Feedback for C2y

WG14 N3350

Title: Survey results for naming of new nelementsof() operator

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Date: 2024-09-18

Proposal category: New features

Target audience: Committee

Abstract: This paper presents the results of a survey of colleagues, who were asked to rank potential names of a new C language operator that would evaluate the number of elements in a specified array.

Prior art: N3325 2024/09/01 Colomar, New nelementsof() operator (v3)

Survey results for naming of new nelementsof() operator

Methodology

The survey was conducted for a period of one week from 10/9/2024 till 18/9/2024, using Microsoft Forms (https://forms.office.com). Only people in Arm could respond. Names of respondents were recorded, but that data is not presented here.

No preference or bias was given to participants. The only prior reading offered was a link to N3325 in the WG14 document log, for the purpose of supplying context.

Empty responses (in which there was no change in ranking) were eliminated and each respondent who had accidentally submitted an empty response was invited to submit a valid response.

Participants

Participants were a self-selecting group of volunteers, representing a mixture of programmers with varying levels of experience in C and other languages. Respondents ranged in grade from Graduate Engineers to Technical Leads and Principal Software Engineers.

Survey form

Naming of a C standard replacement for (sizeof(array) / sizeof((array)[0]))

WG14 n3325 is a proposal for a new operator or macro that yields the number of elements of an array in a C program. I am collecting opinions on what this operator should be named. I will feed the results directly back to the C standard committee.

Please rank these names for an operator to replace (sizeof(array) / sizeof((array)[0])), considering both clarity (is the meaning obvious?) and ease of use (it is easy to type?).

