Introduction to Data Structures

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Homework 2C (small points, difficult problem)

- 10 points for coding evaluation
  - Submission format
    - File name: yourid_HW2C.c
      - Example: 2000123456_HW2C.c
    - File type: .c (NOT .cpp)
  - Submission site: https://icampus.skku.edu
    - Week 5: [Homework] 2C (code)
- No report
- Due date
  - 10/13 23:59 (no late submission accepted)

Rules for homework

- You should follow instructions.
  - Complier
    - You will get no/less point if your program cannot be complied with the specified complier
  - Input/output format
    - You will get no/less point if TA's automatic evaluation program cannot parse your input or output.
  - Permitted modification scope
    - You will get no/less point if you modify code outside of the permitted modification scope
  - All other rules
    - You will get severe penalty or no/less point if you violate the given rules.

Complier and input/output rules for homework

- Every implementation homework will be evaluated by TA's automatic evaluation program with the following complier.
  - Complier: GCC 7.X, 8.X, 9.X or 10.X
    - https://gcc.gnu.org/
  - You will get no/less point if your program cannot be complied with GCC 7.X, 8.X, 9.X or 10.X.
    - For example, do not rely on visual studio.
  - You can use standard library such as *stdlib.h* and *math.h*.
- Input/output format
  - You will get no/less point if TA's automatic evaluation program cannot parse your input or output according to the following rules.
  - Use `stdin` and `stdout`

Problem

- Problem: Palindrome Generator
  - A palindrome is a sequence of characters that reads the same backward as forward.
  - Write a program that generate a palindrome by minimizing the swap of two characters' position.
    - We use the upper-case alphabets from 'A' to 'Z' only.
    - If it is possible to generate a palindrome by the swap of two characters' position, print all intermediate results, and the number of swaps.
    - If it is impossible to generate a palindrome by the swap of two characters' position, print "Impossible"
  - The number of input characters is not more than one hundred.

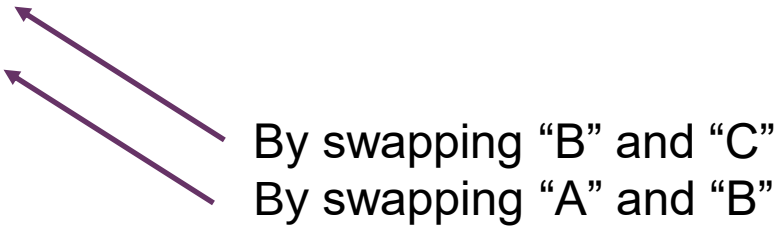
Input/Output

- Input (no space)

```
ABBAC
```

- Output (no space)

```
ABCAB
ABCBA
2
```



Input/Output

- Input (no space)

  ABCDA

- Output (no space)

  Impossible

Template

- There is no template.

Evaluation

- Evaluation
  - TA will test several cases.
  - For each test case,
    - If your C code results in an answer within 10 seconds on a platform with average computing power,
      - If your answer for the number of swaps is the minimum number and your answer for all intermediate (and final) results are correct,
        - You get 100%.
      - Else if your answer for all intermediate (and final) results are correct but your answer for the number of swaps is not the minimum number (but is valid),
        - You get 70% * (the minimum # of swaps) / (your answer for # of swaps).
      - Else,
        - You get 0%.
    - Else,
      - You get 0%.