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)
    }
}
```

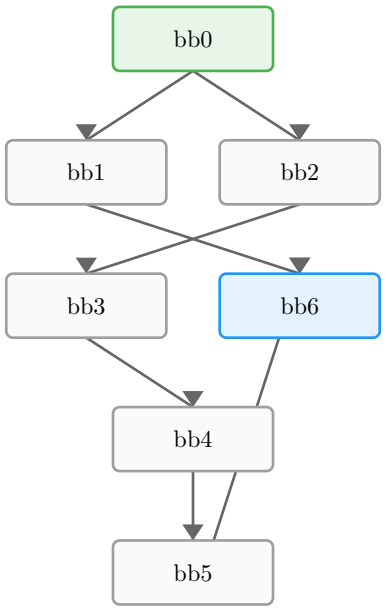
1.2 Function Overview

- **Function:** `sum_to_n_rec`
- **Basic blocks:** 7
- **Return type:** `u32`
- **Notable properties:**
  - Contains panic path
  - Uses checked arithmetic
  - Recursive
  - Contains assertions
  - Has conditional branches

1.3 Locals

Local	Type	Notes
0	u32	Return place
1	u32	
2	u32	
3	u32	
4	(u32, bool)	
5	(u32, bool)	

1.4 Control-Flow Overview



1.5 Basic Blocks

1.5.1 bb0 — entry

Entry point of the function.

MIR	Annotation
`→ switch(\_1) \[0→bb1; else→bb2\]`	Branch on _1

1.5.2 bb1

MIR	Annotation
`\_0 = 0`	Load constant
`→ goto bb6`	Jump to bb6

1.5.3 bb2

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

1.5.4 bb3

MIR	Annotation
`\_3 = move \_4.0`	Move value
`→ \_2 = sum\_to\_n\_rec(move \_3) → bb4`	Recursive call to sum_to_n_rec

1.5.5 bb4

MIR	Annotation
`\_5 = checked(\_1 + \_2)`	Checked Add (may panic)
`→ assert(move \_5.1 == false) → bb5`	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

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

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

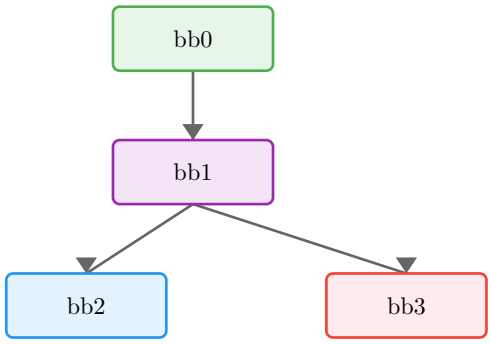
2.2 Function Overview

- **Function:** `main`
- **Basic blocks:** 4
- **Return type:** `()`
- **Notable properties:**
  - Contains panic path
  - Has conditional branches

2.3 Locals

Local	Type	Notes
`0`	`()`	Return place
`1`	`u32`	
`2`	`!`	

2.4 Control-Flow Overview



2.5 Basic Blocks

2.5.1 bb0 — entry

Entry point of the function.

MIR	Annotation
`→ \_1 = sum\_to\_n\_rec(10) → bb1`	Call sum_to_n_rec

2.5.2 bb1 — branch point

MIR	Annotation
`→ switch(\_1) \[55→bb2; else→bb3\]`	Branch on _1

2.5.3 bb2 — return / success

Normal return path.

MIR	Annotation
`→ return`	Return from function

2.5.4 bb3 — panic path

Panic/diverging path.

MIR	Annotation
`→ \_2 = panic(\[16 bytes\])`	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