- *dimensionof (or _Dimensionof)*

- *dimof (or _Dimof)*

- *elementsof (or _Elementsof)*

- *extentof (or _Extentof)*

- *lengthof (or _Lengthof)*

- *lenof (or _Lenof)*

- *nelemsof (or _Nelemsof)*

- *nelementsof (or _Nelementsof)*

- *neltsof (or _Neltsof)*

- *rangeof (or _Rangeof)*

Survey results

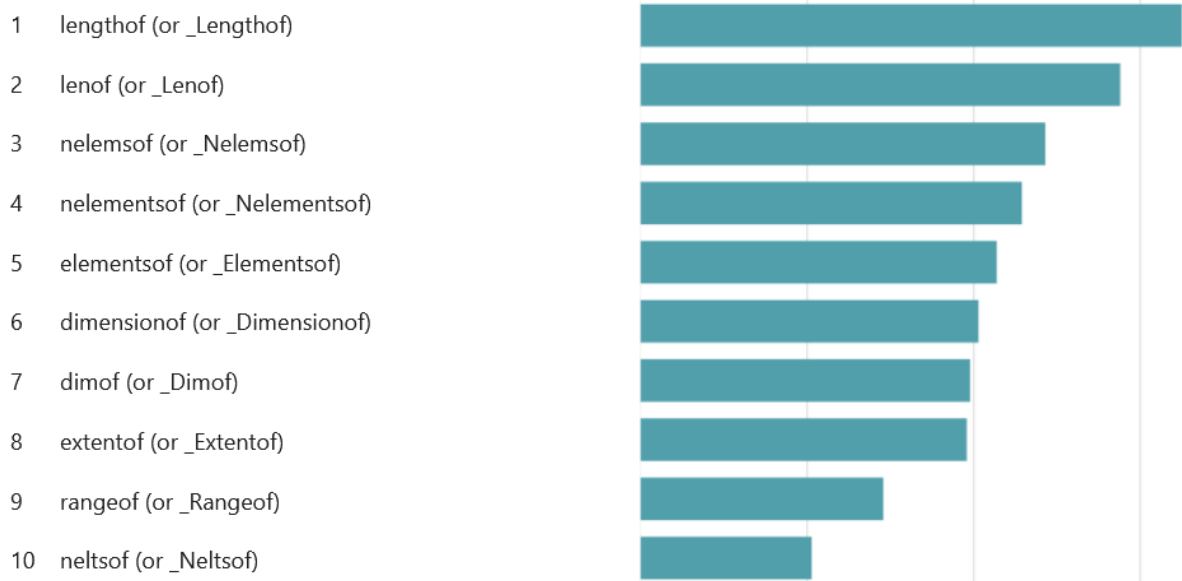39 Responses

Average time to complete: 05:13

Id	Start time	Completion time	Please rank these names for an operator to replace (sizeof(array) / sizeof((array)[0])), considering both clarity (is the meaning obvious?) and ease of use (it is easy to type?).
1	10/09/2024 11:15	10/09/2024 11:15	lenof (or _Lenof); lengthof (or _Lengthof); nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); extentof (or _Extentof); dimof (or _Dimof); dimensionof (or _Dimensionof); rangeof (or _Rangeof); neltsof (or _Neltsof); elementsof (or _Elementsof);
2	10/09/2024 11:14	10/09/2024 11:17	lengthof (or _Lengthof); elementsof (or _Elementsof); nelementsof (or _Nelementsof); rangeof (or _Rangeof); dimensionof (or _Dimensionof); extentof (or _Extentof); lenof (or _Lenof); dimof (or _Dimof); nelemsof (or _Nelemsof); neltsof (or _Neltsof);
3	10/09/2024 11:17	10/09/2024 11:18	lengthof (or _Lengthof); lenof (or _Lenof); dimof (or _Dimof); elementsof (or _Elementsof); dimensionof (or _Dimensionof); nelementsof (or _Nelementsof); nelemsof (or _Nelemsof); extentof (or _Extentof); rangeof (or _Rangeof); neltsof (or _Neltsof);
4	10/09/2024 11:18	10/09/2024 11:19	nelementsof (or _Nelementsof); nelemsof (or _Nelemsof); lengthof (or _Lengthof); lenof (or _Lenof); dimensionof (or _Dimensionof); dimof (or _Dimof); extentof (or _Extentof); rangeof (or _Rangeof); elementsof (or _Elementsof); neltsof (or _Neltsof);
5	10/09/2024 11:17	10/09/2024 11:21	lengthof (or _Lengthof); lenof (or _Lenof); extentof (or _Extentof); rangeof (or _Rangeof); dimensionof (or _Dimensionof); dimof (or _Dimof); nelementsof (or _Nelementsof); elementsof (or _Elementsof); nelemsof (or _Nelemsof); neltsof (or _Neltsof);
6	10/09/2024 11:24	10/09/2024 11:28	lenof (or _Lenof); lengthof (or _Lengthof); dimensionof (or _Dimensionof); dimof (or _Dimof); elementsof (or _Elementsof); extentof (or _Extentof); nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); neltsof (or _Neltsof); rangeof (or _Rangeof);
7	10/09/2024 11:29	10/09/2024 11:32	lengthof (or _Lengthof); nelementsof (or _Nelementsof); nelemsof (or _Nelemsof); extentof (or _Extentof); lenof (or _Lenof); dimensionof (or _Dimensionof); dimof (or _Dimof); rangeof (or _Rangeof); elementsof (or _Elementsof); neltsof (or _Neltsof);
8	10/09/2024 11:30	10/09/2024 11:32	nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); extentof (or _Extentof); elementsof (or _Elementsof); rangeof (or _Rangeof); lengthof (or _Lengthof); dimensionof (or _Dimensionof); neltsof (or _Neltsof); dimof (or _Dimof); lenof (or _Lenof);
9	10/09/2024 11:35	10/09/2024 11:37	elementsof (or _Elementsof); lenof (or _Lenof); lengthof (or _Lengthof); nelementsof (or _Nelementsof); nelemsof (or _Nelemsof); dimensionof (or _Dimensionof); extentof (or _Extentof); dimof (or _Dimof); neltsof (or _Neltsof); rangeof (or _Rangeof);
10	10/09/2024 11:47	10/09/2024 11:49	lengthof (or _Lengthof); lenof (or _Lenof); extentof (or _Extentof); dimensionof (or _Dimensionof); elementsof (or _Elementsof); nelementsof (or _Nelementsof); dimof (or _Dimof); nelemsof (or _Nelemsof); neltsof (or _Neltsof); rangeof (or _Rangeof);
11	10/09/2024 11:43	10/09/2024 11:55	lenof (or _Lenof); dimof (or _Dimof); nelemsof (or _Nelemsof); lengthof (or _Lengthof); extentof (or _Extentof); neltsof (or _Neltsof); nelementsof (or _Nelementsof); rangeof (or _Rangeof); dimensionof (or _Dimensionof); elementsof (or _Elementsof);

