1 `main` — MIR Walkthrough

Purpose: TODO: Describe why this walkthrough exists

1.1 Source Context

```rust
fn main () {

    let mut a = MyStruct { a_value: 32, another: false, a_third: 32};

    // mutate field through ref and double-ref
    let r1 = &mut (a.a_value);
    *r1 = 42;
    assert!(a.a_value == 42);
    let mut r1 = &mut (a.a_value);
    let r2 = &mut r1;
    **r2 = 43;
    assert!(a.a_value == 43);

    // create reference-field chain
    let mut e = Enclosing{inner: &mut a};
    let ee = &mut e;

    // read and  write values through chain of ref/field projections
    let vv = (*(*ee).inner).a_value;
    assert!(vv == 43);

    (*(*ee).inner).another = true;

    let r3 = &mut (*ee).inner.a_third;
    *r3 = (*(*ee).inner).a_value as usize;

    assert!(a.another);
    assert!(a.a_third == 43);

}
```

1.2 Function Overview

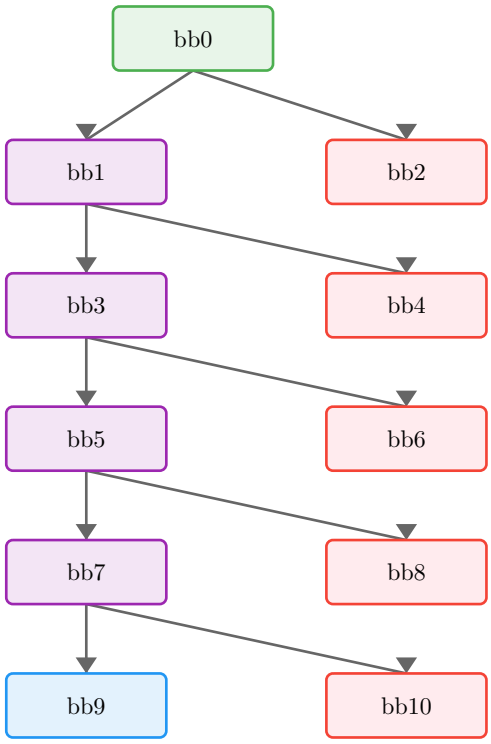
- **Function:** `main`
- **Basic blocks:** 11
- **Return type:** `()`
- **Notable properties:**
  - Contains panic path
  - Introduces borrows
  - Has conditional branches

1.3 Locals

Local	Type	Notes
0	`()`	Return place
1	`MyStruct`	
2	`&mut i8`	
3	`i8`	
4	`!`	
5	`&mut i8`	
6	`&mut &mut i8`	
7	`i8`	

8	`!`	
9	`Enclosing\<'\_\>`	
10	`&mut MyStruct`	
11	`&mut Enclosing\<'\_\>`	
12	`i8`	
13	`!`	
14	`&mut usize`	
15	`i8`	
16	`bool`	
17	`!`	
18	`usize`	
19	`!`	
20	`&mut i8`	
21	`&mut MyStruct`	
22	`&mut MyStruct`	
23	`&mut MyStruct`	
24	`&mut MyStruct`	

1.4 Control-Flow Overview



1.5 Basic Blocks

1.5.1 bb0 — entry

Entry point of the function.

MIR	Annotation
`\_1 = MyStruct(32, 0, 32)`	Construct aggregate
`\_2 = &mut \_1.0`	Mutable borrow

`(\*\_2) = 42`	Load constant
`\_3 = \_1.0`	Copy value
`→ switch(move \_3) \[42→bb1; else→bb2\]`	Branch on move _3

1.5.2 bb1 — branch point

MIR	Annotation
`\_5 = &mut \_1.0`	Mutable borrow
`\_6 = &mut \_5`	Mutable borrow
`\_20 = copy\_deref((\*\_6))`	
`(\*\_20) = 43`	Load constant
`\_7 = \_1.0`	Copy value
`→ switch(move \_7) \[43→bb3; else→bb4\]`	Branch on move _7

1.5.3 bb2 — panic path

Panic/diverging path.

MIR	Annotation
`→ \_4 = panic(\[16 bytes\])`	Call panic

1.5.4 bb3 — branch point

MIR	Annotation
`\_10 = &mut \_1`	Mutable borrow
`\_9 = Enclosing(\_10)`	Construct aggregate
`\_11 = &mut \_9`	Mutable borrow
`\_21 = copy\_deref((\*\_11).0)`	
`\_12 = (\*\_21).0`	Copy value
`→ switch(\_12) \[43→bb5; else→bb6\]`	Branch on _12

1.5.5 bb4 — panic path

Panic/diverging path.

MIR	Annotation
`→ \_8 = panic(\[16 bytes\])`	Call panic

1.5.6 bb5 — branch point

MIR	Annotation
`\_22 = copy\_deref((\*\_11).0)`	
`(\*\_22).1 = 1`	Load constant
`\_23 = copy\_deref((\*\_11).0)`	
`\_14 = &mut (\*\_23).2`	Mutable borrow
`\_24 = copy\_deref((\*\_11).0)`	
`\_15 = (\*\_24).0`	Copy value
`(\*\_14) = move \_15 as RigidTy(Uint(Usize))`	Integer conversion
`\_16 = \_1.1`	Copy value
`→ switch(move \_16) \[0→bb8; else→bb7\]`	Branch on move _16

1.5.7 bb6 — panic path

Panic/diverging path.

MIR	Annotation
`→ \_13 = panic(\[16 bytes\])`	Call panic

1.5.8 bb7 — branch point

MIR	Annotation
`\_18 = \_1.2`	Copy value
`→ switch(move \_18) \[43→bb9; else→bb10\]`	Branch on move _18

1.5.9 bb8 — panic path

Panic/diverging path.

MIR	Annotation
`→ \_17 = panic(\[16 bytes\])`	Call panic

1.5.10 bb9 — return / success

Normal return path.

MIR	Annotation
`→ return`	Return from function

1.5.11 bb10 — panic path

Panic/diverging path.

MIR	Annotation
`→ \_19 = panic(\[16 bytes\])`	Call panic

1.6 Key Observations

TODO: Add bullet points summarizing what this MIR teaches

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1.7 Takeaways

TODO: One or two sentences to generalize this example