**Show n Tell (Group 10) #2**

(In today’s discussion we did a Google Meet, created topics and subtopics, and divided them among us for research)

**Intro Topics:**

1. **Definition and Purpose of Tournament Scheduling**: Explain the need for tournament scheduling, its significance in organizing fair and efficient matches, and an introduction to its role in different fields (e.g., sports, gaming). (Fahad)
2. **Common Tournament Formats**: Describe the main types of tournaments (e.g., round robin, knockout) and their general structure, rules, and use cases. (Ali)
3. **Introduction to Combinatorics in Scheduling**: Explore how combinatorial methods help manage match combinations, including team pairings and rounds. (Riyan)
4. **Introduction to Graph Theory for Scheduling**: Provide a foundational look at how nodes (teams) and edges (matches) are used in graph theory to create efficient schedules. (Ahmed)

**Different Formats:**

**Link:** [**Types of Tournaments - Different Tourney Formats**](https://www.printyourbrackets.com/types-of-tournaments.html)

1. **Research details of the main tournament formats:** round robin, knockout, single-/double-elimination, and their rules, advantages, and disadvantages. (Riyan, Ahmed)
2. **Swiss-System Tournament Structure**: Research the Swiss-system format, commonly used in chess and esports, where competitors do not face each other multiple times. (Fahad)
3. **Scheduling Constraints and Fairness Rules**: Investigate constraints in scheduling (e.g., time, venue limitations, fairness) and how tournament formats account for them. (Ali)

**Scheduling Algorithms and Methods:**

1. **Round Robin Scheduling Algorithm**: Research the mechanics of round robin scheduling algorithms, including step-by-step techniques for match assignments.
2. **Graph Coloring for Conflict Avoidance**: Explore how graph coloring algorithms help avoid scheduling conflicts, ensuring teams don’t play multiple matches at the same time.
3. **Optimization Techniques for Time and Resource Management**: Investigate algorithms that help minimize resources, travel, and time, enhancing efficiency.
4. **Seeding and Progression in Knockout Tournaments**: Research methods for seeding teams, handling progression through brackets, and maintaining fair play.

**Applications of Tournament Scheduling:**

**Real-World Applications of Tournament Schedulers:**

* Esports
* Cricket (ICC) –(Ali)
* Football (Leagues, FIFA)
* Olympics ETC.

**Other Topics (For later Discussion)**

* Emerging Trends: AI and Dynamic Scheduling: Investigate how AI and machine learning are transforming scheduling by making it adaptive to changing circumstances.
* Software Tools and Platforms for Scheduling: Research popular tools (e.g., Bracket HQ, Tournament Scheduler Pro) that automate tournament scheduling.
* Common Scheduling Challenges and Solutions: Identify typical scheduling issues (e.g., last-minute cancellations, weather delays) and how they’re addressed.

**Google Meet Link:**