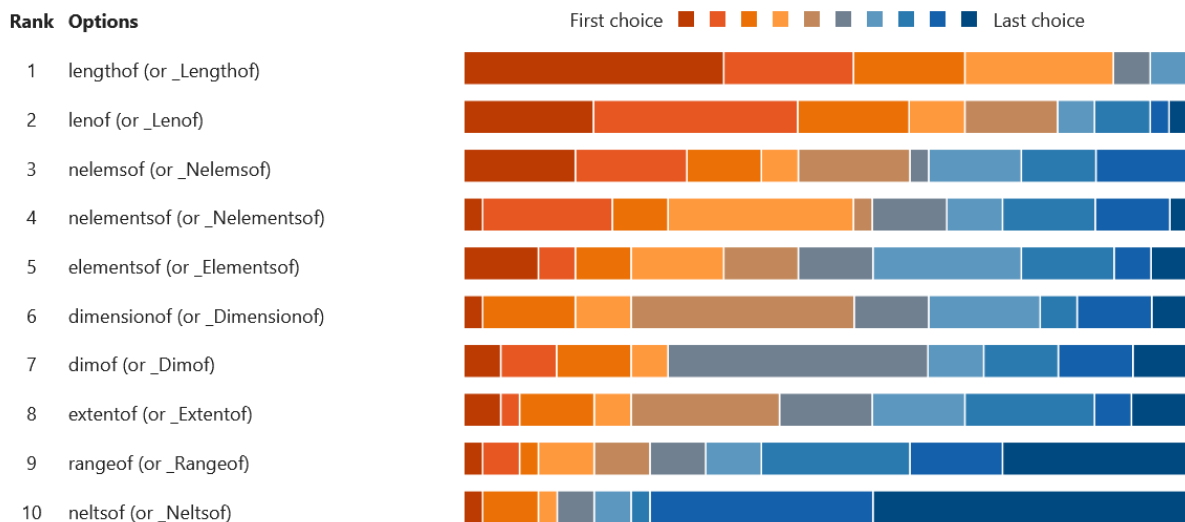|			
14	10/09/2024 13:45	10/09/2024 13:48	lenof (or _Lenof); lengthof (or _Lengthof); dimof (or _Dimof); elementsof (or _Elementsof); dimensionof (or _Dimensionof); rangeof (or _Rangeof); extentof (or _Extentof); nelementsof (or _Nelementsof); nelemsof (or _Nelemsof); neltsof (or _Neltsof);
15	10/09/2024 14:51	10/09/2024 14:53	lenof (or _Lenof); rangeof (or _Rangeof); neltsof (or _Neltsof); lengthof (or _Lengthof); nelemsof (or _Nelemsof); elementsof (or _Elementsof); nelementsof (or _Nelementsof); extentof (or _Extentof); dimof (or _Dimof); dimensionof (or _Dimensionof);
16	10/09/2024 16:13	10/09/2024 16:51	nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); neltsof (or _Neltsof); lengthof (or _Lengthof); lenof (or _Lenof); elementsof (or _Elementsof); extentof (or _Extentof); rangeof (or _Rangeof); dimensionof (or _Dimensionof); dimof (or _Dimof)
17	11/09/2024 10:56	11/09/2024 10:57	nelemsof (or _Nelemsof); lenof (or _Lenof); nelementsof (or _Nelementsof); lengthof (or _Lengthof); dimensionof (or _Dimensionof); rangeof (or _Rangeof); elementsof (or _Elementsof); extentof (or _Extentof); neltsof (or _Neltsof); dimof (or _Dimof)
18	11/09/2024 10:55	11/09/2024 11:02	dimof (or _Dimof); nelemsof (or _Nelemsof); lenof (or _Lenof); lengthof (or _Lengthof); extentof (or _Extentof); nelementsof (or _Nelementsof); dimensionof (or _Dimensionof); elementsof (or _Elementsof); rangeof (or _Rangeof); neltsof (or _Neltsof)
19	11/09/2024 11:15	11/09/2024 11:17	lengthof (or _Lengthof); rangeof (or _Rangeof); elementsof (or _Elementsof); dimensionof (or _Dimensionof); extentof (or _Extentof); dimof (or _Dimof); lenof (or _Lenof); nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); neltsof (or _Neltsof)
20	11/09/2024 10:59	11/09/2024 11:22	lengthof (or _Lengthof); nelementsof (or _Nelementsof); dimensionof (or _Dimensionof); nelemsof (or _Nelemsof); lenof (or _Lenof); dimof (or _Dimof); neltsof (or _Neltsof); elementsof (or _Elementsof); rangeof (or _Rangeof); extentof (or _Extentof)
