

1 sum_to_n_rec — MIR Walkthrough

Purpose: TODO: Describe why this walkthrough exists

1.1 Source Context

```
fn sum_to_n_rec(n:u32) -> u32 {
    if n == 0 {
        0
    } else {
        n + sum_to_n_rec(n - 1)
    }
}
```

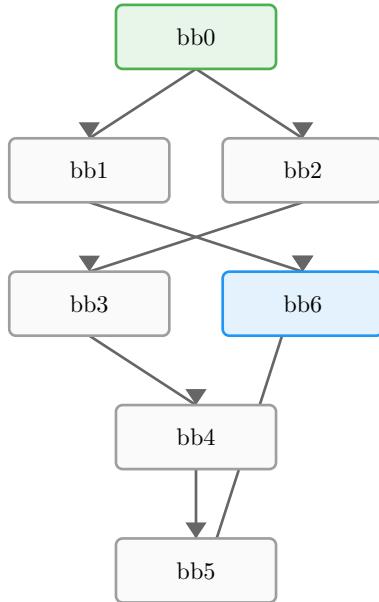
1.2 Function Overview

- **Function:** sum_to_n_rec
- **Basic blocks:** 7
- **Return type:** Uint(U32)
- **Notable properties:**
 - Contains panic path
 - Uses checked arithmetic
 - Recursive
 - Contains assertions
 - Has conditional branches

1.3 Locals

Local	Type	Notes
0	Uint(U32)	Return place
1	Uint(U32)	
2	Uint(U32)	
3	Uint(U32)	
4	(u32, bool) (8 bytes, align 4)	
5	(u32, bool) (8 bytes, align 4)	

1.4 Control-Flow Overview



1.5 Basic Blocks

1.5.1 bb0 — entry

Entry point of the function.

MIR	Annotation
<code>→ switch(_1) [0->bb1; else->bb2]</code>	Branch on _1

1.5.2 bb1

MIR	Annotation
<code>_0 = 0</code>	Load constant
<code>→ goto bb6</code>	Jump to bb6

1.5.3 bb2

MIR	Annotation
<code>_4 = checked(_1 - 1)</code>	Checked Subtract (may panic)
<code>→ assert(move _4.1 == false) → bb3</code>	Panic if move _4.1 is true

1.5.4 bb3

MIR	Annotation
<code>_3 = move _4.0</code>	Move value
<code>→ _2 = sum_to_n_rec(move _3) → bb4</code>	Recursive call to sum_to_n_rec

1.5.5 bb4

MIR	Annotation
<code>_5 = checked(_1 + _2)</code>	Checked Add (may panic)
<code>→ assert(move _5.1 == false) → bb5</code>	Panic if move _5.1 is true

1.5.6 bb5

MIR	Annotation
_0 = move _5.0	Move value
→ goto bb6	Jump to bb6

1.5.7 bb6 — return / success

Normal return path.

MIR	Annotation
→ return	Return from function

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

2 main — MIR Walkthrough

Purpose: TODO: Describe why this walkthrough exists

2.1 Source Context

```
fn main() {
    let ans = sum_to_n_rec(10);

    assert!(ans == 55);
}
```

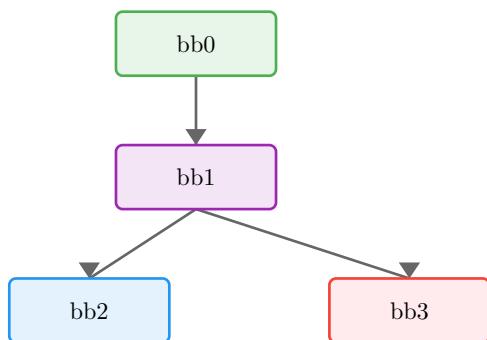
2.2 Function Overview

- **Function:** main
- **Basic blocks:** 4
- **Return type:** () (0 bytes, align 1)
- **Notable properties:**
 - Contains panic path
 - Has conditional branches

2.3 Locals

Local	Type	Notes
0	() (0 bytes, align 1)	Return place
1	Uint(U32)	
2	()	

2.4 Control-Flow Overview



2.5 Basic Blocks

2.5.1 bb0 — entry

Entry point of the function.

MIR	Annotation
$\rightarrow _1 = \text{sum_to_n_rec}(10) \rightarrow \text{bb1}$	Call sum_to_n_rec

2.5.2 bb1 — branch point

MIR	Annotation
$\rightarrow \text{switch}(_1) [55 \rightarrow \text{bb2}; \text{else} \rightarrow \text{bb3}]$	Branch on $_1$

2.5.3 bb2 — return / success

Normal return path.

MIR	Annotation
→ <code>return</code>	Return from function

2.5.4 bb3 — panic path

Panic/diverging path.

MIR	Annotation
→ <code>_2 = panic([16 bytes])</code>	Call panic

2.6 Key Observations

TODO: Add bullet points summarizing what this MIR teaches

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2.7 Takeaways

TODO: One or two sentences to generalize this example

