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#include <stdio.h>

// Warning: getax is effectively returning two outputs
// It is returning one integer, but is also modifying
// the value of nn to tell Mr C who called this function,
// which node sent/received the max number of messages
int getMax(int *a, int n, int *nn){
    int max = -1, i;
    for(i = 0; i < n; i++){
        if(a[i] > max){
            max = a[i];
            *nn = i;
        }
    }
    return max;
}

int getZero(int *a, int n){
    int count = 0, i;
    for(i = 0; i < n; i++){
        if(a[i] == 0)
            count++;
    }
    return count;
}

int main(){
    int n, i, j, node;
    scanf("%d\n", &n);
    int received[n], sent[n];

    // Reset all counts to zero to be safe
    for(i = 0; i < n; i++)
        received[i] = sent[i] = 0;

    // A message was sent from i to j
    scanf("%d %d", &i, &j);
    while(i >= 0 && j >= 0){
        sent[i]++;
        received[j]++;
        // Next message please
        scanf("%d %d", &i, &j);
    }

    printf("%d NODES SENT NO MESSAGES\n", getZero(sent, n));
    printf("%d NODES RECEIVED NO MESSAGES\n", getZero(received, n));
    printf("MAX %d MESSAGES SENT BY NODE %d\n", getMax(sent, n, &node), node);
    printf("MAX %d MESSAGES RECEIVED BY NODE %d", getMax(received, n, &node), node);

    return 0;
}
```