**📝 Infinite Champions Programme – Day 8 (Assignment Sheet)**

**📌 Instructions  
• Deadline: Submit your solutions by 6th October, 2025, EOD.  
• Platform: Test your solutions on LeetCode  
• Collaboration: Discussing concepts is encouraged, but all code must be your own.**

1. [**Evaluate Reverse Polish Notation (150)**](https://leetcode.com/problems/evaluate-reverse-polish-notation/)  
   • **Problem:** You are given an array of strings tokens representing an arithmetic expression in Reverse Polish Notation. Evaluate the expression and return an integer result.  
   • **Objective:** Use a **stack** to process operands and operators, evaluating expressions in postfix order.  
   • **YouTube Solution (Java):** [Evaluate Reverse Polish Notation – Java Solution](https://www.youtube.com/watch?v=iu0082c4HDE)

class Solution {

    public int evalRPN(String[] tokens) {

         Deque<Integer> st = new ArrayDeque<>();

        for (String t : tokens) {

            if (t.equals("+") || t.equals("-") || t.equals("\*") || t.equals("/")) {

                int b = st.pop();

                int a = st.pop();

                int res = 0;

                if (t.equals("+")){

                    res = a + b;

                }

                else if (t.equals("-")){

                    res = a - b;

                }

                else if (t.equals("\*")){

                    res = a \* b;

                }

                else{

                    res = a / b;

                }

                st.push(res);

            } else {

                st.push(Integer.parseInt(t));

            }

        }

        return st.pop();

    }

}

1. [**Online Stock Span (901)**](https://leetcode.com/problems/online-stock-span/)  
   • **Problem:** Design a class StockSpanner that collects daily stock prices and returns the **span** of each day’s price — the number of consecutive days where the price was less than or equal to today’s price.  
   • **Objective:** Use a **monotonic stack** to keep track of price-span pairs and calculate spans efficiently.  
   • **YouTube Solution (Java):** [Online Stock Span – Java Solution](https://www.youtube.com/watch?v=slYhJvWwDEU)

class StockSpanner {

    public Stack<int[]> stack;

    public StockSpanner() {

        stack = new Stack<>();

    }

    public int next(int price) {

        int s= 1;

        while (!stack.isEmpty() && stack.peek()[0] <= price) {

            s += stack.pop()[1];

        }

        stack.push(new int[]{price, s});

        return s;

    }

}

1. [**Simplify Path (71)**](https://leetcode.com/problems/simplify-path/)  
   • **Problem:** Given a string path representing an absolute path in a Unix-style file system, simplify it and return the canonical path.  
   • **Objective:** Use a **stack** to handle directories, .., and . to simplify the file system path.  
   • **YouTube Solution (Java):** [Simplify Path – Java Solution](https://www.youtube.com/watch?v=qYlHrAKJfyA)

class Solution {

    public String simplifyPath(String path) {

        Deque<String> dq = new ArrayDeque<>();

        String[] segs = path.split("/");

        for (String s : segs) {

            if (s.equals("") || s.equals(".")){

                continue;

            }

            else if (s.equals("..")) {

                if (!dq.isEmpty()) dq.pop();

            } else {

                dq.push(s);

            }

        }

        StringBuilder ans = new StringBuilder();

        for (String d : dq) {

            ans.insert(0, "/" + d);

        }

        return ans.length() == 0 ? "/" : ans.toString();

    }

}

**📚 Submission Checklist  
• Time and space complexity analysis for each solution.  
• Test cases demonstrating the correctness of your solutions.**