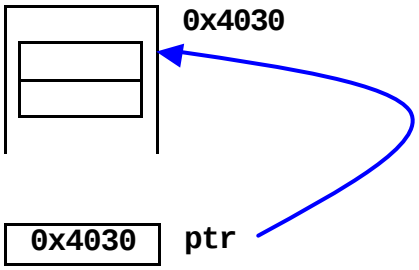
Additional Explanations – Lecture 7 - Nodes

A node is simply like an element in an array, except it is created dynamically by the program as it is running (in the heap). It is a structure that contains data, and a pointer to link it into the list/stack/queue/tree you are creating.

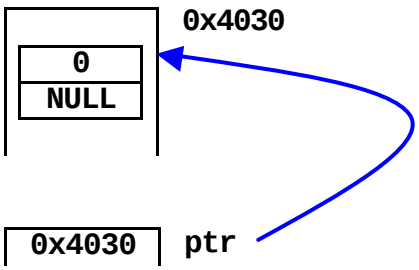
Create a node:

```
struct NodeRec
{
     int data;
     struct NodeRec* next;
};
typedef struct NodeRec Node;


Node* ptr;
ptr = (Node*)malloc(sizeof(Node));
```



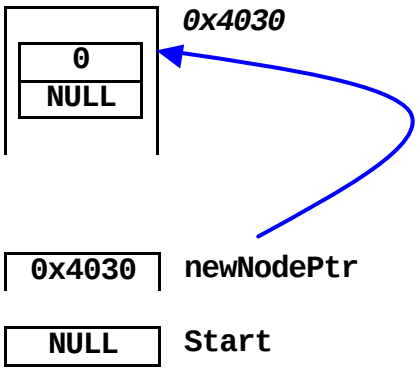
Initialise a node:

```
void init(Node* node)
{
     ptr->next = NULL;
     ptr->data = 0;
     return;
}

init(ptr);
```



To use nodes in a list, a next pointer is used.

Empty list – insert a new node:



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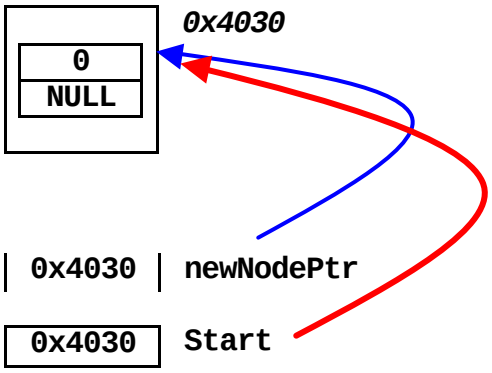
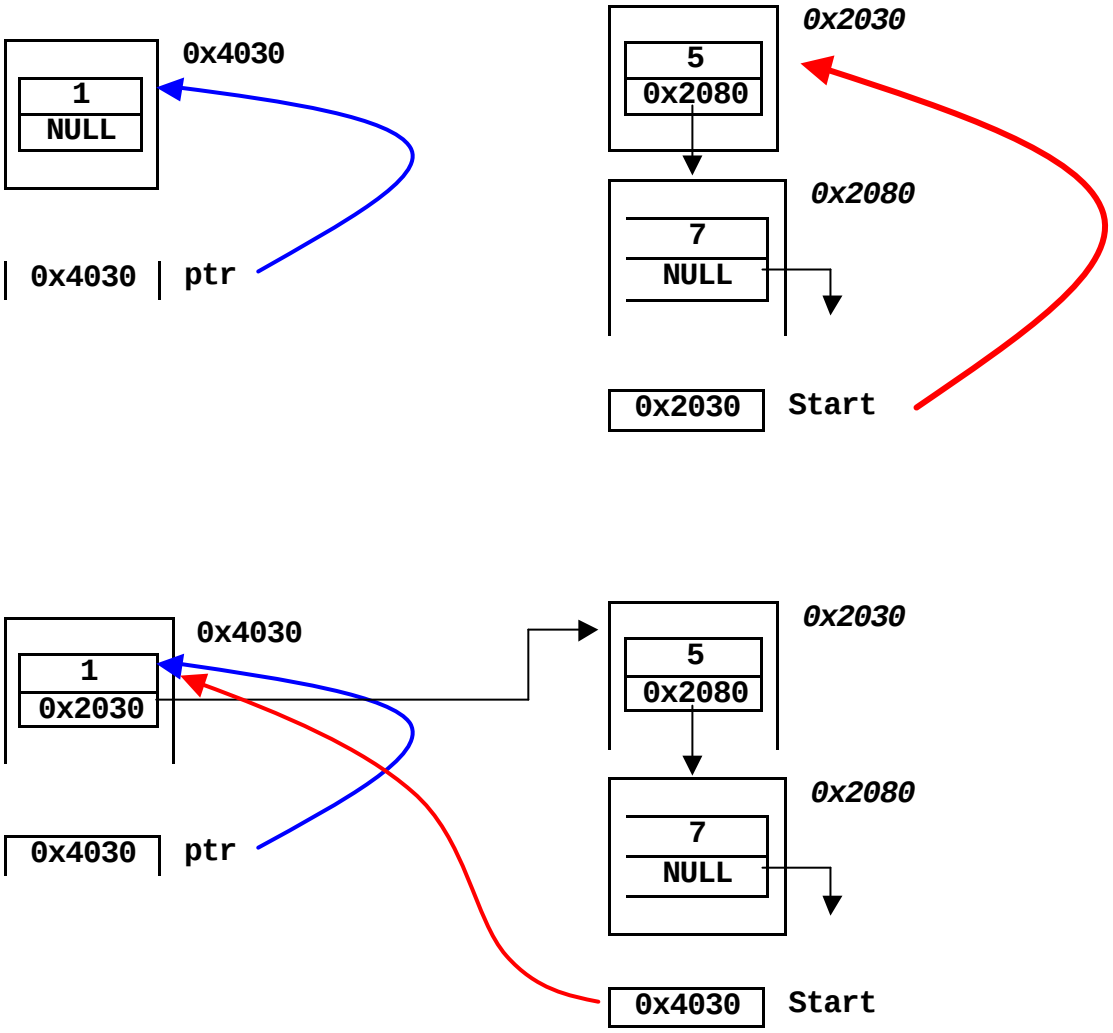
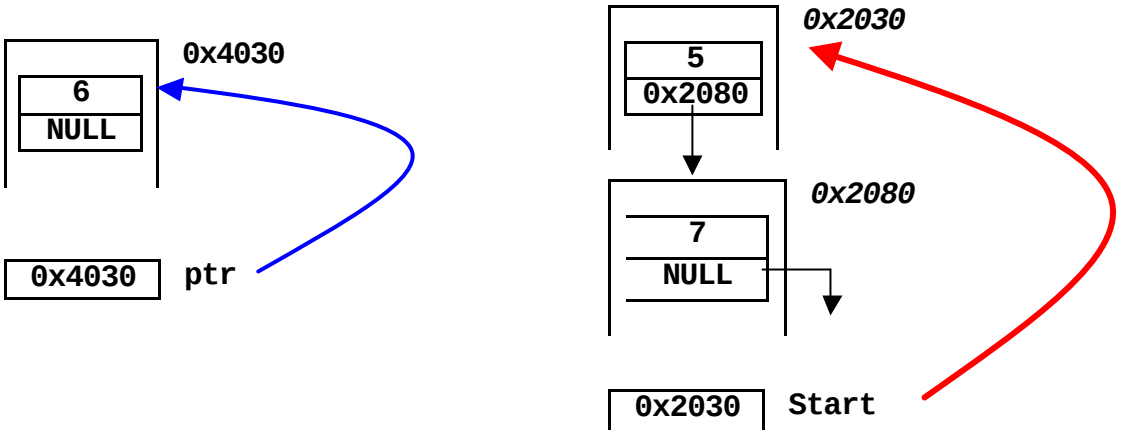
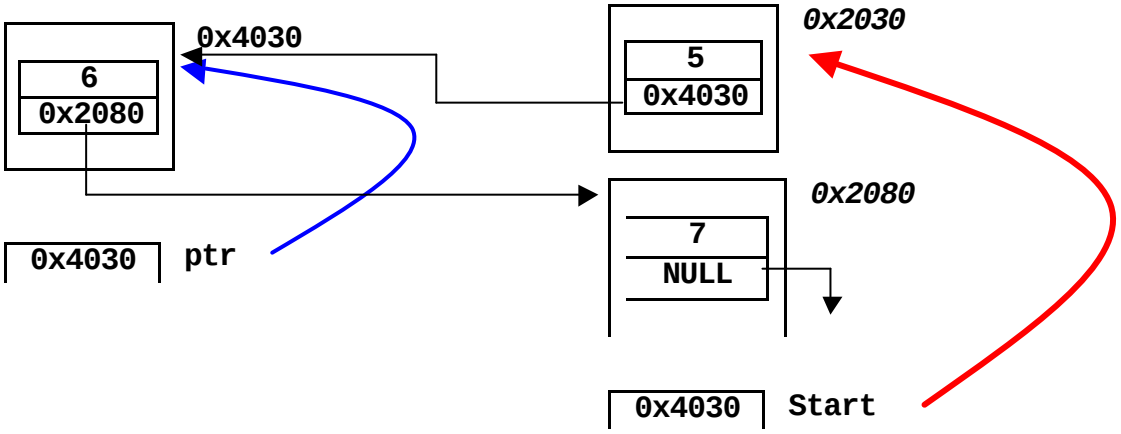


Insert a new node at the start of the list:



Insert a new node into the middle of a list:





Think about deleting from the middle of a list: