# QUEUE

## INTRODUCTION

① capable of passing information between tasks without incurring overwrites from other tasks. (race condition)

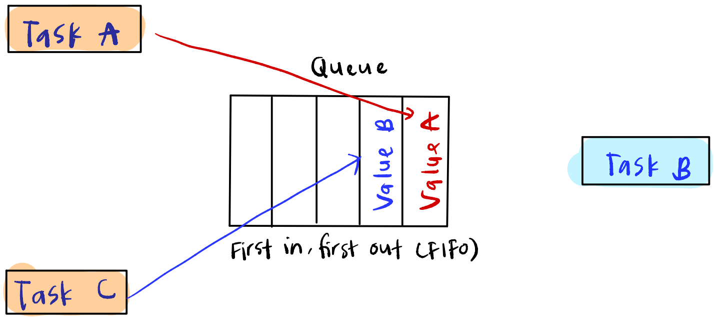
← QUEUE →
(kernel object)

② First in, first out (FIFO) system where items are removed from the queue once read.

## CONCEPTS

① A simple FIFO system with Atomic reads and writes.
② Atomic operation: cannot be interrupted by other tasks during the execution.
③ Ensure another task cannot overwrite the data before it is read by the intended target.

## EXAMPLE



① Task A writes some data to queue.
② No other task can interrupt Task A during the writing process.
③ Task B can write data to the queue after task A.
④ Task B will appear behind task A.

In freeRTOS, information is copied by value, not by reference.
If xQueueSend() function is used to send the data, all of the data will be copied into the queue atomically.

## HARDWARE

① Any ESP32 development board (supported by Arduino IDE)
② Development board capable of running FreeRTOS