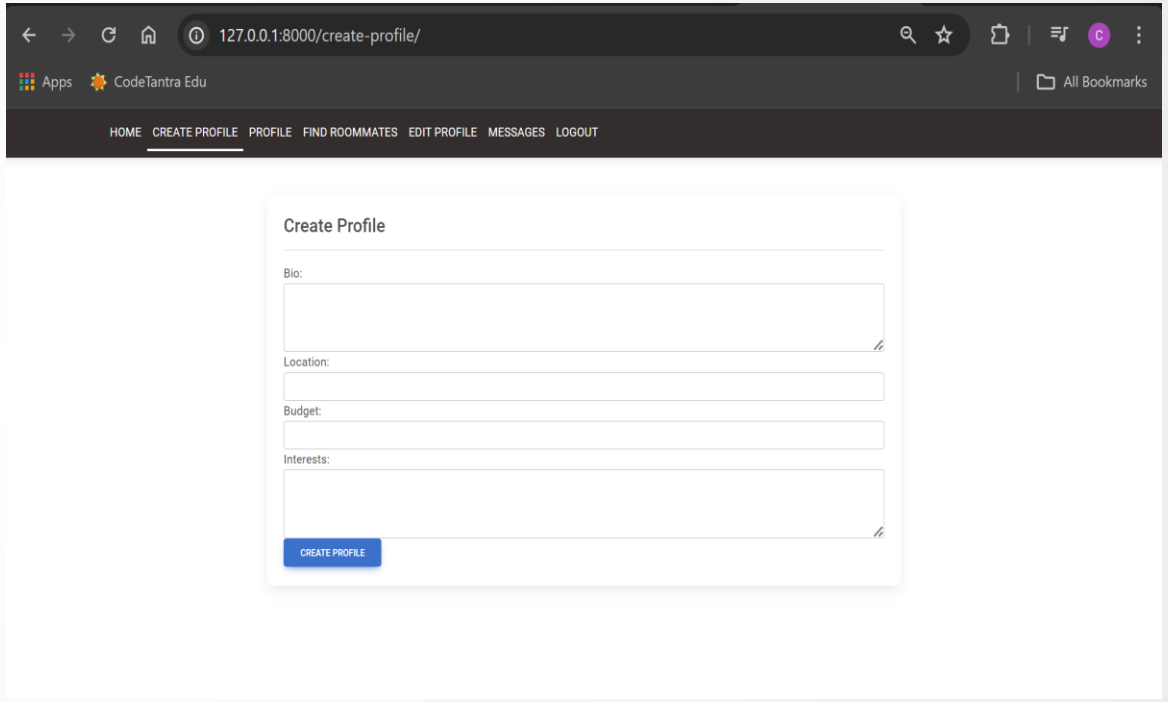

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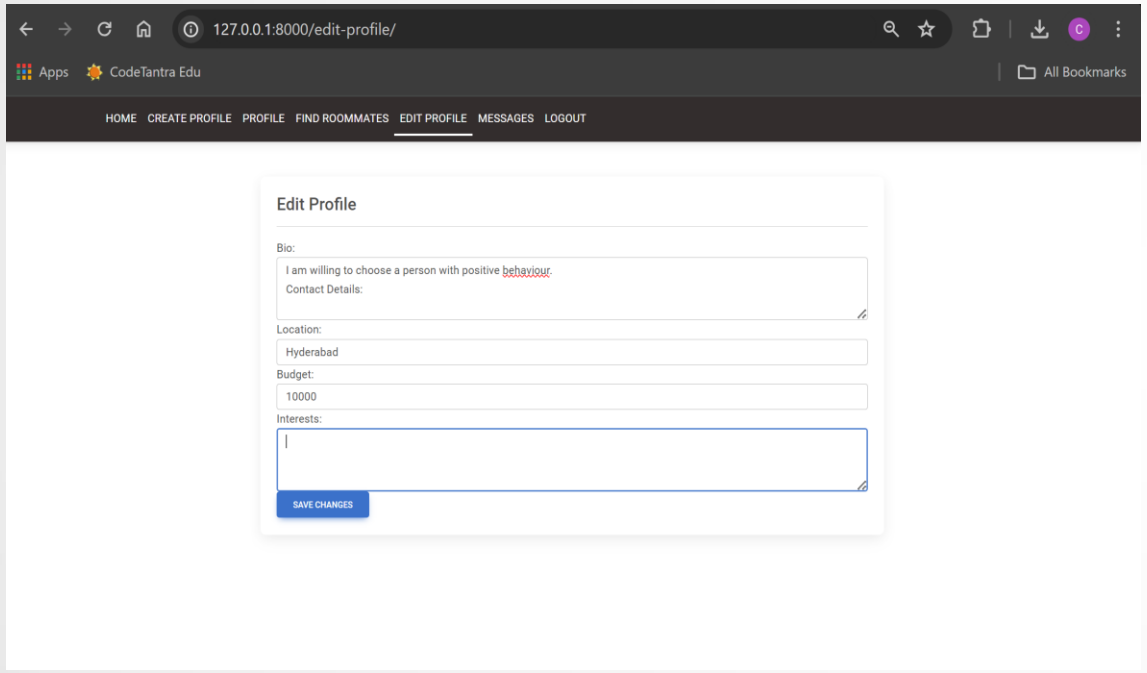

