# Patient Management System

Submitted by: Numan Ali

Q2 — Dry Run / Trace (step-by-step)  
  
Starting state: empty list  
HEAD = NULL, TAIL = NULL  
  
--------------------------------------------------  
Step 1 — insertAtEnd(101)  
  
Operation: append 101 at tail.  
  
NULL ← [101] → NULL  
  
HEAD → 101, TAIL → 101  
--------------------------------------------------  
Step 2 — insertAtEnd(102)  
  
NULL ← [101] ⇆ [102] → NULL  
  
HEAD → 101, TAIL → 102  
--------------------------------------------------  
Step 3 — insertAtBeginning(200)  
  
NULL ← [200] ⇆ [101] ⇆ [102] → NULL  
  
HEAD → 200, TAIL → 102  
--------------------------------------------------  
Step 4 — insertAtPosition(150, 2)  
  
NULL ← [200] ⇆ [150] ⇆ [101] ⇆ [102] → NULL  
  
HEAD → 200, TAIL → 102  
--------------------------------------------------  
Step 5 — deleteFromBeginning()  
  
Before:  
NULL ← [200] ⇆ [150] ⇆ [101] ⇆ [102] → NULL  
  
After:  
NULL ← [150] ⇆ [101] ⇆ [102] → NULL  
  
Deleted: 200  
HEAD → 150, TAIL → 102  
--------------------------------------------------  
Step 6 — insertAtEnd(300)  
  
NULL ← [150] ⇆ [101] ⇆ [102] ⇆ [300] → NULL  
  
HEAD → 150, TAIL → 300  
  
--------------------------------------------------  
Final Results:  
(a) Head = 150  
(b) Tail = 300  
(c) Forward: 150 → 101 → 102 → 300  
(d) Backward: 300 → 102 → 101 → 150