

DS 210 Discussion 7 - Pointers

Our code repo again: <https://github.com/rust4ds/ds210-sp26-a1-code>.

Sync your fork with our course repo, and open the `discussion_7_pointer` folder in the VSCode.

For today's discussion, you will need to answer questions for each example on gradescope.

To run these examples, do the following commands:

```
cargo run --bin example1 (or example2, example3)
```

1 Example 1: Pointer and copy

In this example we try to pass a vector to the function `mid_by_pointer()` and `mid_by_copy()` and get the value at the mid point of it.

We will use two ways to do that: first by **pointer** and second by **copy**.

1. Read the codes in `mid_by_pointer()` function first. Why do we need an `unsafe` here?
2. Fixed the codes by changing `(*v)` to `(&*v)`.
3. Run the codes and check the running time. Which is faster? Could you explain the difference?

1.1 Example 2: Dangling Pointer

1. Run the codes. What do you see in the outputs?
2. Check the warning given by the rust compiler and analyzer. Could you explain why it happens?

1.2 Example 3: Pointer Scope

Try to run the codes with different `my_var` values of 1, 2, 3. For each value, think of:

1. which line will the program execute?
2. why it gives you such outputs?