

Computer Programming 1 Lab

2022/12/29 Andy Hung



Outline

- Link list
- Debug

Linked List

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

- other concept
- insert
- delete
- remove

Linked List - other concept



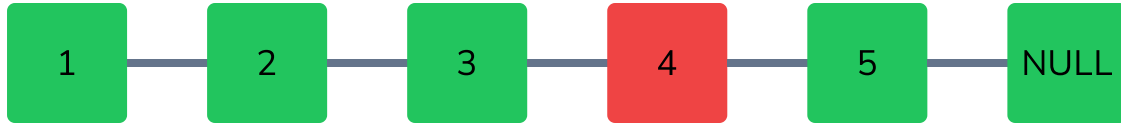
Use a dummy header to avoid strange pointer problem

Linked List - insert



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

Linked List - delete



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

Linked List - remove

```
1  while(ptr ≠ NULL) {  
2      Node* nextPtr = ptr → nextPtr;  
3      free(ptr);  
4      ptr = nextPtr;  
5  }
```

Whenever use malloc, use free then.

Debug

- IO first, then Logic

- `scanf("%d",&i);`
- `printf("%d",i);`

- TLE

- `while(1)` ex: recursive, i-
- `while(1)` oj

- Segmentation fault

- array index link list `NULL` `nextPtr`
- `scanf("%d",&i);`

- Stack Overflow

- `scanf("%d",&i);`

Debug

- array 问题
 - Stack vs heap
 - ``malloc`` 问题
- 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

