

## CS1020E | Lab 5 | Exercise 2 (will not be graded)

### Reorder List

#### Objective

The objective of this exercise is to learn how to manipulate a **Singly Linked List**.

#### Problem Description

Given a list  $(L_1, L_2, \dots, L_{N-1}, L_N)$ , represented in a **singly linked list**, your program is required to reorder it to  $(L_1, L_N, L_2, L_{N-1}, L_3, L_{N-2}, \dots)$ .

For example, given (1, 2, 3, 4, 5, 6), it must be reordered to (1, 6, 2, 5, 3, 4); or given (1, 2, 3, 4, 5), it must be reordered to (1, 5, 2, 4, 3).

Your program must do the reordering **in-place** (i.e. **must not create any new node, and must not use another list or an array**), and also not alter the nodes' data values.

**Add your code only to the parts of the files indicated. Do not modify any other part of the given code, and do not add new files.**

#### Inputs

The first line of the input consists of a single positive integer  $N$ , the number of values in the input list. The next line contains the  $N$  integer data values for the input list, each has value within the range of integer.

#### Outputs

The data values of the list after reordering.

#### Sample Input

```
6
1 2 3 4 5 6
```

#### Sample Output

```
1 6 2 5 3 4
```

#### Hint

Consider reorder the list in two steps.

## Submission

You need to submit **ALL** your completed skeleton **\*.cpp** and **\*.h** files to CodeCrunch (<https://codecrunch.comp.nus.edu.sg/>).

**Your submission for this exercise will not be manually graded, and there is no submission deadline for this exercise.**