Online on Loops

Section: A1+A2 Time: 60 minutes

Q1.Swap Digits by Position

Write a program that swaps the digits in **odd positions** with the digits in **even positions**, where **positions are counted from the right**, starting from 1.

Do **not** use any arrays or string functions. You are allowed to use conditional statements and loops.

Example:

Input: 123456
Explanation: The odd position numbers are 6, 4, 2. The even position numbers are 5,3,1. The positions of 6 and 5, 4 and 3, 2 and 1 are swapped to generate the output.
Output: 214365

Input: 98765
Explanation: The odd position numbers are 5,7,9. The even position numbers are 6,8. The positions of 5 and 6, 7 and 8 are swapped.
Output: 97856

Q2.Print Butterfly Pattern

Write a program that prints a butterfly pattern using numbers. The pattern consists of two symmetrical halves (left and right wings). The left wing contains increasing numbers starting from 1, and the right wing contains decreasing numbers ending at 1. In between, there are spaces that increase and then decrease.

You may only use **nested loops** and **conditional statements**. Arrays and functions are **not allowed**.

Input: A single integer n (1 ≤ n ≤ 9) — the number of rows in each half.
Output: A pattern with 2*n columns per row and n rows in total.

Example:

Input: 4

Output:

```
1      1
12    21
123  321
12344321
```

Input: 3

Output:

```
1    1
12  21
123321
```