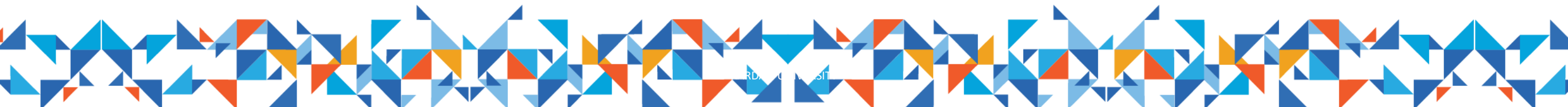
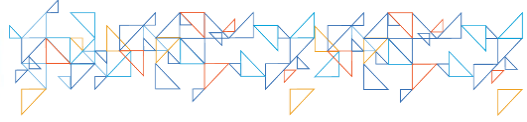




What is a Scheduler?

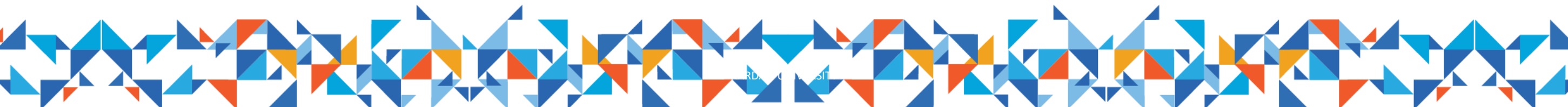
- A **scheduler** is a system program in the OS that selects which process from the **ready queue** should be allocated **CPU time to execute**.
- The scheduler's role is to make the system **responsive** and **efficient**, balancing the workload between processes.

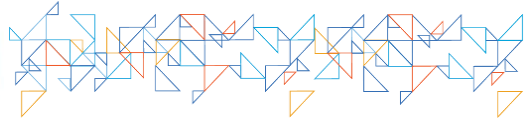




Types of Schedulers

- There are **Three main types of schedulers** in an operating system, each with a specific role in managing processes:



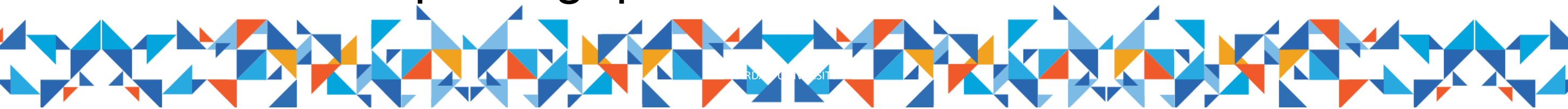


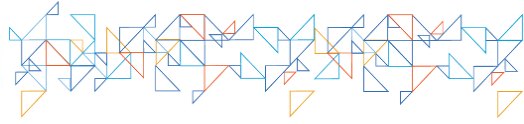
Long-Term Scheduler (Job Scheduler)

The long-term scheduler controls which processes are brought into the **ready queue** from the **job pool** (or disk). It's responsible for **deciding which processes should be loaded into memory** and be allowed to run.

Example:

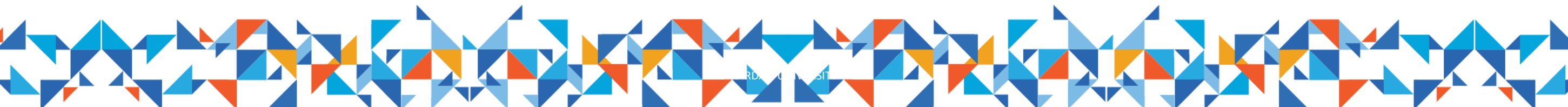
Consider a **printer queue** where you load jobs (documents) to be printed. The long-term scheduler is like a **gatekeeper** who decides which print jobs to move from the "waiting" area into the actual printing queue.

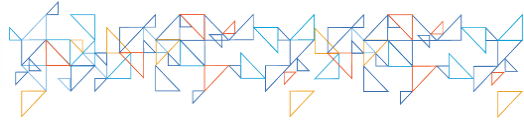




Short-Term Scheduler (CPU Scheduler)

- The short-term scheduler decides which process from the **ready queue** will be assigned to the CPU next. It's responsible for allocating CPU time to processes that are ready to execute.
It runs frequently, often every **few milliseconds**, as it selects a process for **execution on the CPU**.
- **Example:**
The short-term scheduler works like a **waiter** in a restaurant who picks the next table to serve. They determine which customer (process) will be served (get CPU time) next.



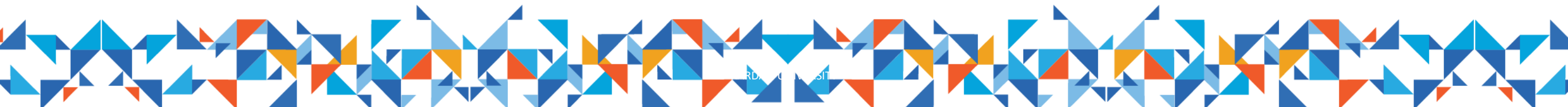


Medium-Term Scheduler (Swapper)

The medium-term scheduler manages **process swapping**. It decides which processes in memory should be swapped out to the **disk** (or other storage) and which should be brought back into memory from the disk.

Example:

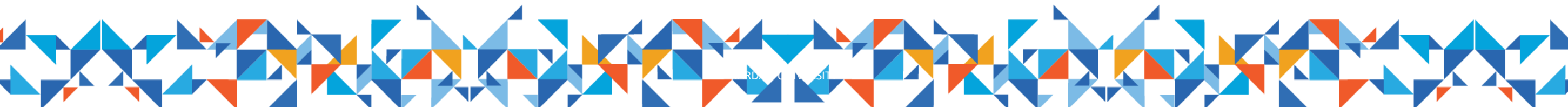
The medium-term scheduler is like the **library librarian** who manages which books (processes) should be checked out (brought into memory) or returned to the shelves (swapped out to disk).





Scheduling Algorithms

- Schedulers use different **scheduling algorithms** to decide how to allocate CPU time. Some common scheduling algorithms are:





Scheduling Algorithms

1. **First Come, First Serve (FCFS):**

Processes are executed in the order they arrive in the **ready queue**.

2. **Shortest Job First (SJF):**

The process with the smallest execution time is executed first.

3. **Round Robin (RR):**

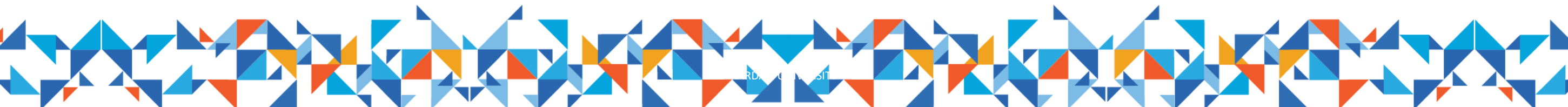
Each process is assigned a fixed time slice or **quantum**. The CPU switches between processes in a circular order.

4. **Priority Scheduling:**

Each process is assigned a priority, and the scheduler selects the process with the highest priority.

5. **Multilevel Queue Scheduling:**

The ready queue is divided into multiple sub-queues, and processes are assigned to different queues based on their priority or type.





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Thank You
Any Questions?

