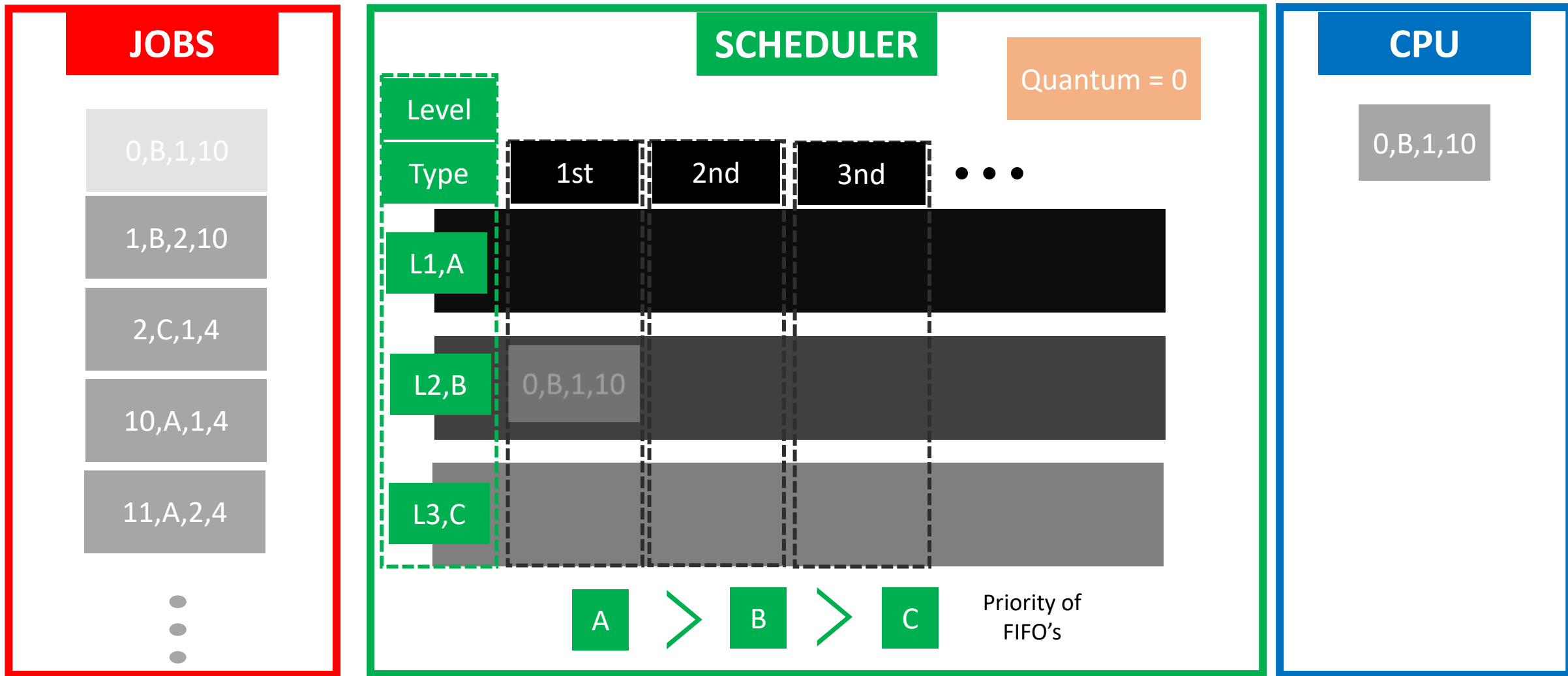


# Ex-1: Properties of Scheduler

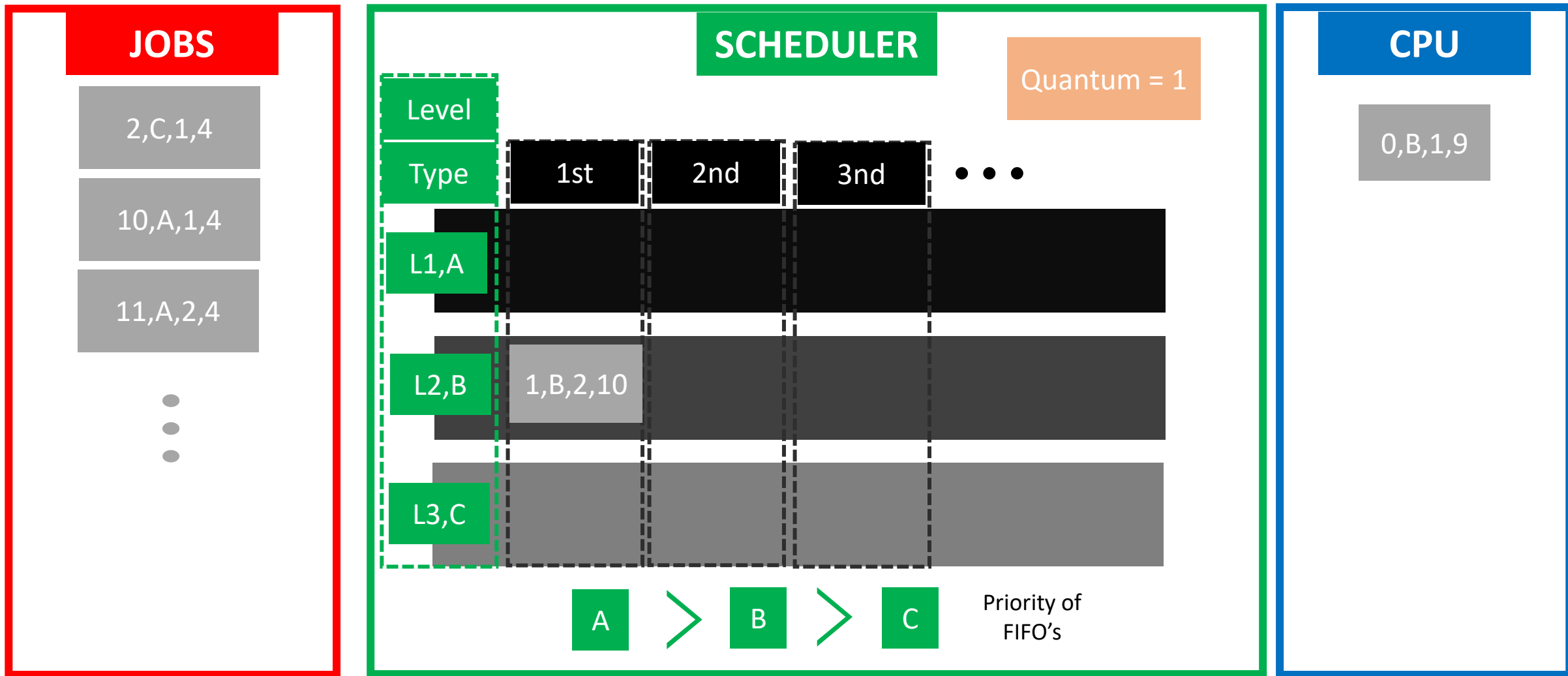


1. Job B1 arrives.
2. Since no other process is executed in the CPU and the scheduler FIFOs are