

### 1) (10 pts) ANL (Algorithm Analysis)

What is the worst case Big-Oh runtime for the function **f**, in terms of its input parameter **n**? You may assume that the array pointed to by **arr** is of length **n**. (Grading note: 2 pts will be awarded for the answer, 8 pts for the proof of the answer. Your proof must include either summations or recurrence relations related to the code below.)

```
int f(int* arr, int n, int minVal) {
    return fHelp(arr, 0, n-1, minVal);
}

int fHelp(int* arr, int low, int high, int minVal) {
    if (low > high) return 0;
    if (low == high) return arr[low] >= minVal;

    int mid = (low+high)/2;
    int left = fHelp(arr, low, mid, minVal);
    int right = fHelp(arr, mid+1, high, minVal);
    int res = left;
    if (right > left)
        res = right;

    int alt = 0, i;
    for (i=mid; i>=low; i--) {
        if (arr[i] < minVal) break;
        alt++;
    }
    for (i=mid+1; i<=high; i++) {
        if (arr[i] < minVal) break;
        alt++;
    }

    if (alt > res) res = alt;
    return res;
}
```