



# CS 225

## **Data Structures**

*Sept. 22 – Stack*

# Array Implementation

	Singly Linked List	Array
Insert/Remove at <b>front</b>		
Insert at <b>given</b> location		
Remove at <b>given</b> location		
Insert at <b>arbitrary</b> location		
Remove at <b>arbitrary</b> location		

# Stack.h

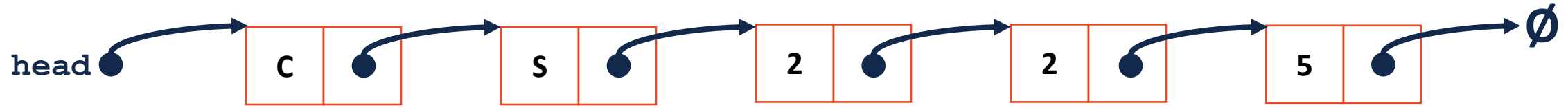
```
1 #ifndef STACK_H
2 #define STACK_H
3
4 template <class T>
5 class Stack {
6     public:
7
8
9
10
11
12
13
14
15
16
17     private:
18
19
20 };
21
22 #endif
```

# Stack Implementations

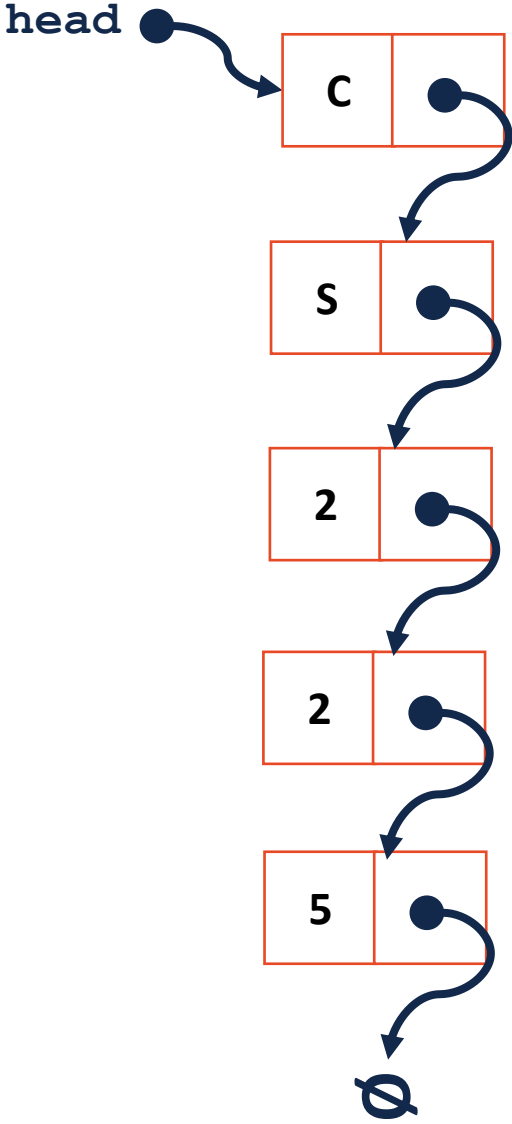
1.

2.

# Linked Memory



# Stack - Linked List



```
1 #include "Stack.h"
2
3 void Stack::push(T & t) {
4
5
6
7
8
9
10 }
11
12 T & Stack::pop() {
13
14
15
16
17
18
19 }
```

# Stack.h

```
1 #ifndef STACK_H
2 #define STACK_H
3
4 template <class T>
5 class Stack {
6     public:
7         Stack();
8         Stack(const Stack &other);
9         ~Stack();
10        Stack& operator=(const Stack &other);
11
12        void push(T & t);
13        T & pop();
14        bool isEmpty() const;
15
16    private:
17
18
19
20 };
21
22 #endif
```



# Array Implementation

**T\* arr:**

<b>C</b>	<b>S</b>	<b>2</b>	<b>2</b>	<b>5</b>		
[0]	[1]	[2]	[3]	[4]		

```
1 #include "Stack.h"
2
3 void Stack::push(T & t) {
4
5
6
7
8
9
10 }
11
12 T & Stack::pop() {
13
14
15
16
17
18
19 }
```

# Resize Strategy – Details



# Resize Strategy – Details



# CS 225 – Things To Be Doing

**Exam 3 (Theory, C++) starts Monday**

More Info: <https://courses.engr.illinois.edu/cs225/fa2017/exams/>

**MP2: Week #2**

*Nightly reports are in mp2/grades/*

**Lab: lab\_gdb – Due Sunday, 11:59pm**

*One of the hardest labs of the semester, important to work with gdb*

**POTD**

Every Monday-Friday – *Worth +1 Extra Credit /problem (up to +40 total)*