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| C:\Users\HTThanh\Desktop\Logo-KHTN 2009.jpg | TRƯỜNG ĐẠI HỌC KHOA HỌC TỰ NHIÊN TP.HCM  KHOA CÔNG NGHỆ THÔNG TIN  BỘ MÔN CÔNG NGHỆ PHẦN MỀM  HỆ CHÍNH QUI CHẤT LƯỢNG CAO  MÔN: **KĨ THUẬT LẬP TRÌNH**  GVLT: TS. ĐINH BÁ TIẾN |

**WEEK 07**

**STACK & QUEUE**

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# Problem 1 – Stack

Implement a stack of integer with the following methods:

1. Init an empty stack
2. Push/add an integer to stack
3. Pop/remove an integer from stack
4. Check whether a stack is empty or not
5. Make a stack empty
6. Get the number of elements in the stack

## Problem 1.1 – Stack – v1

Using a dynamic allocated array

**class** **Stack**

{

**private**:

**int** \*data;

**int** top;

**int** size;

};

## Problem 1.2 – Stack – v2

Using a singly linked list

**class** **Stack**

{

**private**:

Node \*pHead;

};

# Problem 2 – Queue

Implement a queue of integer with the following methods:

1. Init an empty queue
2. Enqueue/add an integer to queue
3. Dequeue/remove an integer from queue
4. Check whether a queue is empty
5. Make a queue empty
6. Get the number of elements in the queue

## Problem 2.1 – Queue – v1

Using a dynamic allocated array

**class** **Queue**

{

**private**:

**int** \*data;

**int** in;

**int** out;

**int** size;

};

## Problem 2.2 – Queue – v2

Using a singly linked list

**class** **Queue**

{

**private**:

Node \*pHead;

Node \*pTail;

};

# Problem 3 – Application of stack

1. Convert an unsigned integer from decimal base to binary base, and vice versa
2. Convert an unsigned integer from decimal base to hex base, and vice versa

# Problem 4 – Polish notation

Compute value of an expression

# A07

Problem 1.1, 2.1

# H07

Problem 1, 2, 3

Problem 4: Bonus