

## 1. Introduction

Job sequencing determines the order in which jobs are processed on one or more machines to optimize performance measures such as makespan, flow time, and lateness.

---

## 2. Flow Shop vs. Job Shop

- **Flow Shop:** Jobs follow the same sequence of machines.
  - **Job Shop:** Jobs may follow different machine sequences.
- 

## 3. Johnson's Rule (Two Machines)

- Applicable to two-machine flow shops with no passing allowed.
- **Steps:**
  1. List jobs with processing times on each machine (M1, M2).
  2. Find the job with the smallest processing time.
    - If it's on M1, schedule it as early as possible.
    - If it's on M2, schedule it as late as possible.
  3. Repeat until all jobs are scheduled.

## 4. Johnson's Rule (Three Machines)

- Convert the 3-machine problem into an equivalent 2-machine problem by combining times:
    - $M1' = M1 + M2$
    - $M2' = M2 + M3$
  - Apply Johnson's Rule to the transformed problem.
- 

## 5. Performance Measures

- **Makespan:** Total time to complete all jobs.
  - **Total Flow Time:** Sum of completion times.
  - **Total Lateness:** Sum of differences between completion times and due dates.
- 

## 6. Applications

- Manufacturing production scheduling

- Logistics vehicle loading/unloading
- Service operations scheduling (hospital surgeries, repair workshops)