1 `main` — MIR Walkthrough

Purpose: TODO: Describe why this walkthrough exists

1.1 Source Context

```rust
fn main() {
    assert!(-128_i8 << 1 == 0);
    assert!(-32768_i16 << 1 == 0);
    assert!(-2147483648_i32 << 1 == 0);
    assert!(-9223372036854775808_i64 << 1 == 0);
    assert!(-170141183460469231731687303715884105728_i128 << 1 == 0);
}
```

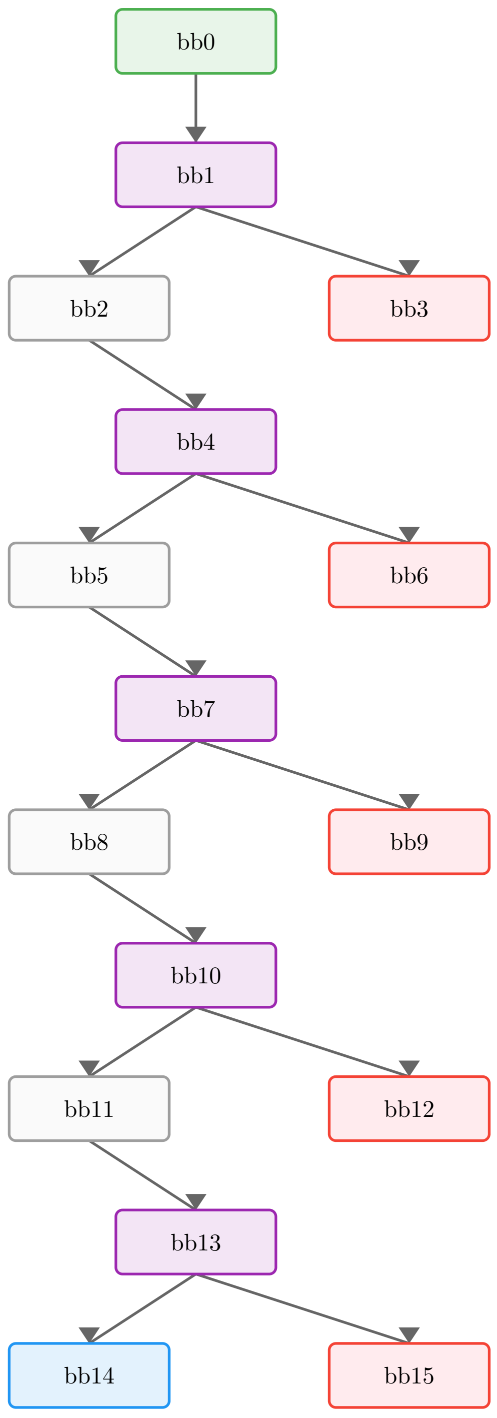
1.2 Function Overview

- **Function:** `main`
- **Basic blocks:** 16
- **Return type:** `()`
- **Notable properties:**
  - Contains panic path
  - Contains assertions
  - Has conditional branches

1.3 Locals

Local	Type	Notes
0	`()`	Return place
1	`i8`	
2	`u32`	
3	`bool`	
4	`!`	
5	`i16`	
6	`u32`	
7	`bool`	
8	`!`	
9	`i32`	
10	`u32`	
11	`bool`	
12	`!`	
13	`i64`	
14	`u32`	
15	`bool`	
16	`!`	
17	`i128`	
18	`u32`	
19	`bool`	
20	`!`	

1.4 Control-Flow Overview



1.5 Basic Blocks

1.5.1 bb0 — entry

Entry point of the function.

MIR	Annotation
`\_2 = 1 as RigidTy(Uint(U32))`	Integer conversion
`\_3 = move \_2 \< 8`	Less than operation
`→ assert(move \_3 == true) → bb1`	Panic if move __3 is false

1.5.2 bb1 — branch point

MIR	Annotation
`\_1 = 128 \<\< 1`	Shift left operation
`→ switch(move \_1) \[0→bb2; else→bb3\]`	Branch on move _1

1.5.3 bb2

MIR	Annotation
`\_6 = 1 as RigidTy(Uint(U32))`	Integer conversion
`\_7 = move \_6 \< 16`	Less than operation
`→ assert(move \_7 == true) → bb4`	Panic if move _7 is false

1.5.4 bb3 — panic path

Panic/diverging path.

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

1.5.5 bb4 — branch point

MIR	Annotation
`\_5 = -32768 \<\< 1`	Shift left operation
`→ switch(move \_5) \[0→bb5; else→bb6\]`	Branch on move _5

1.5.6 bb5

MIR	Annotation
`\_10 = 1 as RigidTy(Uint(U32))`	Integer conversion
`\_11 = move \_10 \< 32`	Less than operation
`→ assert(move \_11 == true) → bb7`	Panic if move _11 is false

1.5.7 bb6 — panic path

Panic/diverging path.

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

1.5.8 bb7 — branch point

MIR	Annotation
`\_9 = -2147483648 \<\< 1`	Shift left operation
`→ switch(move \_9) \[0→bb8; else→bb9\]`	Branch on move _9

1.5.9 bb8

MIR	Annotation
`\_14 = 1 as RigidTy(Uint(U32))`	Integer conversion
`\_15 = move \_14 \< 64`	Less than operation
`→ assert(move \_15 == true) → bb10`	Panic if move _15 is false

1.5.10 bb9 — panic path

Panic/diverging path.

MIR	Annotation
`→ \_12 = panic(\[16 bytes\])`	Call panic

1.5.11 bb10 — branch point

MIR	Annotation
`\_13 = -9223372036854775808 \<\< 1`	Shift left operation
`→ switch(move \_13) \[0→bb11; else→bb12\]`	Branch on move __13

1.5.12 bb11

MIR	Annotation
`\_18 = 1 as RigidTy(Uint(U32))`	Integer conversion
`\_19 = move \_18 \< 128`	Less than operation
`→ assert(move \_19 == true) → bb13`	Panic if move __19 is false

1.5.13 bb12 — panic path

Panic/diverging path.

MIR	Annotation
`→ \_16 = panic(\[16 bytes\])`	Call panic

1.5.14 bb13 — branch point

MIR	Annotation
`\_17 = \[16 bytes\] \<\< 1`	Shift left operation
`→ switch(move \_17) \[0→bb14; else→bb15\]`	Branch on move __17

1.5.15 bb14 — return / success

Normal return path.

MIR	Annotation
`→ return`	Return from function

1.5.16 bb15 — panic path

Panic/diverging path.

MIR	Annotation
`→ \_20 = panic(\[16 bytes\])`	Call panic

1.6 Key Observations

TODO: Add bullet points summarizing what this MIR teaches

-
-

1.7 Takeaways

TODO: One or two sentences to generalize this example