CS 225

Data Structures

Sept. 18 – Linked Memory

List.h

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

List Implementations

1.

2.

Exam 3

- **Will be a “Theory” exam….**
- **Rule of Three, Inheritance, etc…**

Honors Section

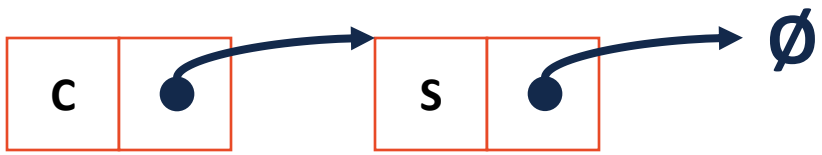
- **Starts this Friday!**
- **17:00 (5pm) in 1310 DCL**

Linked Memory

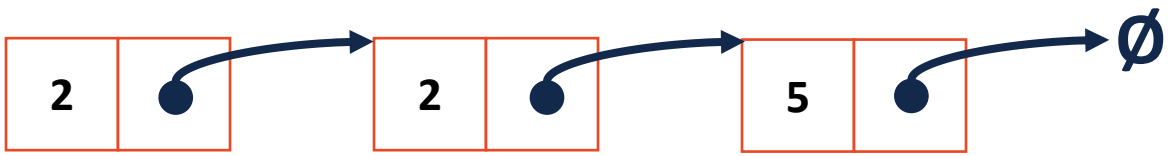
Snippet: ListNode struct

```
1  struct ListNode {
2    T & data;
3    ListNode * next;
4    ListNode(T & data) : data(data), next(NULL) { }
5  };
```

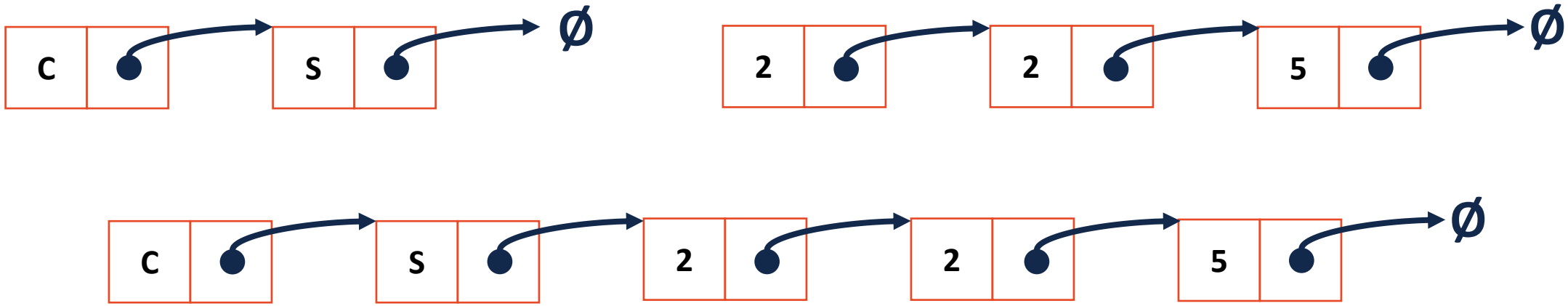
Linked Memory



Linked Memory



Linked Memory



List.h

```
 1  #ifndef LIST_H
 2  #define LIST_H
 3
 4  template <class T>
 5  class List {
 6    public:
…      /* ... */
28    private:
29      struct ListNode {
30        T & data;
31        ListNode * next;
32        ListNode(T & data) :
           data(data), next(NULL) { }
33      };
34
35
36
37
38
39  };
40
41  #endif
```

List.cpp

```
 1  #include "List.h"
 2
 3  template <class T>
 4  void List::insertAtFront(const T& t) {
 5
 6
 7
 8
 9
10
11
12
13
14
15
16
17
18
19
20
21
22  }
```

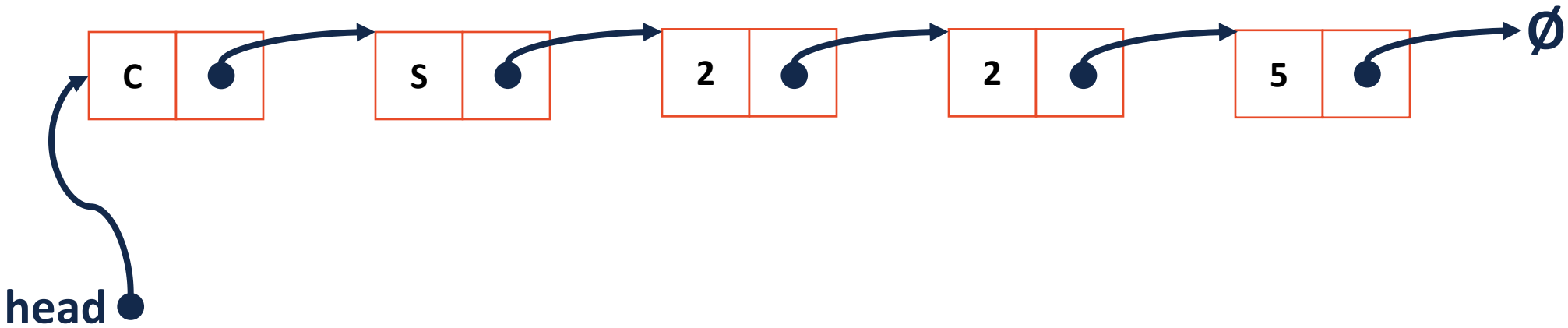
Running Time of Linked List `insertAtFront`

```
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
```

List.cpp

```
 1 #include "List.h"
 2
 3 void List::printReverse() const {
 4
 5
 6
 7 }
 8
 9
10
11
12
13
14
15
16
17
18
19
20
21
22
```

Linked Memory



Running Time of Linked List `printReverse`

List.cpp

```
1  #include "List.h"
2
3  ListNode *& List::_find(int index) const {
4
5
6
7
8
9
10 }
```

List.cpp

```
1  #include "List.h"
2
3  ListNode *& List::_find(int index) const {
4
5
6
7
8
9
10 }
```

CS 225 – Things To Be Doing

Exam 2 starts on today!

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

MP2 is out – Early Deadline tonight Monday, Sept. 18

Up to +7 Extra Credit for Early Submission

POTD

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