**CS162 – Introduction to Computer Science 2**

# Lab 07
# Recursion

Cảm ơn thầy Trần Duy Quang đã cung cấp template cho môn học


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# 1

# Notes

Create a single solution/folder to store your source code in a week.

Then, create a project/sub-folder to store your source code of each assignment.

The source code in an assignment should have at least 3 files:

- A header file (.h): struct definition, function prototypes/definition.
- A source file (.cpp): function implementation.
- Another source file (.cpp): named YourID_Ex01.cpp, main function. Replace 01 by id of an assignment.

Make sure your source code was built correctly. Use many test cases to check your code before submitting to Moodle.

Name of your submission, for example: **18125001_W01_07.zip**

# 2

## Content

In this lab, we will review the following topics:

- How do recursive functions work?

# 3 Assignments

**A: YY: 02 problems / assignments.**

**H: YY: 06 problems / assignments.**

Implement these problems in the recursive style.

## 3.1 binary

```
string decimal2Binary(int x);
int binary2Decimal(string s);
```

## 3.2 hex

```
string decimal2Hex(int x);
int hex2Decimal(string s);
```

## 3.3 Recaman's sequence

Given an integer n. Print first n elements of Recaman's sequence.

## 3.4 Recursion on arrays

1. Output the array of integer values to screen.
2. Output the array of integer values to screen in reversed order.
3. Find the sum of positive numbers in the array.
4. Count all distinct values in the array.

## 3.5 Recursion on linked lists

1. Search an element in a linked list.
2. Reverse a linked list.
3. Find the middle of a linked list. Return the second middle element if the list has an even number of elements.
4. Delete a value of x in a linked list.
5. Remove duplicate elements, keep one, in a linked list.

## 3.6 Individual Project Report

Write a short paragraph (at least 10 sentences) to describe 1 task you have completed in the project in this week. **A task must be done only by 1 member.**

Your report should answer the following questions:

What is the name of your task?

Write a short description about this task.

What is the start date that you began to work on this task and the end date that you finished this task?

What is the number of working hours you spent for this task?

Screenshot the commit in your Github/Bitbucket/GitLab project.