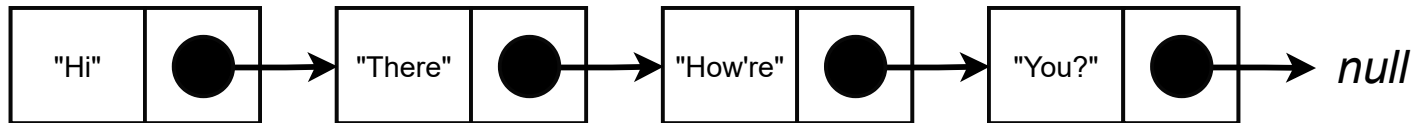
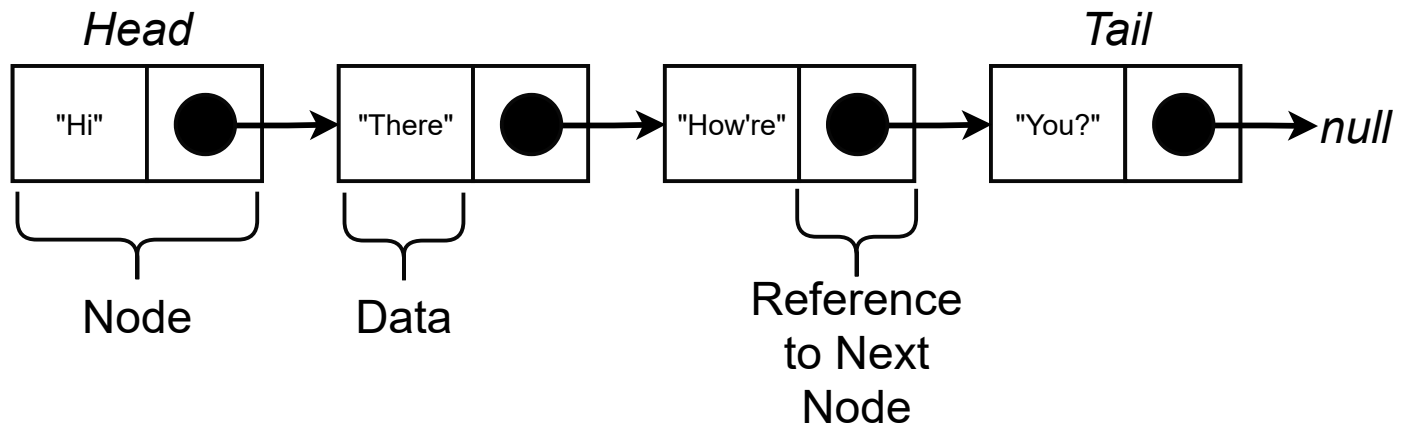


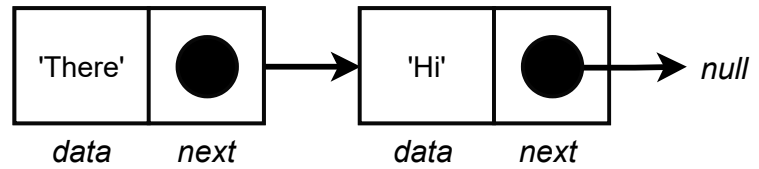
Linked Lists



Linked Lists



```
const n1 = new Node('Hi')  
n1.data // 'Hi'  
n1.next // null  
const n2 = new Node('There', n1);  
n2.next // returns n1
```



Memory Address	Data at Address
1000	Record
1005	Record
1010	Record
1015	Record
1020	Record