empty, process **B1** utilizes the CPU.

Quantum time (Q) of each level equal to  $Q = l$

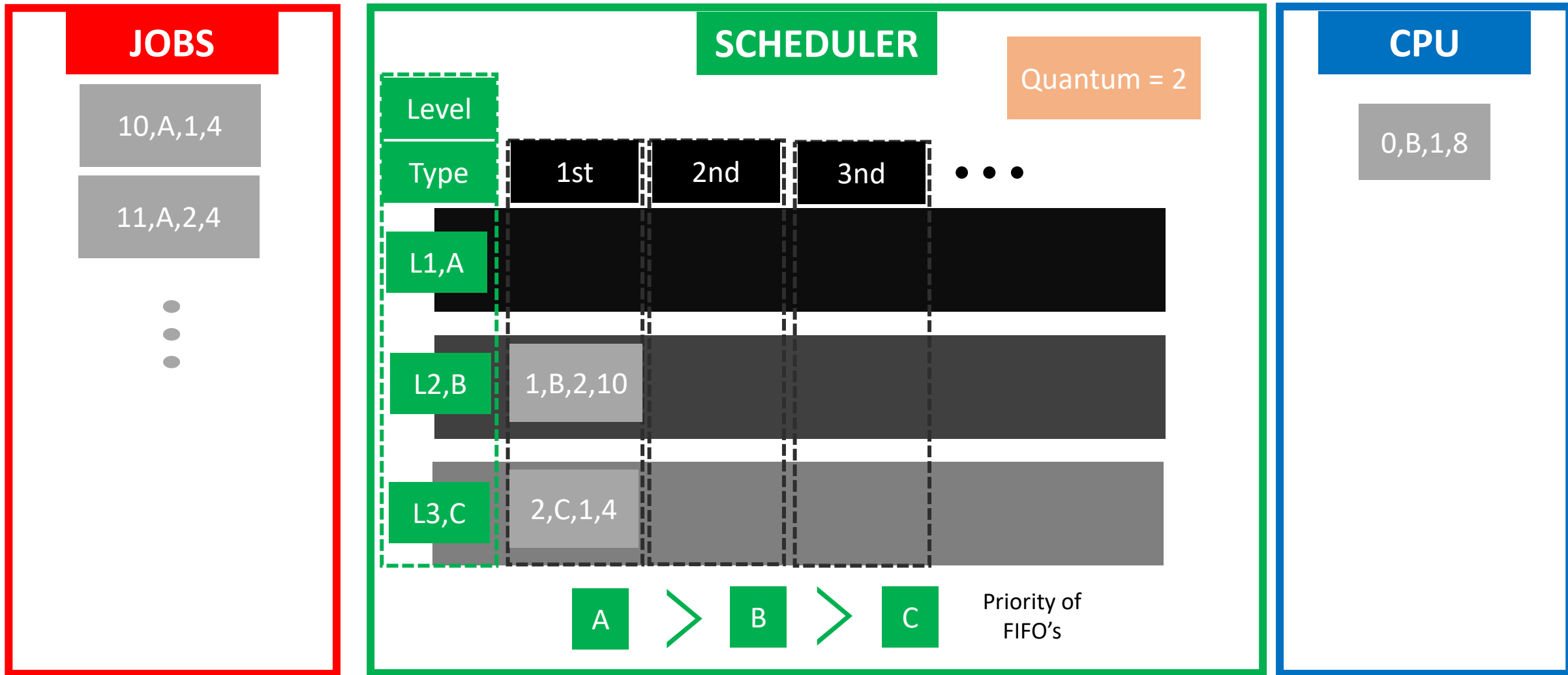
$l$  : level of the FIFO

Q: Represents the maximum time a process utilizes from a CPU.

