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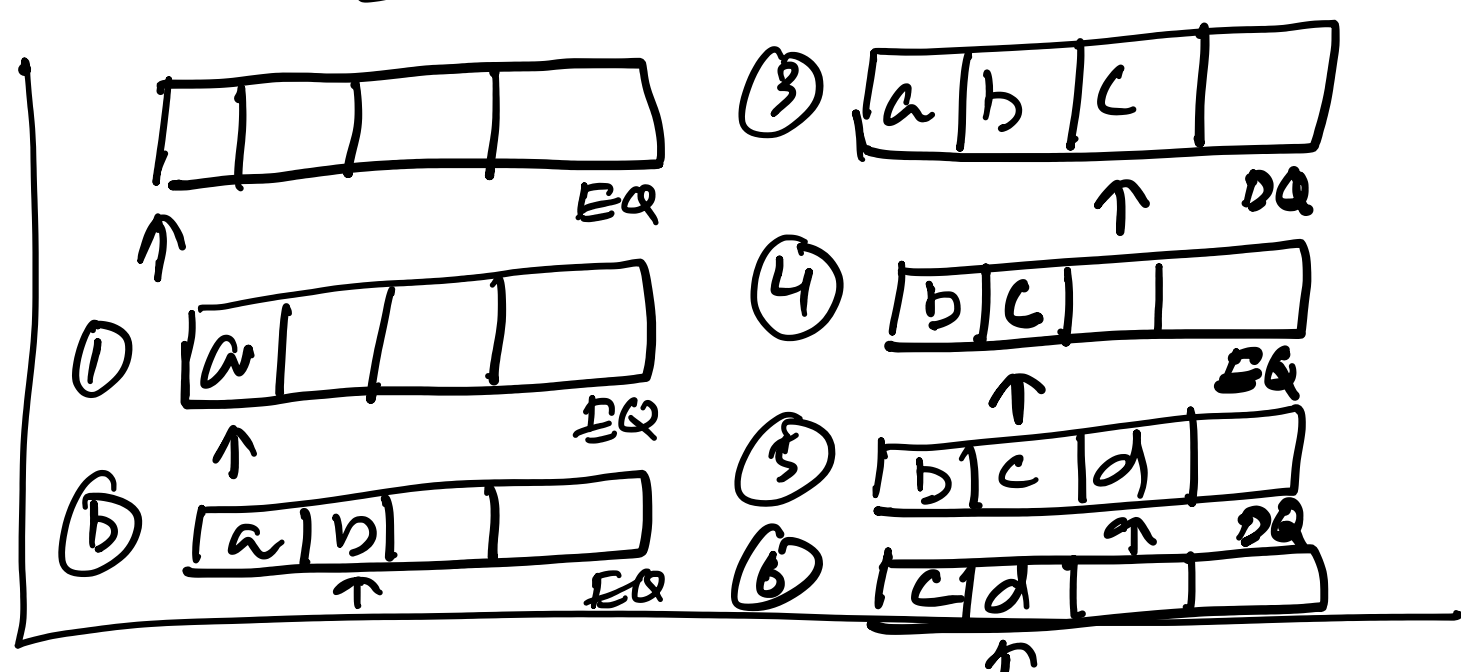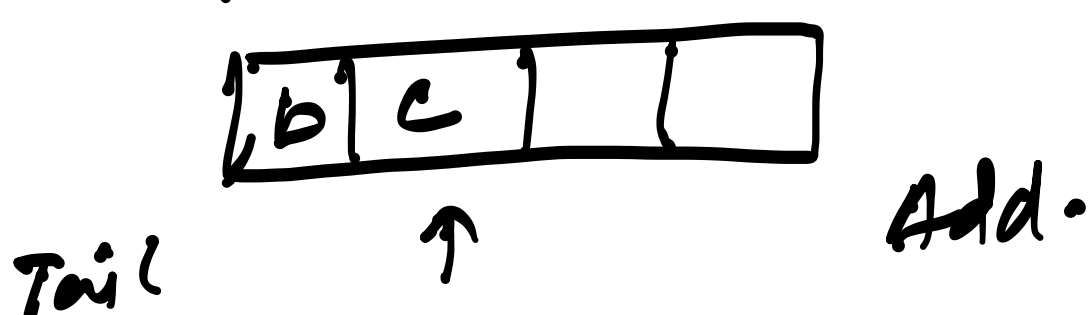   THEN
        OUTPUT "Error - Underflow"
        END
    ELSE
        Head ← Head + 1
        IF Head > ToQ THEN Head = 0
        X = DATA AT Head.
ENDIF.

SIMPLE Q

| | b | c | | |

Tail ↑

Add.

① | a | | | | EQ
② | a | b | | | EQ
③ | a | b | c | DQ
④ | b | c | | EQ
⑤ | b | c | d | DQ
⑥ | c | d | |

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