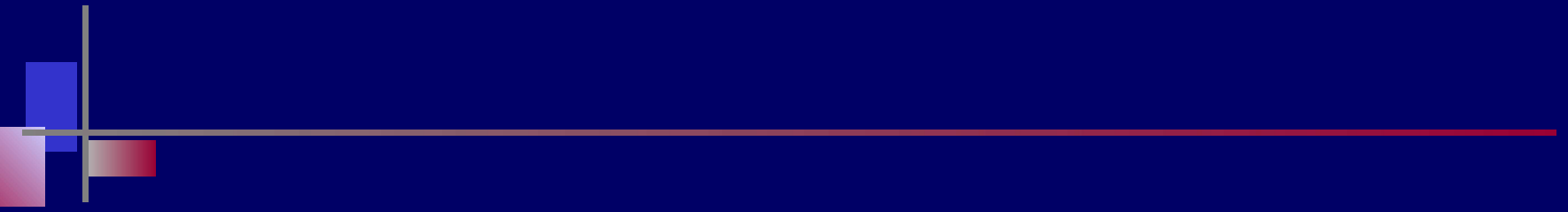


# CSCP-2034: Data Structures and Algorithms

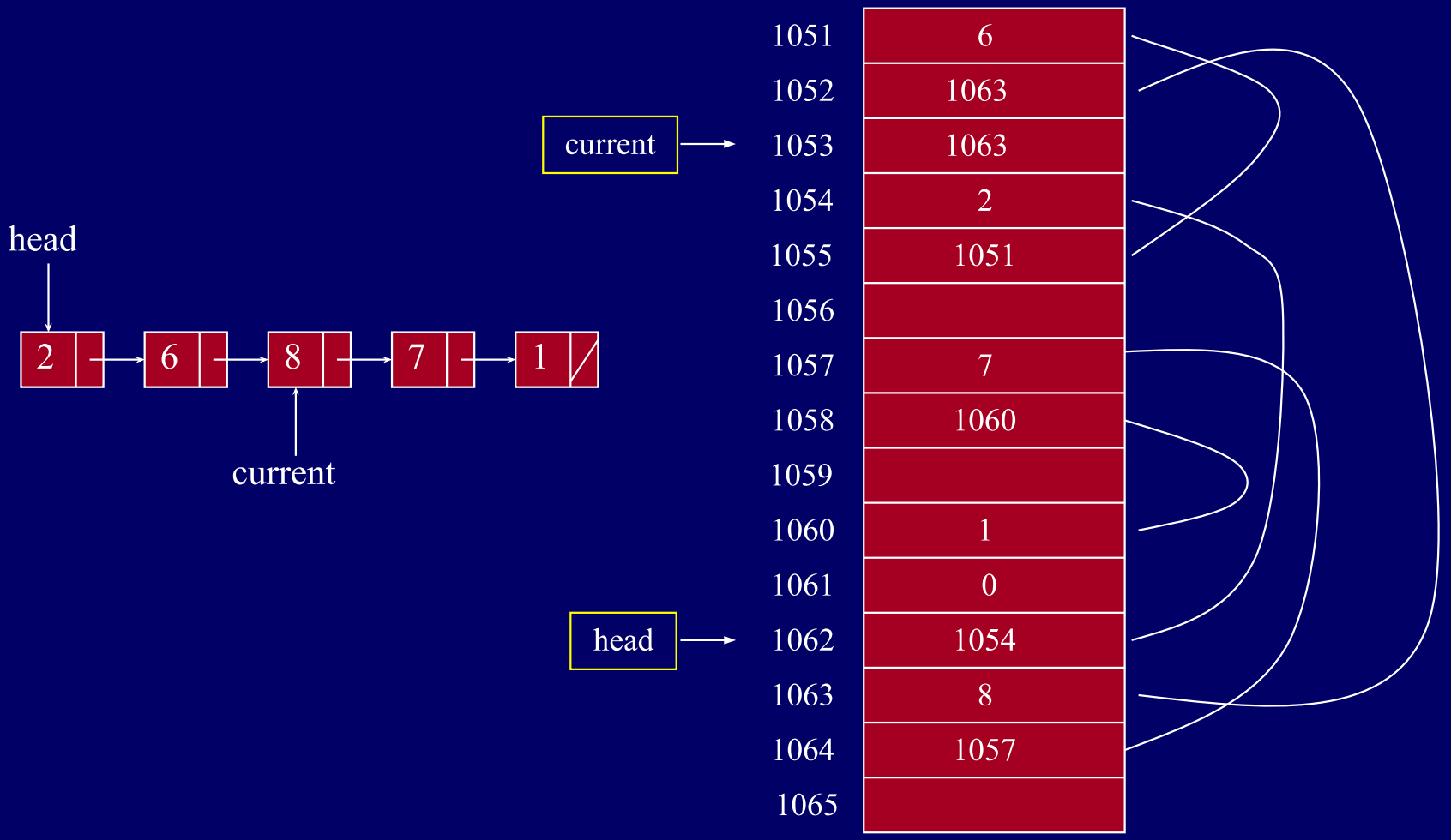
By

Dr Islam Zada

(Lecture 27-28)

# Linked List

- Actual picture in memory:



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- add(9): Create a new node in memory to hold ‘9’

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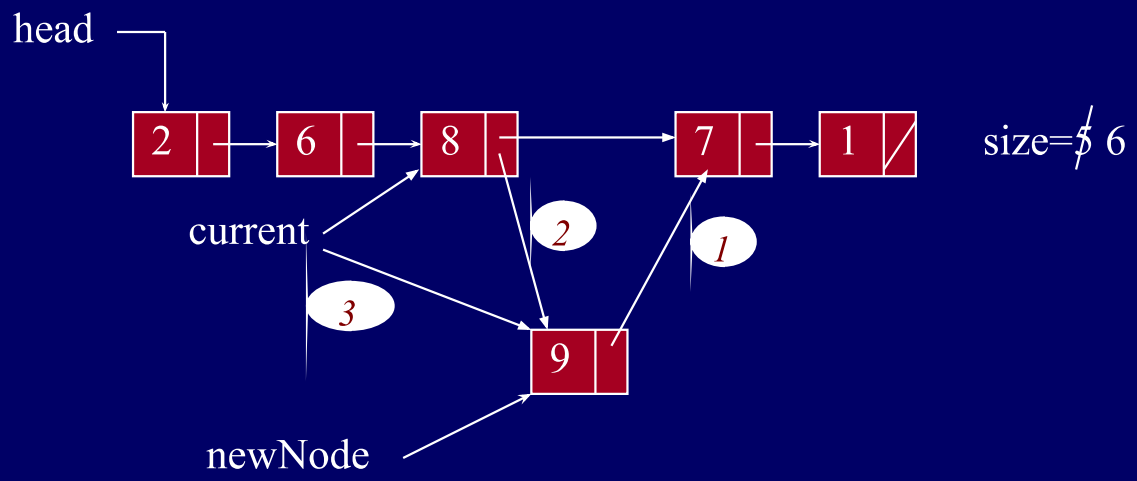
- Link the new node into the list



# C++ Code for Linked List

*The Node class*

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class Node {
public:
    int get() { return object; };
    void set(int object) { this->object = object; };

    Node *getNext() { return nextNode; };
    void setNext(Node *nextNode)
           { this->nextNode = nextNode; };
private:
    int object;
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#include <stdlib.h>
#include "Node.cpp"

class List {
public:
   // Constructor
   List() {
      headNode = new Node();
      headNode->setNext(NULL);
      currentNode = NULL;
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void add(int addObject) {
     Node* newNode = new Node();
     newNode->set(addObject);
     if( currentNode != NULL ){
         newNode->setNext(currentNode->getNext());
         currentNode->setNext( newNode );
         lastCurrentNode = currentNode;
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```

