PROJECT 117 ASSIGNMENT 3

STACK QUESTION: REFLECTION

Why stack supports *undo* but not fairness

- A stack implements LIFO (Last In, First Out). That means the most recent (last) action/item pushed is the first one popped.
- *Undo* is naturally "undo the latest action first." So, Stack's LIFO behavior matches the requirement of undo operations.
- Fairness, especially in service or scheduling contexts, typically means *first-come, first-served* (i.e. no one who waited longer is skipped). A stack would serve new items first — that is the opposite of fairness.
- Therefore, stacks are suitable for undoing semantics but not for fair scheduling

QUEUE QUESTION: REFLECTION

Why FIFO ensure equality in distribution (theory only)

1. **Temporal fairness**: FIFO (first-in, first-out) processes entrants in the exact order of arrival. This property ensures that no one who arrived earlier is repeatedly passed over for later arrivals — everyone is served in the order they queued. That simple chronological rule is the baseline definition of fairness in line-based distribution.
2. **Predictable waiting bound**: Because service follows arrival order, a person can estimate an upper bound (or expected bound) on wait time based on the number of people ahead and average service time. This predictability reduces disputes and perceived unfairness. (Queueing theory / FCFS analysis.)
3. **Transparency and auditability**: FIFO is easy to explain and verify arrival tokens or timestamps make it trivial to prove that distribution followed order. Humanitarian operations and distribution points commonly adopt first-come, first-served or clearly defined priority rules to preserve legitimacy and reduce conflict.
4. **Avoids harmful late-arrival advantage**: A LIFO/stack approach would prioritize the most recent arrivals, allowing latecomers to "jump the line" — an outcome that is usually considered unfair in aid and public-service contexts.