

# Day 15: Linked List



## Objective

Today we're working with *Linked Lists*. Check out the [Tutorial](#) tab for learning materials and an instructional video!

A *Node* class is provided for you in the editor. A *Node* object has an integer data field, *data*, and a *Node* instance pointer, *next*, pointing to another node (i.e.: the next node in a list).

A *Node insert* function is also declared in your editor. It has two parameters: a pointer, *head*, pointing to the first node of a linked list, and an integer *data* value that must be added to the end of the list as a new *Node* object.

## Task

Complete the *insert* function in your editor so that it creates a new *Node* (pass *data* as the *Node* constructor argument) and inserts it at the tail of the linked list referenced by the *head* parameter. Once the new node is added, return the reference to the *head* node.

**Note:** If the *head* argument passed to the *insert* function is *null*, then the initial list is empty.

## Input Format

The *insert* function has **2** parameters: a pointer to a *Node* named *head*, and an integer value, *data*. The constructor for *Node* has **1** parameter: an integer value for the *data* field.

You *do not* need to read anything from stdin.

## Output Format

Your *insert* function should return a reference to the *head* node of the linked list.

## Sample Input

The following input is handled for you by the locked code in the editor:

The first line contains *T*, the number of test cases.

The *T* subsequent lines of test cases each contain an integer to be inserted at the list's tail.

```
4
2
3
4
1
```

## Sample Output

The locked code in your editor prints the ordered data values for each element in your list as a single line of space-separated integers:

```
2 3 4 1
```

## Explanation

*T* = **4**, so the locked code in the editor will be inserting **4** nodes.

The list is initially empty, so *head* is null; accounting for this, our code returns a new node containing the data value **2** as the *head* of our list. We then create and insert nodes **3**, **4**, and **1** at the tail of our list. The resulting list returned by the last call to *insert* is [**2**, **3**, **4**, **1**], so the printed output is **2 3 4 1**.

Initial: head  $\rightarrow$  null