# Building a Linked List

```
List list;
```

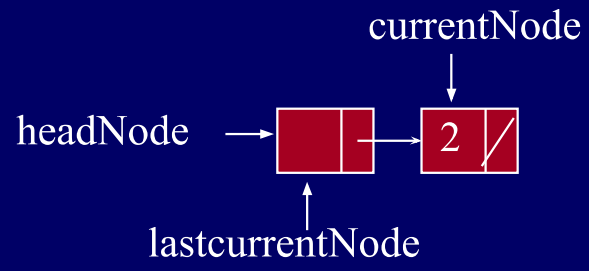

size=0

# Building a Linked List

```
List list;
```


size=0

```
list.add(2);
```



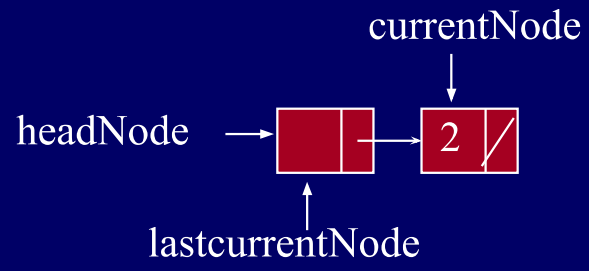

size=1

# Building a Linked List

```
List list;
```

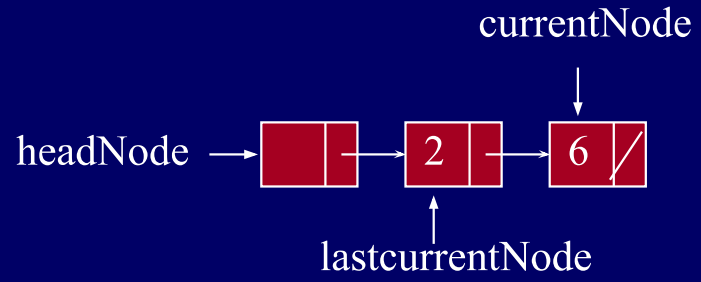

size=0

```
list.add(2);
```




size=1

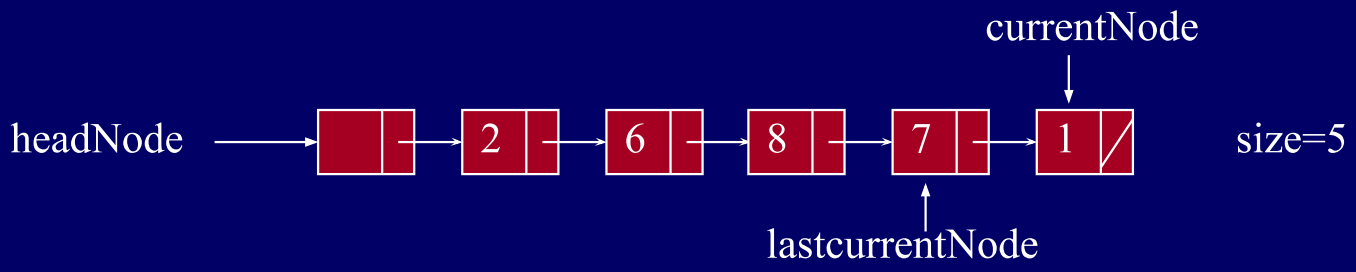
```
list.add(6);
```




size=2

# Building a Linked List

```
List.add(8); list.add(7); list.add(1);
```



# C++ Code for Linked List

```
int get() {
    if (currentNode != NULL)
        return currentNode->get();
};
```

# C++ Code for Linked List

```
bool next() {
    if (currentNode == NULL) return false;

    lastCurrentNode = currentNode;
    currentNode = currentNode->getNext();
    if (currentNode == NULL || size == 0)
      return false;
    else
      return true;
};
```