QUEUE:

Tail → **FIFO** → Head

Head

| a | b | c | d |

Tail ↑

Tail → Add

Head → Delete

INSERTION

INPUT DATA
Tail ← Tail + 1
INSERT.

DELETION

∴ X.1
Head ← Head + 1
X = DATA

EXCEPTION: OVERFLOW

IF Head = NULL AND
    TAIL = TOQ

∴ X.1

ELSE
    INPUT DATA
    Tail ← Tail + 1
    IF Tail > TOQ
      THEN
            TAIL ← 1
    ENDIF
    INSERT
ENDIF.

EXCEPTION (UNDERFLOW)

IF Head = Tail
    THEN
        OUTPUT "Error - Underflow"
    END.
ENDIF

CIRCULAR Q:

ADD - Q

INPUT DATA
IF Head = NULL AND Tail = TOQ
    THEN
        OUTPUT "Error - Overflow"
        END.
    ELSE
        Tail = Tail + 1
        IF Tail > TOQ THEN TAIL = 0
        INSERT DATA AT Tail
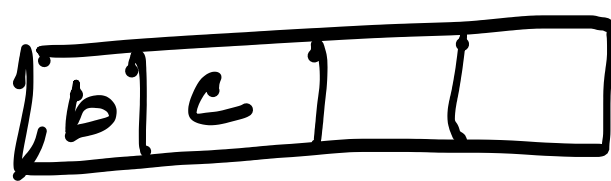ENDIF

DELETE - Q

IF Head = Tail
    THEN
        OUTPUT "Error - Underflow"
        END
    ELSE
        Head ← Head + 1
        IF Head > TOQ THEN Head = 0
        X = DATA AT Head.
ENDIF.

SIMPLE-Q

| b | c | | |

Tail ↑   Add.

ADD - Q

INPUT DATA
IF Tail = TOQ
    THEN
        OUTPUT "Error - Overflow"
        END
    ELSE
        Tail ← Tail + 1
        INSERT AT Tail
ENDIF.

DELETE - Q

IF Tail = NULL
    THEN
        OUTPUT "Error - Underflow"
    END
ELSE
    X = DATA AT 0 position
    FOR C = 0 TO Tail
        QUEUE [C] = QUEUE [C+1]
    Next C
    Tail ← Tail - 1
ENDIF