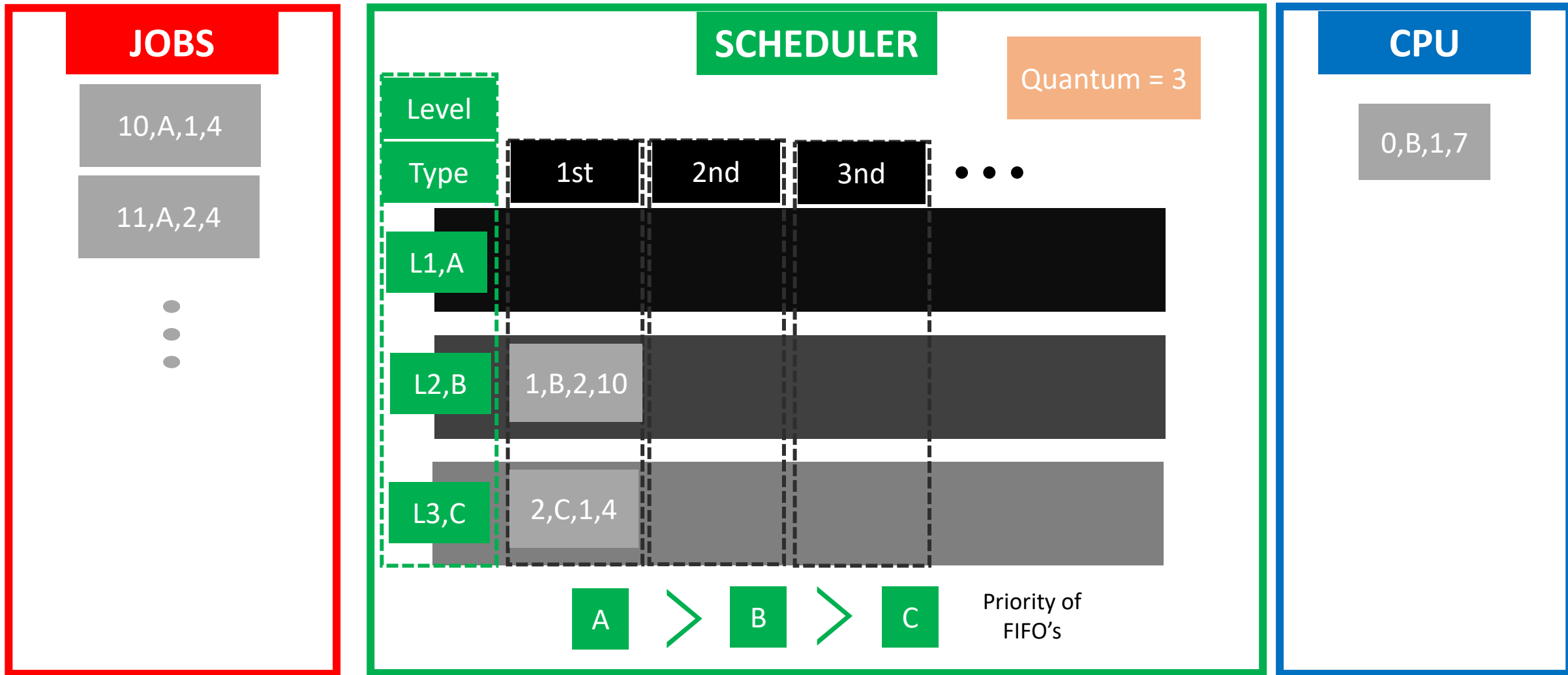


1. Job **B2** arrives.
2. Since process **B1** is executed in the CPU and the scheduler FIFOs are empty, process **B1** utilizes the CPU.
3. Process time of **B1** decreases to 9.
4. **Quantum** is increased by one.