21	11/09/2024 11:20	11/09/2024 11:23	nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); dimensionof (or _Dimensionof); dimof (or _Dimof); elementsof (or _Elementsof); extentof (or _Extentof); lengthof (or _Lengthof); lenof (or _Lenof); neltsof (or _Neltsof); rangeof (or _Rangeof)
22	11/09/2024 11:28	11/09/2024 11:30	elementsof (or _Elementsof); nelemsof (or _Nelemsof); lengthof (or _Lengthof); nelementsof (or _Nelementsof); dimensionof (or _Dimensionof); dimof (or _Dimof); extentof (or _Extentof); rangeof (or _Rangeof); lenof (or _Lenof); neltsof (or _Neltsof)
23	11/09/2024 10:55	11/09/2024 11:34	elementsof (or _Elementsof); lengthof (or _Lengthof); dimensionof (or _Dimensionof); extentof (or _Extentof); lenof (or _Lenof); dimof (or _Dimof); rangeof (or _Rangeof); nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); neltsof (or _Neltsof)
24	11/09/2024 13:07	11/09/2024 13:08	lengthof (or _Lengthof); elementsof (or _Elementsof); lenof (or _Lenof); nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); dimensionof (or _Dimensionof); dimof (or _Dimof); extentof (or _Extentof); neltsof (or _Neltsof); rangeof (or _Rangeof)
25	11/09/2024 13:39	11/09/2024 13:42	lengthof (or _Lengthof); lenof (or _Lenof); rangeof (or _Rangeof); nelementsof (or _Nelementsof); nelemsof (or _Nelemsof); neltsof (or _Neltsof); elementsof (or _Elementsof); dimensionof (or _Dimensionof); dimof (or _Dimof); extentof (or _Extentof)
26	13/09/2024 10:10	13/09/2024 10:11	lenof (or _Lenof); nelemsof (or _Nelemsof); lengthof (or _Lengthof); nelementsof (or _Nelementsof); extentof (or _Extentof); rangeof (or _Rangeof); neltsof (or _Neltsof); elementsof (or _Elementsof); dimensionof (or _Dimensionof); dimof (or _Dimof)
28	16/09/2024 12:36	16/09/2024 12:49	lengthof (or _Lengthof); nelemsof (or _Nelemsof); lenof (or _Lenof); nelementsof (or _Nelementsof); dimensionof (or _Dimensionof); dimof (or _Dimof); elementsof (or _Elementsof); extentof (or _Extentof); neltsof (or _Neltsof); rangeof (or _Rangeof)

