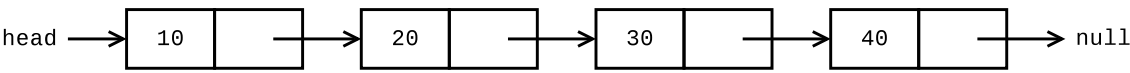


Model 1 Linked List

A more flexible strategy for storing a list of numbers in memory is to use *pointers*. A pointer is a memory address for the next item in the list.



For example, the list [10, 20, 30, 40] could be stored in memory this way:

Address:	74		75	
Value:	...	30	78	
Index:				

We use the memory address 0 to represent the *null pointer*.

Questions (10 min)

Start time: _____

1. How many memory cells are needed for each list item?
2. In the diagram above, write the index of each list item below the corresponding memory cell. Note there are only four items in the list, so you should only have four indexes.
3. Is there a relationship between the index and the corresponding memory address? Why or why not?
4. What is the purpose of the null pointer?
5. The statement `lucky.insert(2, 25)` changes the list to [10, 20, 25, 30, 40]. In Model 1, change the values of memory cells 81, 82, and 83 to perform this insertion.

81	82	83

6. What memory operations does it take to insert a value in the middle of a linked list?

7. Summarize the pros and cons of using an array versus a linked list to represent a list of numbers.