C, C++, DSA in depth

Doubly linked list

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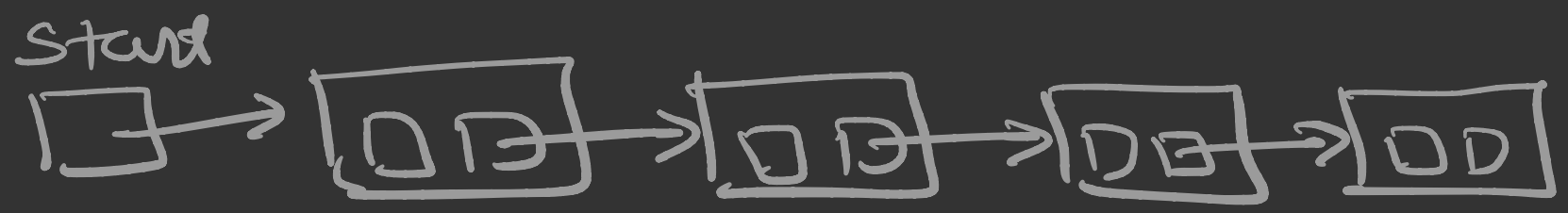
Agenda

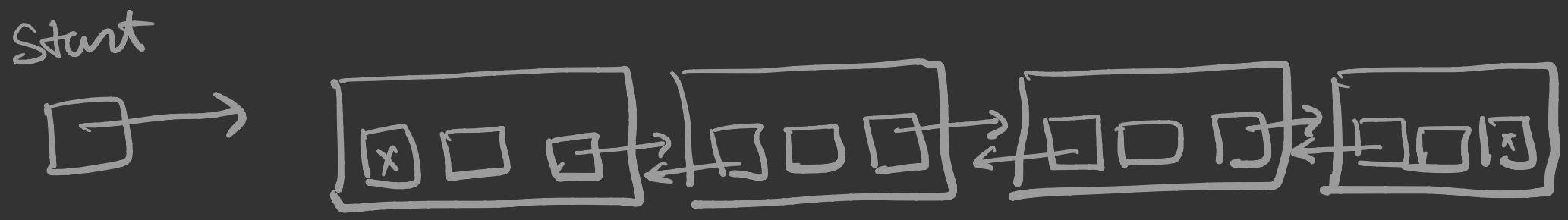
1. Shortcomings of singly linked list
2. Doubly linked list
3. node
4. insertion
5. deletion