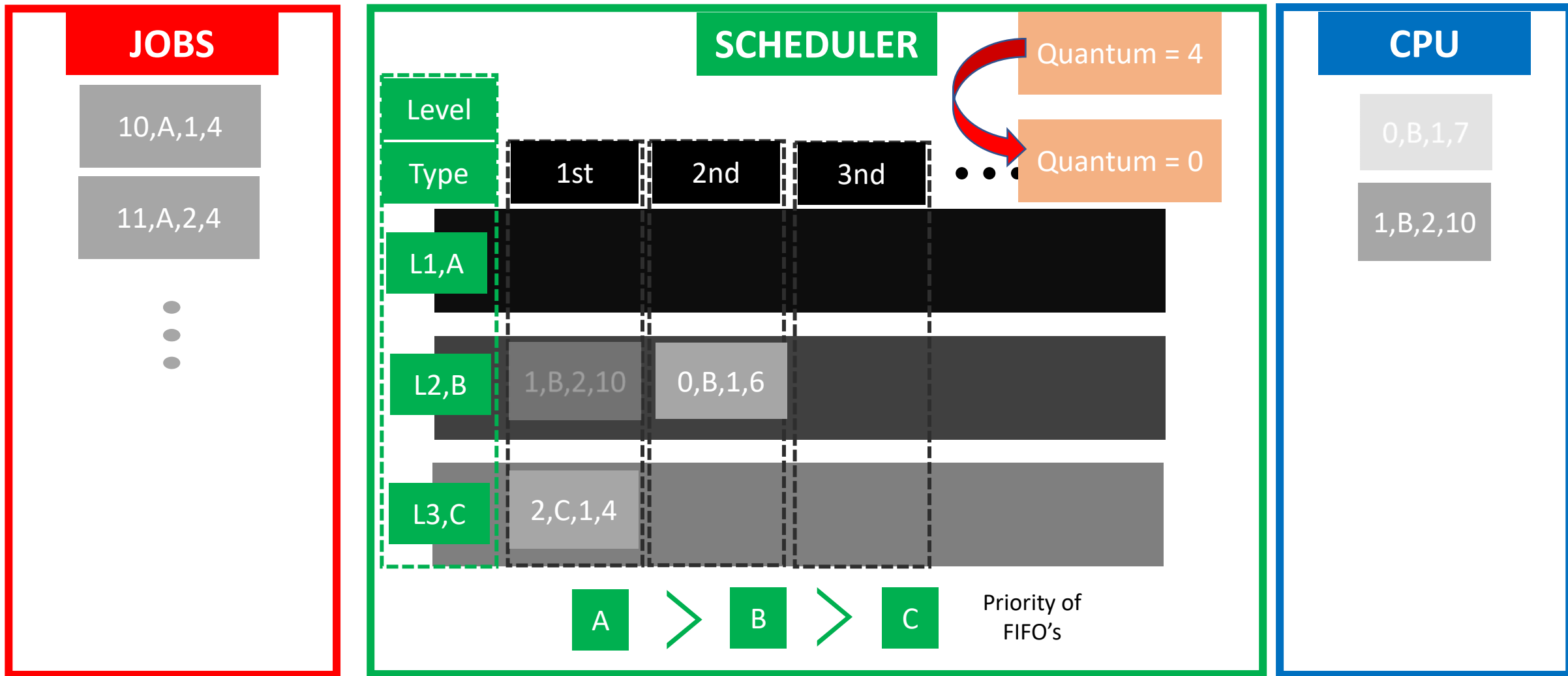
**TIME: 1**



- 1. Job **C1** arrives.
- 2. Since process **B1** is executed in the CPU and the priority of **C1** is lower than the **B1**, **B1** continues to utilize the CPU.
- 3. Process time of **B1** is decreased by one.
- 4. **Quantum** is increased by one.



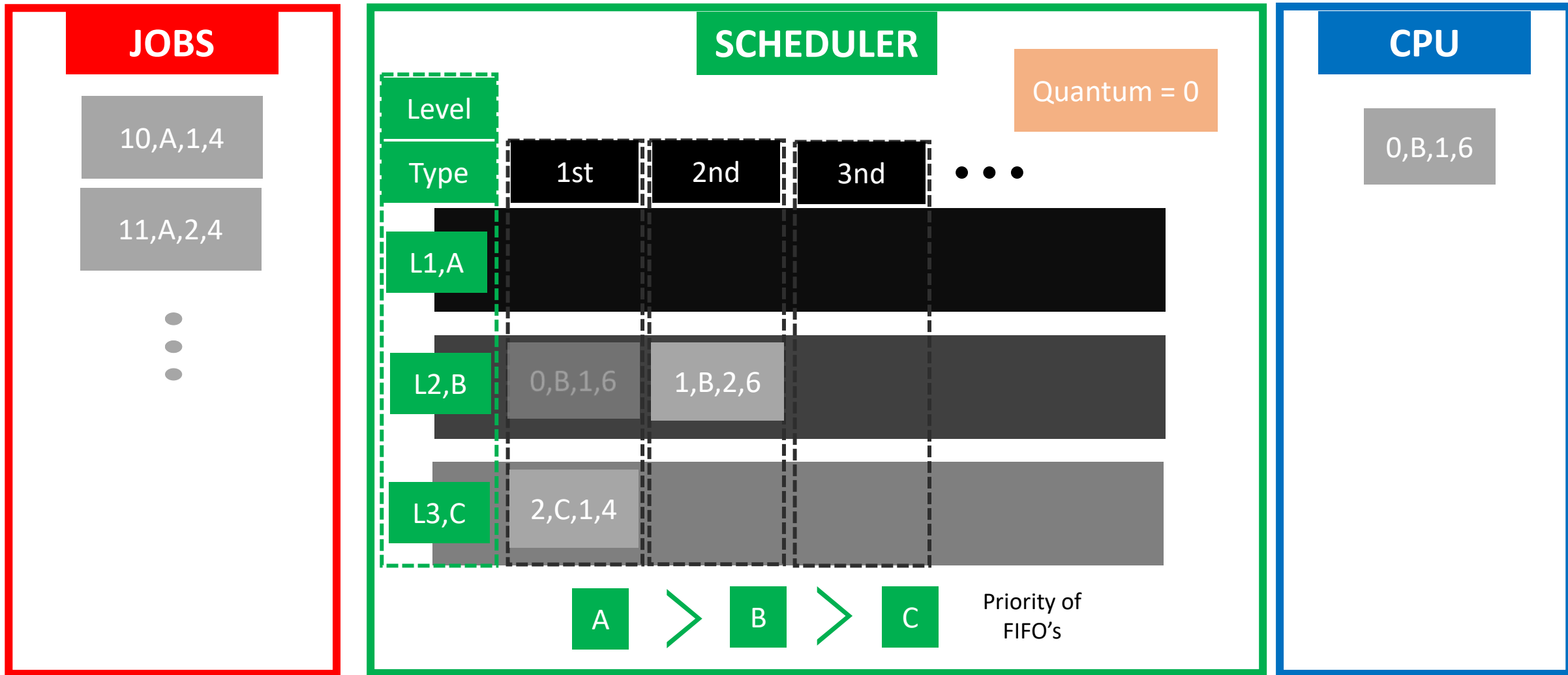
1. There is no arriving process.
2. Process time of **B1** is decreased by one.
3. **Quantum** is increased by one.



