Computer Programming 1 Lab

2022/12/29 Andy Hung

Slide here!

Outine

- Link list
- Debug

Linked List

```
1  typedef struct node Node;
2
3  struct node {
4    int value;
5    Node* nextPtr;
6  }
```

Linked List

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3  struct node {
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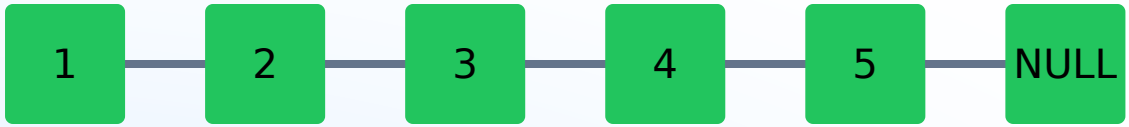
```

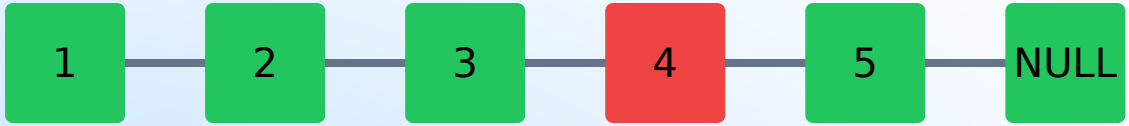
- other concept
- insert
- delete
- remove

Linked List - other concept



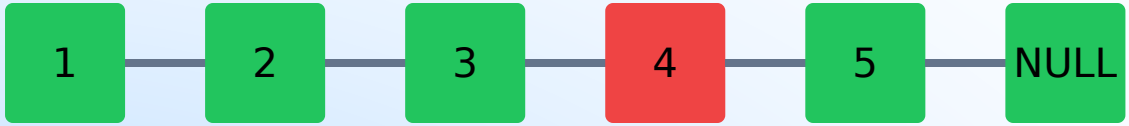
Use a dummy header to avoid strange pointer problem

Linked List - insert




```
1   Node* newPtr = malloc(sizeof(Node));
2   newPtr -> value = 0;
3   newPtr -> nextPtr = currPtr -> nextPtr;
4   currPtr -> nextPtr = newPtr;
```

Linked List - insert

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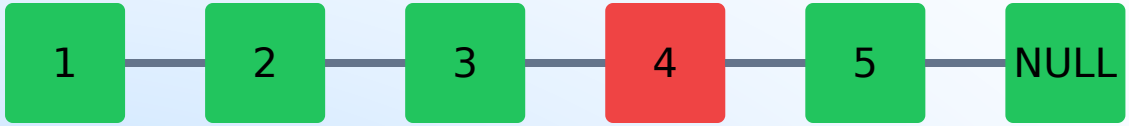


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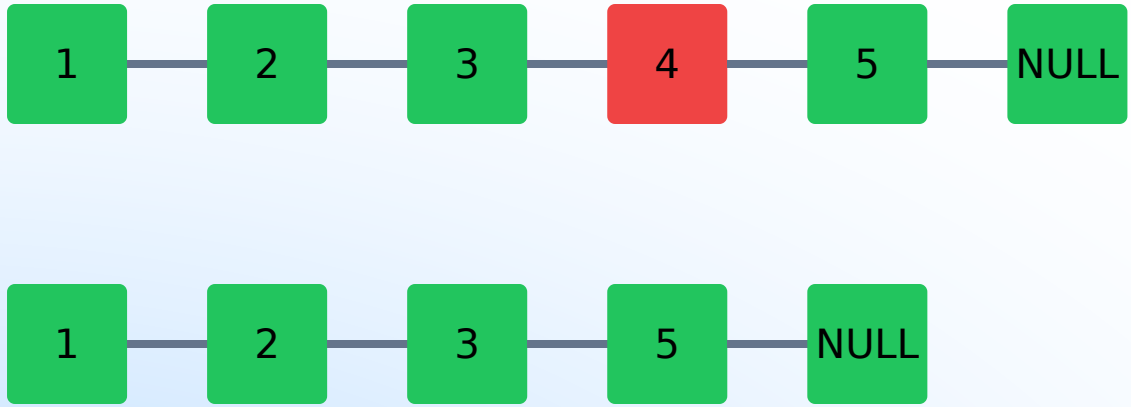
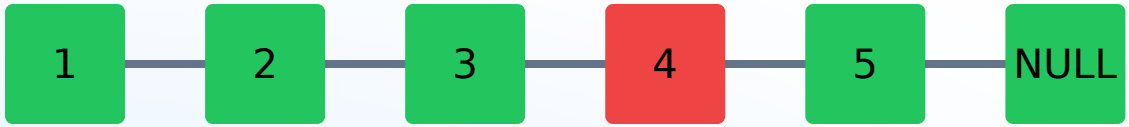


Linked List - delete




```
1   Node* tmpPtr = currPtr -> nextPtr;
2   currPtr -> nextPtr = tmpPtr -> nextPtr;
3   free(tmpPtr);
```

Linked List - remove

```
while(ptr != NULL) {
  Node* nextPtr = ptr -> nextPtr;
  free(ptr);
  ptr = nextPtr;
}
```

Whenever use malloc, use free then.

Debug

- **IO** first, then **Logic**
  - 避免有時候邏輯寫完發現input根本就是錯的。
  - 處理IO時，處理一個程序print一次，循序漸進。

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- Stack Overflow
  - 遞迴過深，檢查終止條件

Debug

- array 開不起來
  - Stack vs heap
  - 用 `malloc` 或用全域變數

Debug

- array 開不起來
  - Stack vs heap
  - 用 `malloc` 或用全域變數
- local vs ghost vs oj
  - gcc version
  - `llvm` vs `gcc`

Debug friend - GDB

- Vscode instruction: WSL setup
- You can also use `gdb` command: GeekForGeeks.
- Other platforms have other good tools.

No exercise this year

END