# MINIMUM NUMBER OF GROUPS TO CREATE A VALID ASSIGNMENT
# CSA0650- DESIGN ANALYSIS AND ALGORITHMS FOR AMORTIZED ANALYSIS


## DONE BY

## DHANUSH VEL NITHI.M (192211010)

# AGENDA

1. ABSTRACT
2. INTRODUCTION
3. CODING
4. COMPLEXITY ANALYSIS
5. FUTURE SCOPE
6. CONCLUSION

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## Introduction:

- The problem requires dividing array indices into groups where values are identical and the group sizes are nearly balanced.
- This ensures that the difference in sizes between groups is at most 1
- The significance of this problem lies in its applications in data clustering, scheduling, and resource allocation where balanced grouping is crucial.
- The solution needs to be both efficient and straightforward.

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## FUTURE SCOPE:

**This grouping algorithm can be applied to various domains such as:**

**Task Scheduling: Distributing tasks among workers where tasks of the same type should be grouped together.**

**Load Balancing: Ensuring servers in a distributed system receive similar workloads.**

**Data Clustering: Grouping similar data points in machine learning applications, where balancing cluster sizes is a priority**

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## CONCLUSION:

- **This project presents a solution to the problem of grouping array indices such that group sizes are balanced and group members have identical values.**
- **The C program provides an efficient implementation with linear time complexity.**
- **We have analyzed the algorithm's behavior in best, worst, and average case scenarios.**

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THANK YOU