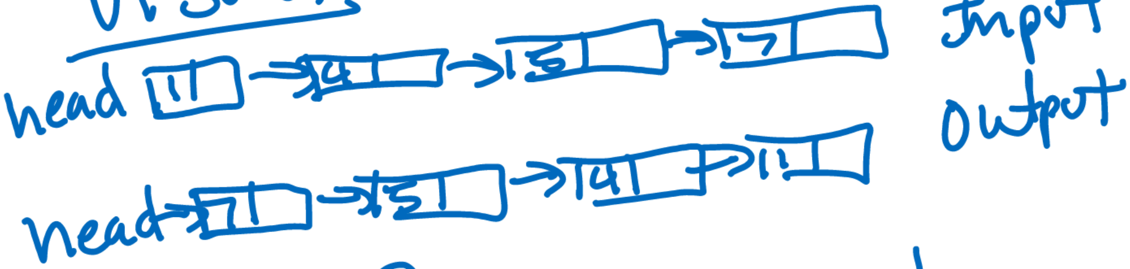
Whiteboard 10

Problem Domain

Reverse a singly linked list without using any built in methods. Aim to have an O(n) Space solution.
*note no return req.

Visual



so how?

Array.size-1 = this.root

?

this.root.next = Array.size-2

while loop? while Array.size>0

Algorithm (LL)

- find size of Linked list using previously coded method
- Create a while loop that derements size until its zero
- set LL root to LL to size -1.
- go through loop till all ListNodes are relinked using next property
- return Reversed list

Big O

this solution keeps O(n) space the same (no new list) and has a single while loop so time is also O(n)

Pseudo Code

```
LL = LinkedList

int size = LL.size() - 1;
this.root = size -1
int cylce = LL.size()
while (cycle < Ø)
    assign this.root.next = size--
then return list
```

Code

```
public static void returnLinkedList(){
    int size = Linked list.size()-1;
    this.root = Linked list[size];
  int cycle = Linked list.size();
  this.root.next = LinkedList[size-1];
  // now new root has new connection to
        next node
  ListNode current = this.root.next;
  while( cycle-2 <0){
  current.next = LinkedList[size-2];
    current = current.next
     size --;
    }
   System.out.println(LinkedList);
}
```

Tests

test for empty list

test for list only one node

" " " " two nodes

test for likedlist with at least four nodes

*Use befor each to setup linkedlists using prepend method for tests