



# COLLEGE ALLOCATION SYSTEM

THEME: DIGITAL SOCIETY

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# PROBLEM STATEMENT

Design and develop a software system that allows students to select their preferred colleges and assigns them to available slots based on their preferences and the capacity of each college. The system should allow colleges to specify their capacity and view the list of students allocated to them





# INTRODUCTION

- A college allocation system in Java can be designed to automate the process of allocating students to colleges based on their preferences, percentile scored by the student and availability of seats in each college.
- The system can be developed using Java programming language, which provides a robust and flexible platform for building complex applications.



# INTRODUCTION

- The college allocation system can be designed using object-oriented programming principles, where each student and college can be represented as objects with their respective properties and methods.
- The system can take input from students about their preferences for colleges and from colleges about the number of available seats. Based on this information, the system can allocate students to colleges in a fair and efficient manner.



# USE OF DATA STRUCTURES

- A HashMap is a data structure that allows you to store data as key-value pairs, where each key is associated with a value.
- In the case of college allocation, the college names can be used as the keys, and the capacity of each college can be stored as the corresponding value.
- When a student is being allocated to a college, the HashMap can be used to check if the college has available slots.
- If the college has available slots, the student can be assigned to that college, and the capacity of the college in the HashMap can be updated accordingly.



# USE OF DATA STRUCTURE

- If the college does not have available slots, the student can be assigned to a different college.
- Using a HashMap for college allocation in Java can make the allocation process more efficient and faster.
- HashMaps have a constant time complexity for insertion and retrieval operations, which means that searching for and assigning students to colleges can be done quickly.



# APPROACH

1. Design the system: This involves identifying the requirements of the college allocation system, defining the data structures needed to store the college and student information, and creating a flowchart or diagram to illustrate how the system will work.
2. Implement the data structures: This involves creating classes or structures to represent the colleges and students, and using data structures such as HashMaps, ArrayLists, or TreeMaps to store and manage the information.
3. Develop the allocation algorithm: This involves creating an algorithm that assigns students to colleges based on their preferences and the availability of slots in each college.



# APPROACH

4. Test and debug the system: This involves running tests to ensure that the system works as intended, and identifying and fixing any errors or bugs that are encountered.

5. Refine and optimize the system: This involves reviewing the system to identify areas that can be improved, and making modifications to improve its efficiency, accuracy, or usability.





# RESOURCES

1.University Image - <https://research.collegeboard.org/>



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