Homework 12

Objective :

Learning how to use *pointer* and *structure*.

Exercise :

12

Stack is a common kind of data structure. The data IO of stack is first in last out (FILO). Stack is controlled by two functions: one is push, another is pop. Please design a program that use pointer to implement stack. User can use instruction to control stack and output the state of stack. There are two instructions:

1. *Number 1+space+number N*: this way is for push. When detecting the first input is 1, push the number N into stack and refresh the state of stack. Ex: (1 23), (1 5), (1 45)...

2. *Number 2*: This is for pop. Pop the top element of the stack and refresh the state of stack. Ex: (2).

This program shoule let user keep input until input EOF. The program should include two functions:

1. *void mypush(int)*: input a integer N. This N shoule be push into stack.

2. *int mypop()*: pop the top element of the stack and return the value in the element. This function should check whether there is any element in the stack. If not, function need return a error message. You can use -1 instead.

Note: this homework can't use build-in push and pop.

Note: you don't need to check the error input.

Output:

```
Nothing in stack.
Please input the instruction:2
Error pop.
Nothing in stack.
Please input the instruction:1 3
push 3 into stack.
*         *
*    3    *
*         *
*********
Please input the instruction:1 5
push 5 into stack.
*         *
*    5    *
*         *
*********
*         *
*    3    *
*         *
*********
Please input the instruction:1 20
push 20 into stack.
*         *
*   20    *
*         *
*********
*         *
*    5    *
*         *
*********
*         *
*    3    *
*         *
*********
Please input the instruction:1 444
push 444 into stack.
```

```
Please input the instruction:1 444
push 444 into stack.
*         *
*   444   *
*         *
*********
*         *
*   20    *
*         *
*********
*         *
*    5    *
*         *
*********
*         *
*    3    *
*         *
*********
Please input the instruction:1 9
push 9 into stack.
*         *
*    9    *
*         *
*********
*         *
*   444   *
*         *
*********
*         *
*   20    *
*         *
*********
*         *
*    5    *
*         *
*********
*         *
*    3    *
*         *
*********
Please input the instruction:2
pop 9 from stack.
```

```
Please input the instruction:2
pop 9 from stack.
*         *
*   444   *
*         *
*********
*         *
*   20    *
*         *
*********
*         *
*    5    *
*         *
*********
*         *
*    3    *
*         *
*********
Please input the instruction:2
pop 444 from stack.
*         *
*   20    *
*         *
*********
*         *
*    5    *
*         *
*********
*         *
*    3    *
*         *
*********
Please input the instruction:2
pop 20 from stack.
*         *
*    5    *
*         *
*********
*         *
*    3    *
*         *
*********
Please input the instruction:^Z

--------------------------------
Process exited after 105.7 seconds with return value 0
請按任意鍵繼續 . . .
```

Rule and Format：

Comment in your program will get addition point in consider.

Please hand in .c file and name your .c file with your student number.

Compress all the .c file and name with your student number.

Upload the compressed file finally.

Example:

If your student number is B073040055, the file name will be B073040055.c.

Compressed file is B073040055.rar/.zip.

Deadline is **2018.12.20** (Thur.) before class.

No input/output will get 0 point.

Please upload homework to Cyber University:

1. Go to NSYSU Cyber University http://cu.nsysu.edu.tw/

2. Sign in and select C program design(I)

3. Click "Assessment Center"

4. Click "Do assignment"

5. Click "Start"

6. Click "選擇檔案" -> upload file .cpp -> submit