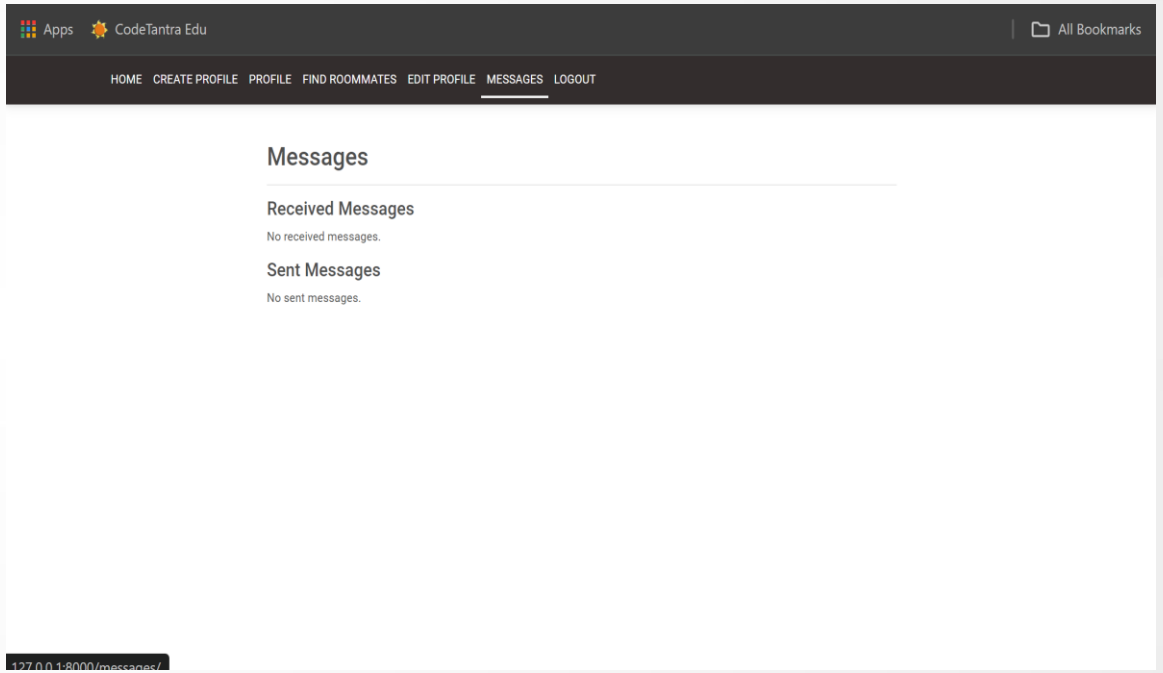

CONCLUSION

A roommate match website provides a convenient and efficient way to find compatible roommates and create a positive living environment. Users can create profiles with their personal information, living preferences, and interests to find suitable roommates through an algorithm-based matching system.

Future developments in technology may enhance the website's features and expand its target audience, providing even more value to users.

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