30	16/09/2024 21:28	16/09/2024 21:29	dimensionof (or _Dimensionof); dimof (or _Dimof); lenof (or _Lenof); elementsof (or _Elementsof); extentof (or _Extentof); lengthof (or _Lengthof); nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); neltsof (or _Neltsof); rangeof (or _Rangeof)
31	17/09/2024 07:00	17/09/2024 07:02	nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); elementsof (or _Elementsof); lengthof (or _Lengthof); lenof (or _Lenof); dimof (or _Dimof); dimensionof (or _Dimensionof); rangeof (or _Rangeof); extentof (or _Extentof); neltsof (or _Neltsof)
33	17/09/2024 08:41	17/09/2024 08:43	lengthof (or _Lengthof); lenof (or _Lenof); extentof (or _Extentof); nelementsof (or _Nelementsof); dimensionof (or _Dimensionof); dimof (or _Dimof); nelemsof (or _Nelemsof); elementsof (or _Elementsof); rangeof (or _Rangeof); neltsof (or _Neltsof)
34	17/09/2024 09:17	17/09/2024 09:25	neltsof (or _Neltsof); lenof (or _Lenof); dimof (or _Dimof); lengthof (or _Lengthof); nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); elementsof (or _Elementsof); dimensionof (or _Dimensionof); rangeof (or _Rangeof); extentof (or _Extentof)
35	17/09/2024 10:01	17/09/2024 10:15	extentof (or _Extentof); lengthof (or _Lengthof); lenof (or _Lenof); elementsof (or _Elementsof); dimensionof (or _Dimensionof); dimof (or _Dimof); rangeof (or _Rangeof); nelementsof (or _Nelementsof); nelemsof (or _Nelemsof); neltsof (or _Neltsof)
37	17/09/2024 11:19	17/09/2024 11:19	extentof (or _Extentof); lengthof (or _Lengthof); dimensionof (or _Dimensionof); nelementsof (or _Nelementsof); rangeof (or _Rangeof); dimof (or _Dimof); elementsof (or _Elementsof); lenof (or _Lenof); nelemsof (or _Nelemsof); neltsof (or _Neltsof)
38	17/09/2024 14:21	17/09/2024 14:22	dimof (or _Dimof); extentof (or _Extentof); lengthof (or _Lengthof); lenof (or _Lenof); nelemsof (or _Nelemsof); dimensionof (or _Dimensionof); elementsof (or _Elementsof); rangeof (or _Rangeof); neltsof (or _Neltsof); nelementsof (or _Nelementsof)
39	17/09/2024 15:28	17/09/2024 15:29	lenof (or _Lenof); lengthof (or _Lengthof); nelemsof (or _Nelemsof); rangeof (or _Rangeof); dimensionof (or _Dimensionof); dimof (or _Dimof); elementsof (or _Elementsof); extentof (or _Extentof); nelementsof (or _Nelementsof); neltsof (or _Neltsof)
40	17/09/2024 17:45	17/09/2024 17:47	elementsof (or _Elementsof); nelemsof (or _Nelemsof); nelementsof (or _Nelementsof); neltsof (or _Neltsof); rangeof (or _Rangeof); extentof (or _Extentof); lengthof (or _Lengthof); lenof (or _Lenof); dimof (or _Dimof); dimensionof (or _Dimensionof)
41	9/17/2024 19:04	9/17/2024 19:05	lengthof (or _Lengthof);lenof (or _Lenof);neltsof (or _Neltsof);nelementsof (or _Nelementsof);elementsof (or _Elementsof);nelemsof (or _Nelemsof);dimensionof (or _Dimensionof);dimof (or _Dimof);extentof (or _Extentof);rangeof (or _Rangeof)
42	9/17/2024 19:24	9/17/2024 19:24	lengthof (or _Lengthof);lenof (or _Lenof);dimof (or _Dimof);dimensionof (or _Dimensionof);extentof (or _Extentof);elementsof (or _Elementsof);rangeof (or _Rangeof);nelemsof (or _Nelemsof);nelementsof (or _Nelementsof);neltsof (or _Neltsof)
43	9/18/2024 10:07	9/18/2024 10:07	nelemsof (or _Nelemsof);nelementsof (or _Nelementsof);lengthof (or _Lengthof);lenof (or _Lenof);dimensionof (or _Dimensionof);dimof (or _Dimof);elementsof (or _Elementsof);extentof (or _Extentof);neltsof (or _Neltsof);rangeof (or _Rangeof)
44	9/18/2024 10:14	9/18/2024 10:14	rangeof (or _Rangeof);dimof (or _Dimof);lenof (or _Lenof);lengthof (or _Lengthof);extentof (or _Extentof);elementsof (or _Elementsof);nelemsof (or _Nelemsof);nelementsof (or _Nelementsof);dimensionof (or _Dimensionof);neltsof (or _Neltsof)

