Name: Mohd. Azam Siddique
Id: BS22034
Branch: CSE-A

Assignment - 01

Que-1: Explain about the fair-share scheduling policy in the context of operating system.

Ans → Fair-share scheduling is a policy used to allocate CPU time or other resources to processes or users in a way that reflects their share and priority.

Ex: Let's say you have a computer system with three users : Alice, Bob and Carol. You want to make sure that each user gets a fair share of the CPU time based on their needs. Here's how you might allocate resources.

- Alice — 50% of CPU time
- Bob — 30% of CPU time
- Carol — 20% of CPU time

The CPU time divided according to the percentages. The above distribution ensures that each user gets their fair share of the CPU based on their assigned quota.

How it works

- **Allocation Based on Quotas :** If Alice has used up her 50% share, she will have to wait until the next period to get more CPU time

- **Dynamic Adjustment :** If there are more users or processes, the system dynamically adjusts the allocation to maintain fairness.

- **Monitoring and Enforcement :** If a user tries to use more CPU time than their quota, the system will limit their usage

Ques → Mention the advantages of the fair share policy over the round-robin policy.

Name: Mohd Azam Siddique
Id: B522034
Branch: CSE-A

Ans

1. Tailored Resource Allocation:

- Fair-share: Allocates resources based on predefined quotas or needs. for example if someone needs more CPU time because they are running a complex task, they get more time according to their share.

- Round-Robin: Distribute resources equally in fixed time slices, regardless of what each process or user needs.

2. Improved efficiency:

- Fair-share: Resources are used more efficiently, as they match users needs.

- Round-Robin: Some users may get more time than needed, while others might get too little.

3. Prevents Resource starvation:

- Fair-share: Ensures that all users or processes get their fair share of resources, preventing situations where some users or processes get starved for resources.

- Round-Robin: Does not prevent starvation if a process need more time and resource than others and is stuck waiting for its turn in the cycle.

Name: Mohd. Azam Siddique
Id: BS 22034
Branch: CSE-A

4. <u>Better user satisfaction</u>:

- <u>Fair-share</u>: Provides users with a share of resources that matches their needs ~~and all~~ which can lead to higher satisfaction and better performance

- <u>Round-Robin</u>: May lead to dissatisfaction. if processes or users have different needs and all get the same amount of time regardless of their requirements.