HO CHI MINH UNIVERSITY OF SCIENCE
FACULTY OF INFORMATION TECHNOLOGY
SOFTWARE ENGINEERING DEPARTMENT
APCS – CLC
COURSE: **CS162 – KTLT**
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WEEK 03

SINGLY LINKED LIST

- TRƯƠNG PHƯỚC LỘC
- HỒ TUẤN THANH

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1 Problems

1.1 Problem 1

You are given a singly linked list in which each node represents an integer number. The problem is *to reverse the linked list.* Please write a program to input the linked list (from a text file), reverse the linked list, and output the nodes in the new order (to another text file with the same format as your input file).

To get full marks, you should actually implement the singly linked list, reverse it, and traverse on the new linked list to output their values.

1.2 Problem 2

You will use the linked list in Problem 1. You are asked to delete all nodes with even values. After that, output the nodes to another text file with the same format.
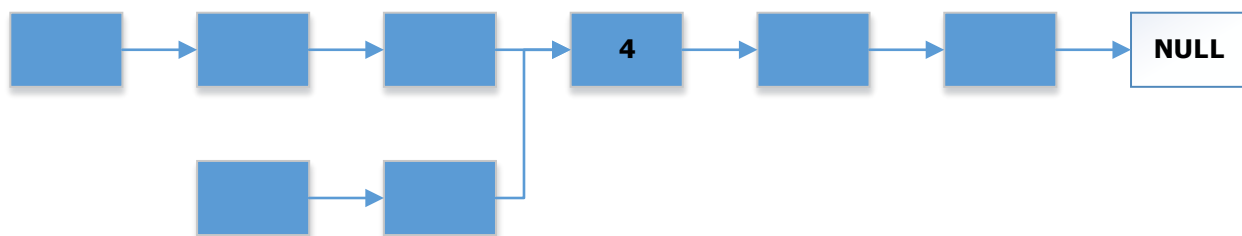
1.3 Problem 3

Please insert nodes numbered 2, 4, 6, 8, 10… before every nodes in the list of Problem 2. After that, output the list to a text file.

The following two problems are quite popular. In fact, they were interview questions (for software developers) by large corporations such as Google and Microsoft, and you can easily google the solutions. However, we strongly recommend you to solve them by yourself.
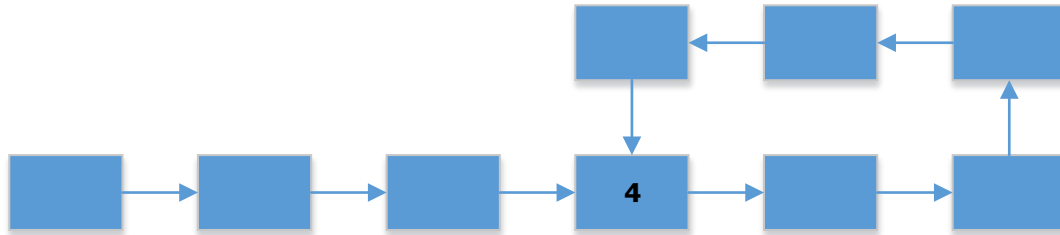
1.4 Problem 4

Given 2 linked lists A and B. You need to find out if A and B have any common nodes. If so, you should find the node at which A and B are joined.

In this case, the two linked list are actually joined, and you should output (to another text file) the node 4.

1.5 Problem 5

Given a singly linked list, you are to dertermine whether it contains a loop or not. Output YES or NO to a text file.

You may need to use ONLY ONE project for all problems.

The paths of the input and output text files are stored in a text file named "config.txt"

config.txt
1_input.txt
1_output_reversed.txt
2_output_even_deleted.txt
3_output_even_inserted.txt
4_joined.txt
5_loop.txt

1 A04

Problem 1, 2

2 H04

Problem 1 → 5

3 H04 – Special

Problem 1 → 5