perplexity

give example for scale factor for basic data types

Here are examples of the **scale factor** for basic data types in C, which determines by how many bytes a pointer is incremented when you do `p++`:

Scale Factor for Basic Data Types

Data Type	Typical Scale Factor (Bytes)	Example of Pointer Increment
`char`	1	`char *p; p++` increases address by 1
`int`	4	`int *p; p++` increases address by 4
`float`	4	`float *p; p++` increases address by 4
`double`	8	`double *p; p++` increases address by 8

- The **scale factor** is the number of bytes occupied by the data type the pointer points to[1] [2] [3].
- When you increment a pointer, it moves by its scale factor, not just by 1 byte[4] [5] [1] [2] [3] [6].

Example Code to Display Scale Factors

```
#include <stdio.h>

int main() {
    printf("Scale factor for char: %zu\n", sizeof(char));
    printf("Scale factor for int: %zu\n", sizeof(int));
    printf("Scale factor for float: %zu\n", sizeof(float));
    printf("Scale factor for double: %zu\n", sizeof(double));
    return 0;
}
```

Sample Output (on a typical system):

```
Scale factor for char: 1
Scale factor for int: 4
Scale factor for float: 4
Scale factor for double: 8
```

Key Point

- The actual scale factor can vary by system/architecture, but the concept remains the same: **Pointer increment = pointer + (scale factor of its type)**[4] [1] [2] [3].

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1. https://cse.iitkgp.ac.in/~palash/Courses/2020PDS/Files/L6a-Pointers.pdf
2. https://www.lkouniv.ac.in/site/writereaddata/siteContent/202005182239033564Zeeshan-Pointers.pdf
3. https://cse.iitkgp.ac.in/~somindu/pds/slides/10 - Pointers-Basics.pdf
4. https://www.tutorialspoint.com/explain-the-concepts-of-pointers-and-arrays-in-c-language
5. https://skills.microchip.com/fundamentals-of-the-c-programming-language-part-iii/700294
6. https://gacbe.ac.in/pdf/ematerial/18BCS23C-U5.pdf