1. There is no arriving process.
2. Process time of **B1** is decreased by one.
3. **Quantum** is increased by one. It reaches to the value of 4, which is limit of **B** type of process. So **B1** is put back to **FIFO L2**.

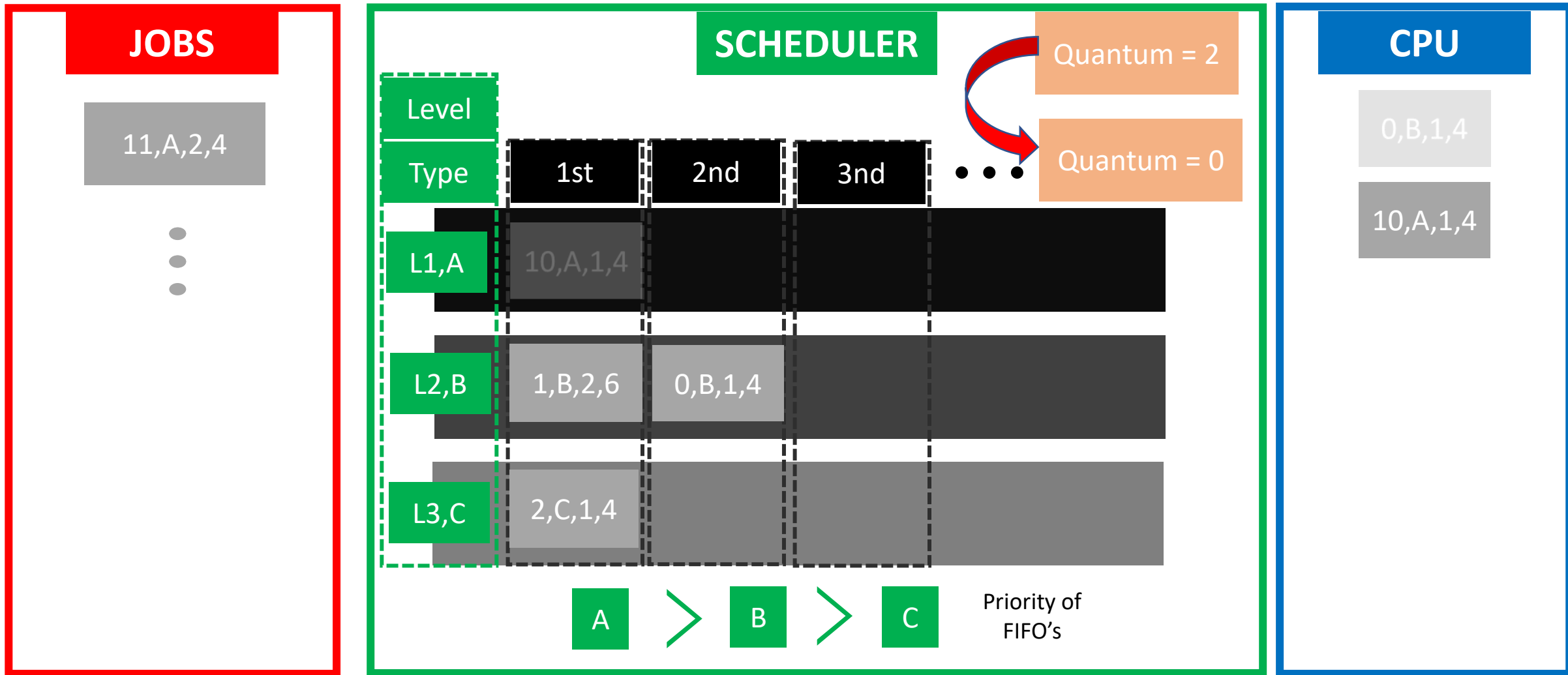
**TIME: 4**

4. Scheduler sends **B2** to CPU.
5. Since the new process starts, **Quantum** becomes zero.



1. Process **B2** utilizes CPU until time step 8.
2. **Quantum** reaches the value of 4, which is the limit of the **B** type of process. So it is put back to **FIFO L2**.
3. Since the new process starts, **Quantum** becomes zero.