| 45 | 9/18/2024 10:14 | 9/18/2024 10:15 | lengthof (or _Lengthof);lenof (or _Lenof);elementsof (or _Elementsof);nelementsof (or _Nelementsof);nelemsof (or _Nelemsof);extentof (or _Extentof);dimensionof (or _Dimensionof);dimof (or _Dimof);neltsof (or _Neltsof);rangeof (or _Rangeof) |

Visualisation of results

1	lengthof (or _Lengthof)	
2	lenof (or _Lenof)	
3	nelemsof (or _Nelemsof)	
4	nelementsof (or _Nelementsof)	
5	elementsof (or _Elementsof)	
6	dimensionof (or _Dimensionof)	
7	dimof (or _Dimof)	
8	extentof (or _Extentof)	
9	rangeof (or _Rangeof)	
10	neltsof (or _Neltsof)	

Detailed visualisation of results

Rank	Options
1	lengthof (or _Lengthof)
2	lenof (or _Lenof)
3	nelemsof (or _Nelemsof)
4	nelementsof (or _Nelementsof)
5	elementsof (or _Elementsof)
6	dimensionof (or _Dimensionof)
7	dimof (or _Dimof)
8	extentof (or _Extentof)
9	rangeof (or _Rangeof)
10	neltsof (or _Neltsof)

First choice ▮▮▮▮▮▮▮▮▮▮ Last choice

Freeform feedback

1. *Although personally I don't particularly like any of the names. "Length" is probably the closest concept in my opinion, so that was my top choice.*

   I'd maybe also throw

   - *sizeof[](array) // analogous to sizeof...(Ts) which also counts and new[]*

   - *countof(array)*

   - *array_sizeof(array)*

   into the mix.

2. *No array_sizeof? ARRAY_SIZE is pretty well-established.*

3. *element_count? I don't really want to type that, but I don't really want to type C for the rest of my life either.*

4. *extentof — good and consistent with C++.*

   lengthof and lenof — good and consistent with Python and Rust. However, I don't like that the word len is always associated with strings in C, hence #2.

   nelementsof and the friends - it's alright, but inconsistent with other languages.

   dimensionof - misleading. One could expect that dimensionof(int[42][42][42][42]) == 4.

   rangeof - misleading, the word range assumes a beginning and an end in computer science.

   elementsof - misleading, sounds like the elements of the array themselves.

5. *Another vote for ARRAY_SIZE purely out of familiarity. Wouldn't lenof be the most in line with the others? That would be my second pick after ARRAY_SIZE.*

   I'd argue lenof can be used for both strings and arrays because strings are basically arrays... Oh yeah, we want the null terminated length not the allocated length.

   I was looking at the -gth and it looks very annoying to type.

6. *Some truly cursed options in there. The dim ones because making C look like VB6 just hurts. rangeof because it doesn't produce a range as other languages would talk about it, extentof because we all have thesauruses but that doesn't make them a good tool for naming a function used hundreds of times in a codebase.*

7. *Is len() or length() already taken? Just makes it similar to other programming languages like Python, Java or C++.*

8. *I'm not sure I'm too bothered about the name, but it does sound a good addition - it's a pain trying to remember how to write that macro correctly every time I start a new project.*