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I need to know if this is possible in Rust (and if not, how come). I have a function `combined_words` in a trait called `Parent`. The trait contains an associated constant for `SIZE`: `u32` and `WORDS`: `[&'static str; SIZE]`.

I want the function to use both known sized associated constants to generate a `&'static str` at compile time.

I'm not sure if this is possible, if so, is there something I'm missing, is there a need to use a macro. Is there a library that can do this.

```
trait Parent {
    const SIZE: usize;

    const WORDS: [&'static str; <X as Parent>::SIZE];

    // this is the function I want to implement. It's just pseudocode for now
    fn combined_words() -> &'static str {
        for i in 0..X::SIZE {
            // concat the words into a single &'static str e.g.
            format!("{}{}", X::WORDS[i as usize], i);
        }

        // and return it
    }
}

struct X;

impl Parent for X {
    const SIZE: usize = 3;
    const WORDS: [&'static str; <X as Parent>::SIZE] = ["hi", "there", "friend"];
}

fn main() {
    let x: X = X{};
    assert_eq!(X::combined_words(), "hilthere2friend3");
}
```

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asked Nov 17, 2023 at 7:40

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This can't even work currently in Rust for a different reason: [you can't use `Self:::SIZE` as the size of a `const` trait member](#).

cdhowie – [cdhowie](#)

2023-11-17 08:06:42 +00:00

Commented Nov 17, 2023 at 8:06

However you can make [parent trait generic over const SIZE: usize](#).

Aleksander Krauze – [Aleksander Krauze](#)

2023-11-17 08:29:07 +00:00

Commented Nov 17, 2023 at 8:29

@AleksanderKrauze that's semantically different, you can implement that trait multiple times with different `SIZES` for the same struct which you couldn't do for OPs variant if it was valid.

cafce25 – [cafce25](#)

2023-11-17 08:31:52 +00:00

Commented Nov 17, 2023 at 8:31

Can you use nightly?

Chayim Friedman – [Chayim Friedman](#)

2023-11-18 18:51:00 +00:00

Commented Nov 18, 2023 at 18:51

Even if this is possible, this will require extreme type metaprogramming. Do you really need it? Why cannot you afford allocating a little `String`?

Chayim Friedman – [Chayim Friedman](#)

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Commented Nov 18, 2023 at 18:53

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No, there can not be one.

`str` is a string slice, i.e. a string located in contiguous memory.

Using `format` (or anything else like that) has to manipulate the string and as such it can not return a reference (there is no place in memory where the concatenated string *already exists* contiguously).

The closest thing you could do is to try the opposite approach, i.e. storing the string in one piece along with the indices of the word boundaries. You could then create a function that gets the *n*th word, just like indexing an array; and getting the entire string is trivial:

```
let string = "Lorem ipsum dolor sit amet";
let indices = [0, 6, 12, 18, 22];

fn get_word<'a>(s: &'a str, indices: &[usize], index: usize) -> &'a str {
    &s[
        indices[index] .. indices.get(index+1).copied().unwrap_or(s.len())
    ]
}

get_word(string, &indices, 3) // &'static "sit "
string // &'static "Lorem ipsum dolor sit amet"
```

Or, you could just go the easy way and use `Strings`.

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answered Nov 17, 2023 at 8:47

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