Is it possible to use the linear selection algorithm on an even number of groups? Is it also possible to use the linear selection algorithm on a group with even number in each group?

For example, how would I solve this problem?

Quote: Consider running the linear selection algorithm on an array of n unique elements. What is a tight lower bound on the number of elements less than the median of medians? Assume the median of medians is found with groups of SIX and that there are an EVEN number of groups.

Subject: Re: Even numbers using the linear selection algorithm
Posted by SSinischo on Mon, 27 Mar 2017 23:50:36 GMT

Someone correct me if I'm wrong, but if we have groups with an even number of objects, we can't find a median without interpolation... which doesn't work here. Same with number of groups. We can run the linear selection algorithm with an even number of groups, but I don't think we can find a tight upper/lower bound without subtracting or adding a group.

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Subject: Re: Even numbers using the linear selection algorithm
Posted by lusth on Tue, 28 Mar 2017 12:02:03 GMT

The algorithm would work with an even number of items in a group; you could just choose the lower or the upper of the two candidates for median. The math would work out a little differently, but would not be difficult if you always chose the lower (or upper).

Likewise, for an even number of groups, you could always assume the small side calculation is missing a group.

Subject: Re: Even numbers using the linear selection algorithm
Posted by SSinischo on Tue, 28 Mar 2017 14:11:45 GMT

lusth wrote on Tue, 28 March 2017 07:02

Likewise, for an even number of groups, you could always assume the small side calculation is missing a group.
However since you make that assumption, would it be correct to say that this calculation is not a tight bound?

Subject: Re: Even numbers using the linear selection algorithm
Posted by lusth on Fri, 31 Mar 2017 13:33:11 GMT
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It would still be tight.