Shortcomings of Singly linked list

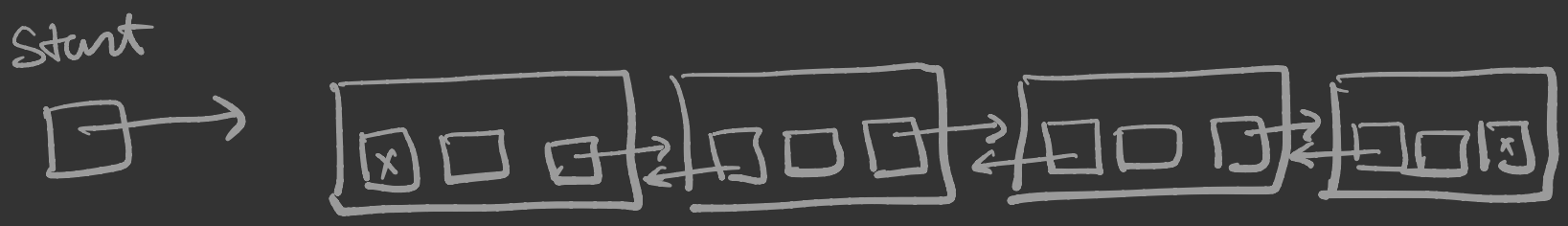


In SLL, you can move only in the forward direction

Doubly linked list

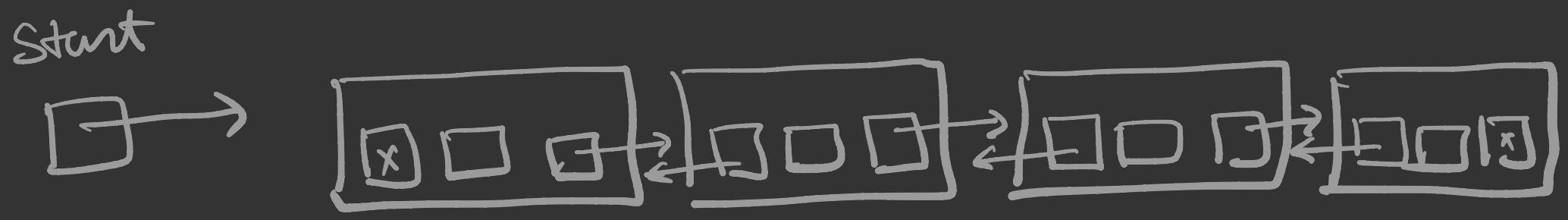


node



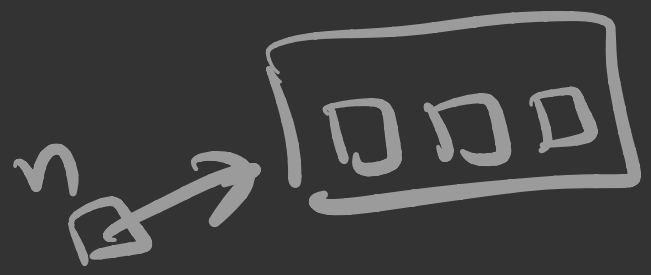

```
struct node
{
    node *prev;
    int item;
    node *next;
};
```

Insertion



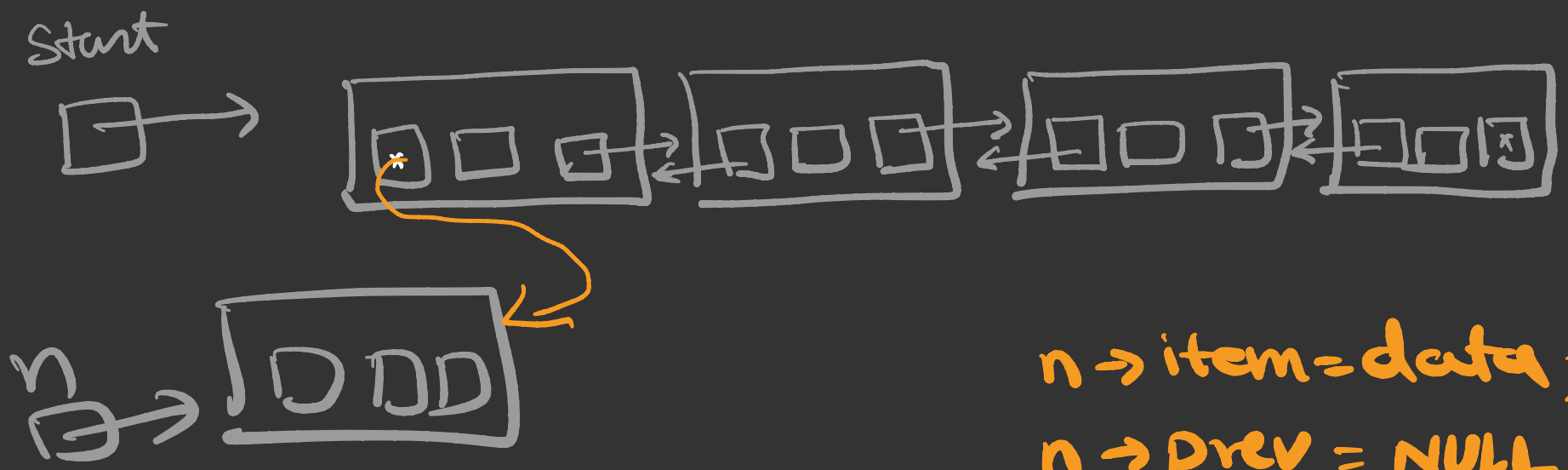
Insertion

1. At First
2. At Last
3. After a node



n -> item = data;

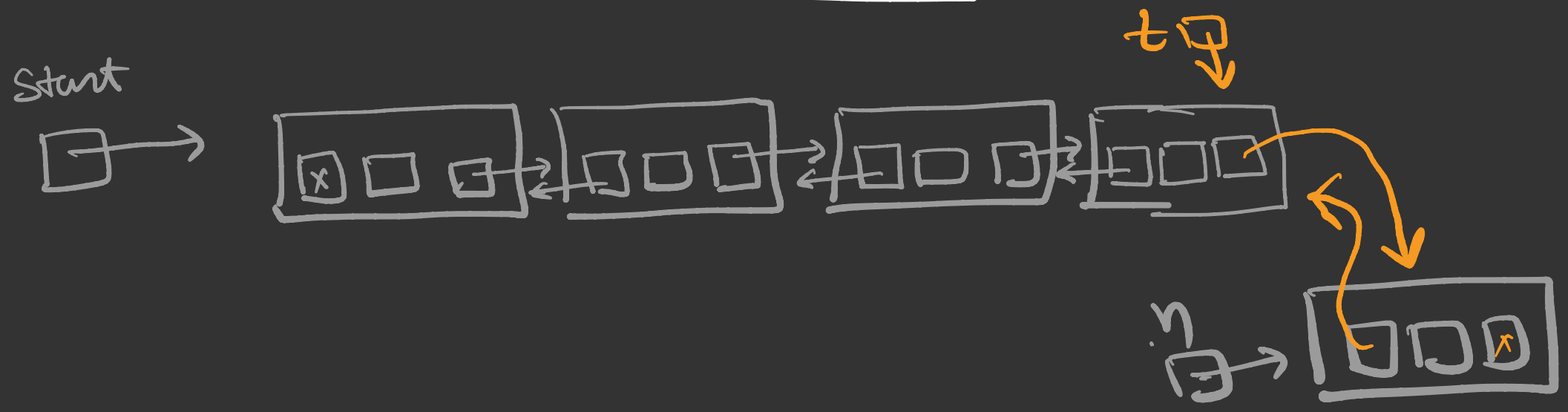
Insert as a first node




```
n->item=data;
n->prev = NULL;
n->next = start;

start->prev= n;
start = n;
```