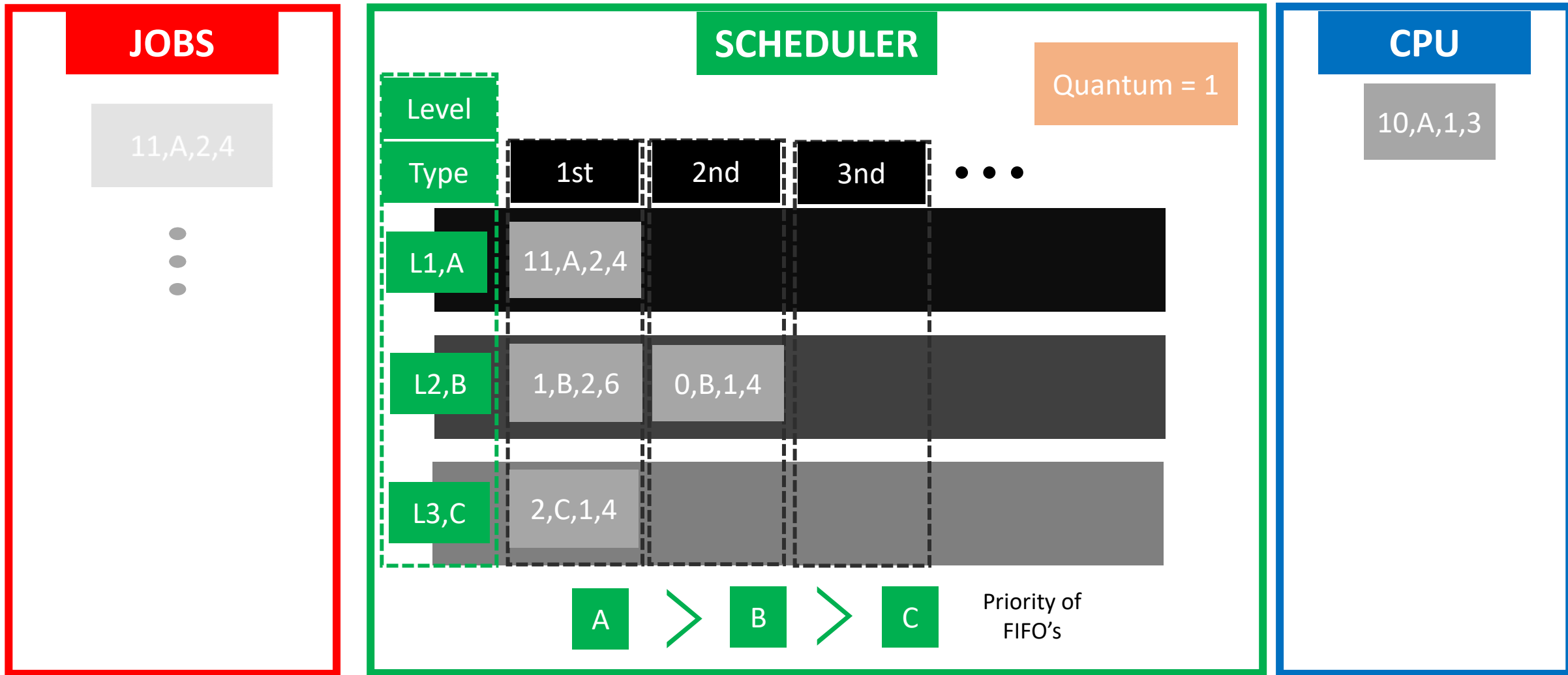
**TIME: 8**



1. Job **A1** arrives.
2. Its priority is higher than the running process **B1**. **A1** is sent to CPU. **B1** put back to FIFO
3. Since the new process starts, **Quantum** becomes zero.

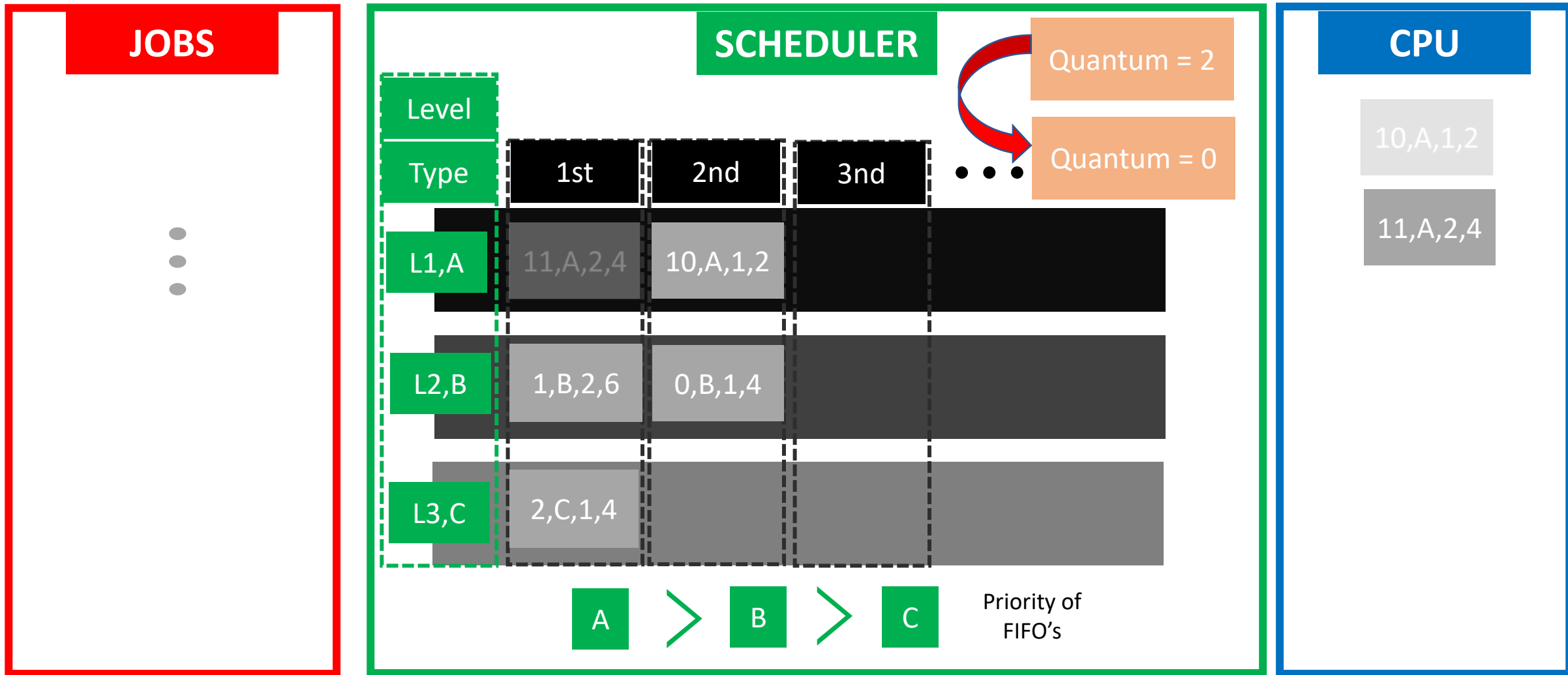
**TIME: 10**





1. Job **A2** arrives.
2. **A2** has the same priority with running process **A1**. So **A2** is put into **FIFO L1**.
3. Process time of **A1** is decreased by one.
4. **Quantum** is increased by one.

