

1) (10 pts) ANL (Algorithm Analysis) What is the Big-Oh memory usage for the function call `createNode(N)`? Please provide your answer in terms of the input parameter, N . **Please justify your answer by either evaluating an appropriate recurrence relation or summation.**

```
typedef struct Node Node;
struct Node {
    Node ** children;
    int val;
};
Node * createNode(int N) {
    Node * res = (Node *) malloc(sizeof(Node));
    if (N == 0) return res;
    res->children = (Node **) malloc(sizeof(Node*) * N);
    res->children[0] = createNode(N / 2);
    res->val = 0;
    for (int i = 0; i < N; i++)
        res->val += i;

    return res;
}
```