Insert at last

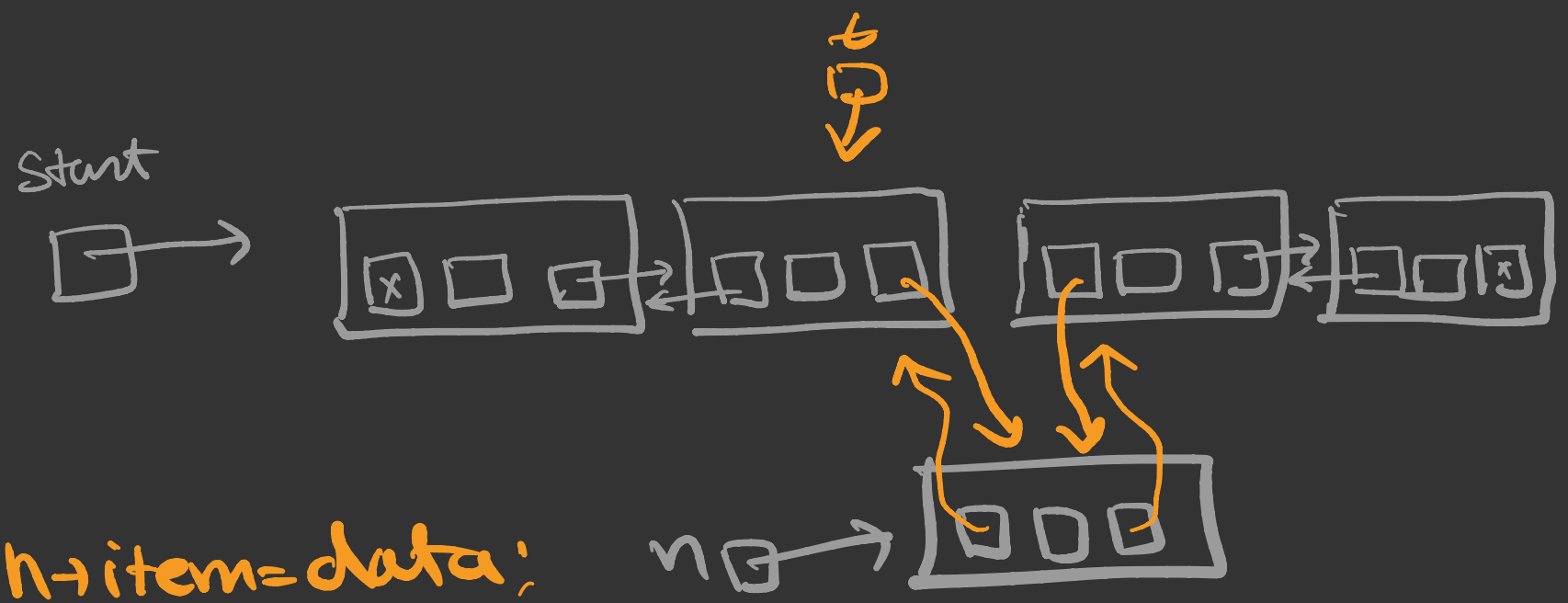



```
n -> item=data;
n -> next = NULL;

t = start;
while (t -> next != NULL)
        t = t -> next;

n -> prev = t;
t -> next = n;
```

Insert After a node




```
n->item=data;
n->prev= t;
n->next = t->next;
if (t->next)
    t->next->prev = n;
t->next =n;
```

Deletion

1. Delete first Node
2. Delete Last Node
3. Delete specific node