

Queues

(Algorithms and Data Structures)

Queues

- it is an **abstract data type** – and it can be implemented either with **arrays** or with **linked lists**
- it has a so-called **FIFO** structure – the first item we inserted is the first item we take out
- basic operations are **enqueue()**, **dequeue()** and **peek()**
- has several applications in **operating systems** and thread management (multithreading)

Queues

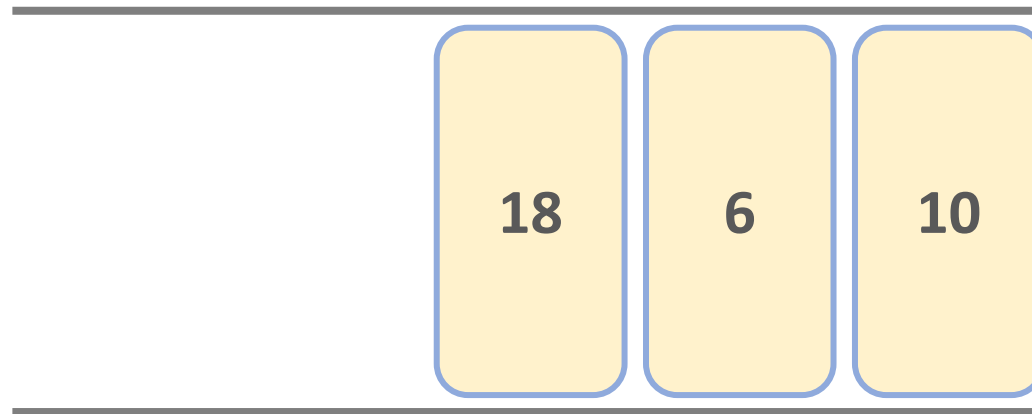
Queues



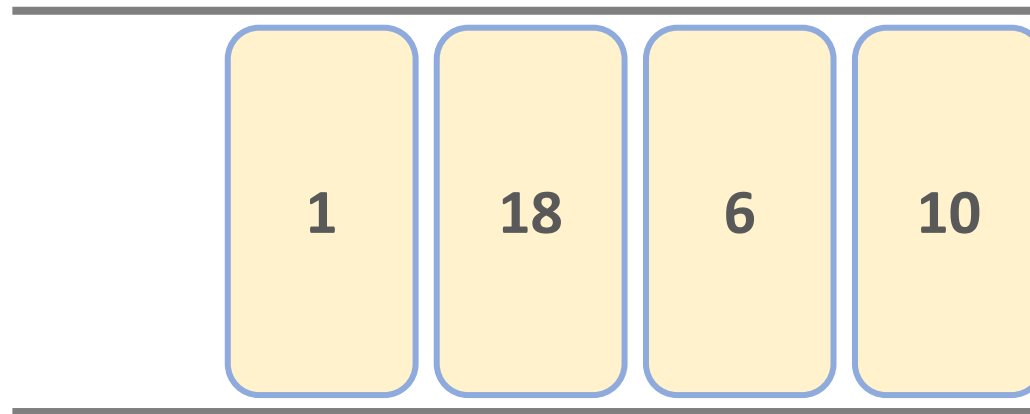
Queues



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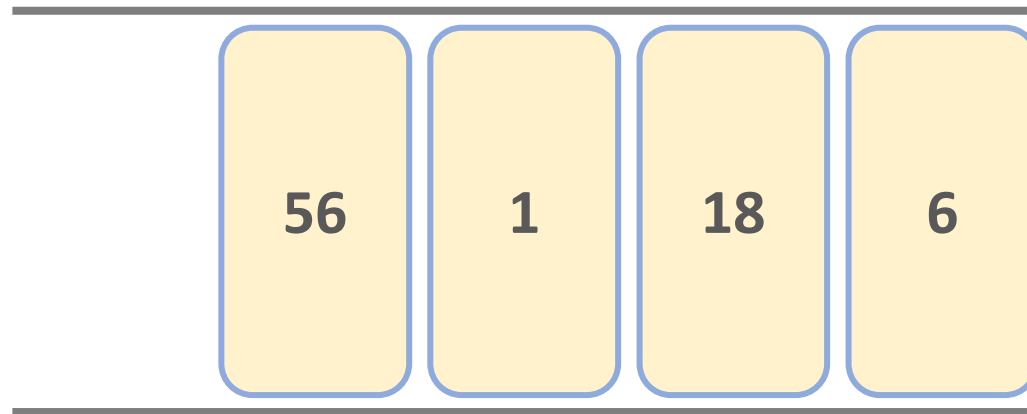
Queues



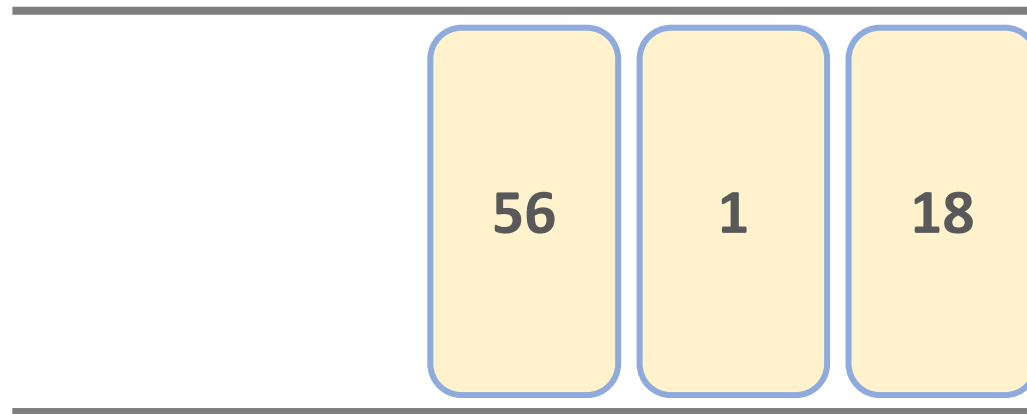
Queues



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Queues Applications

- **queues** are useful when a resource is shared with several consumers (for example threads)
- threads are stored in queues
- queues are important in **CPU** scheduling
- when data is transferred asynchronously (data not necessarily received at same rate as sent) between two processes
- graph algorithms rely heavily on queues: **breadth-first search** use queue as an underlying abstract data type