"Array" data structure knows where the first element is

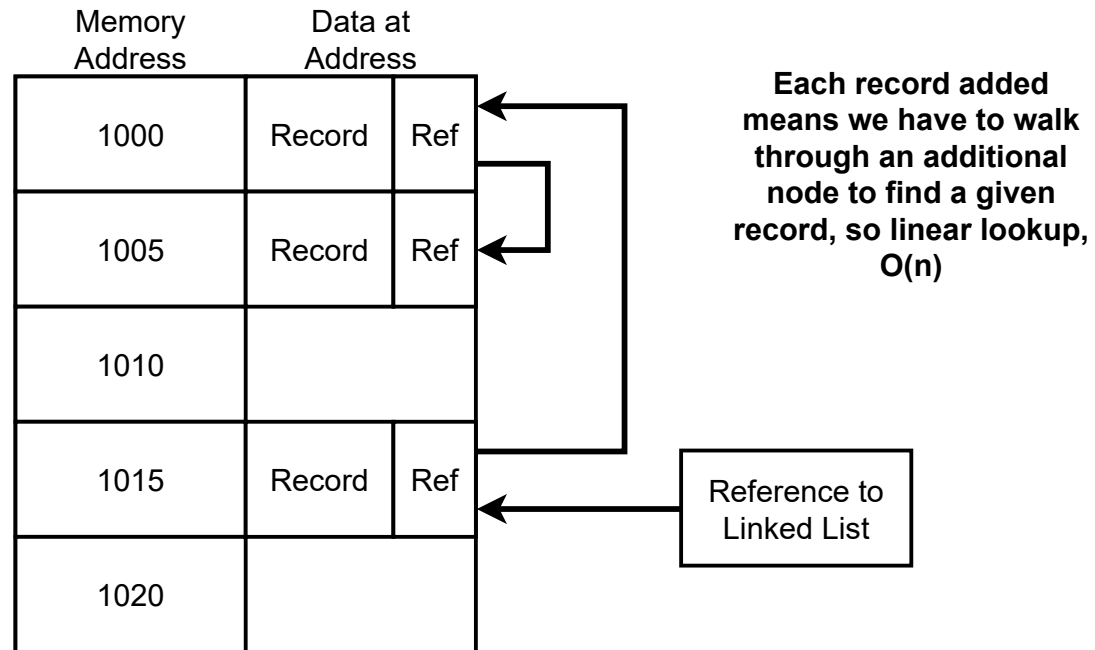
Each record is 5 bytes of data

Memory Address	Data at Address
1000	Record
1005	Record
1010	Record
1015	Record
1020	Record

Third element (index 2) is at address...

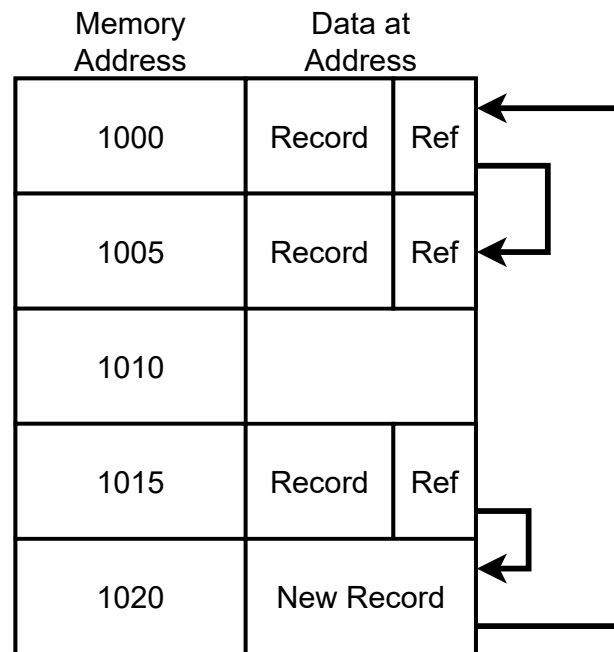
$$1000 + 2 * 5 \text{ bytes} = 1010$$

If we add more records, it will still take the same amount of time to find a given record, so constant time lookup, $O(1)$



Memory Address	Data at Address
1000	Record
1005	Record
1010	New Record!
1015	Record
1020	Record
	Record

**Record Insertion
with Arrays.
 $O(n)$**



**Record Insertion
with Linked Lists.
 $O(1) + \text{Search Time}$**

