

CSE 202 Midterm 1 Part (a)

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I. QUESTION (ALGORITHM ANALYSIS) (15 POINTS)

Given the following function

```
int magic(int N){
    if (N == 0)
        return 0;
    int sum = 0;
    for (i = 0; i < N; i++)
        sum++;
    return algorithm(N / 2) + sum;
}
```

What is the time complexity of magic? Explain your result. Do not use the master theorem.

II. QUESTION (LINKEDLIST) (20 POINTS)

Write the method

```
void removeKth(int K)
```

which deletes K 'th node from a doubly linked list.

III. QUESTION (STACK) (15 POINTS)

Write a function which removes only the K bottom elements of the stack.

```
void removeBottomK(int K)
```

You are only allowed to use pop, push, isEmpty functions.