**TIME: 11**

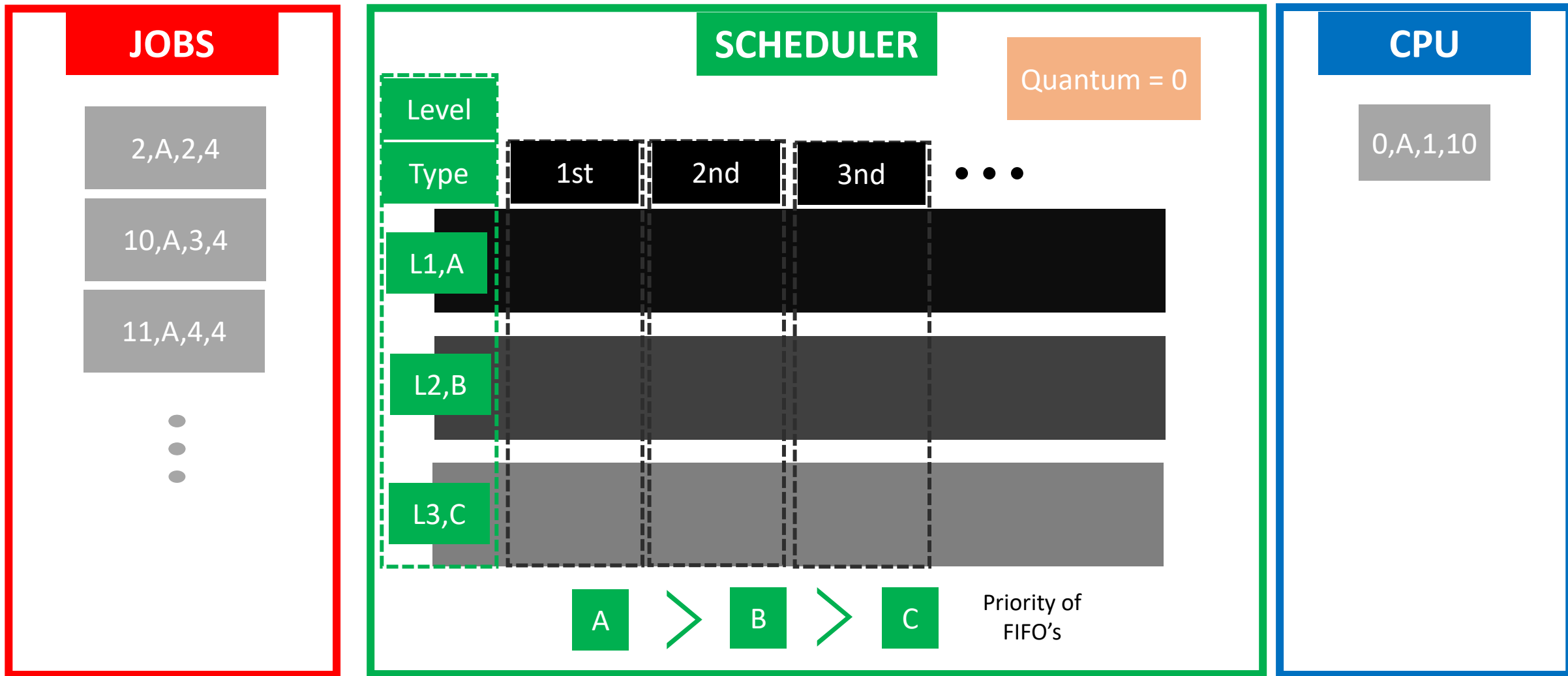


1. No job arrived.
2. Process time of **A1** is decreased by one.
3. **Quantum** is increased by one and reaches the limit value of process type A. So **A1** is put back to **FIFO L1**.

**TIME: 12**

4. Scheduler sends **A2** to CPU since it is the first process in the list.
5. Since the new process starts, **Quantum** becomes zero.

Ex-2: Two Process Arrive  
Scheduler in Same Time



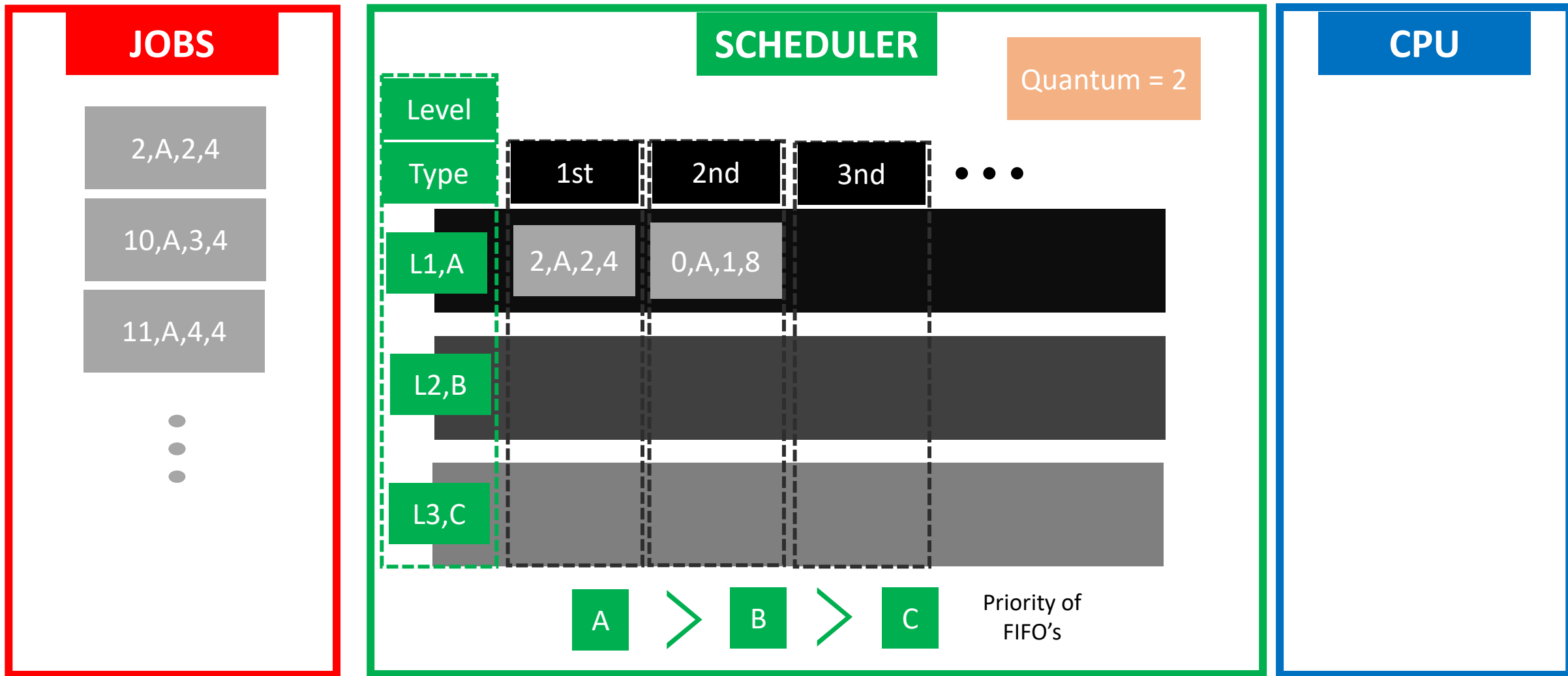
1. Job A1 arrives.
2. Since no other process is executed in the CPU and the scheduler FIFOs are empty, process **A1** utilizes the CPU.

**TIME: 2**

Quantum time (Q) of each level equal to  $Q = l$

$l$  : level of the FIFO

Q: Represents the maximum time a process utilizes from a CPU.



1. Job **A2** arrives.
2. Process time of **A1** decreased to **8**.
3. **Quantum** reaches the value of 2, the limit of **A** type of process. So **A1** is put back to **FIFO L1**.

**TIME: 2**

4. **A2** and **A1** should enter the scheduler at the same time. In such a situation, the priority belongs to the new-arriving jobs(process) **A2**.