1 `main` — MIR Walkthrough

Purpose: TODO: Describe why this walkthrough exists

1.1 Source Context

```
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);
}
```

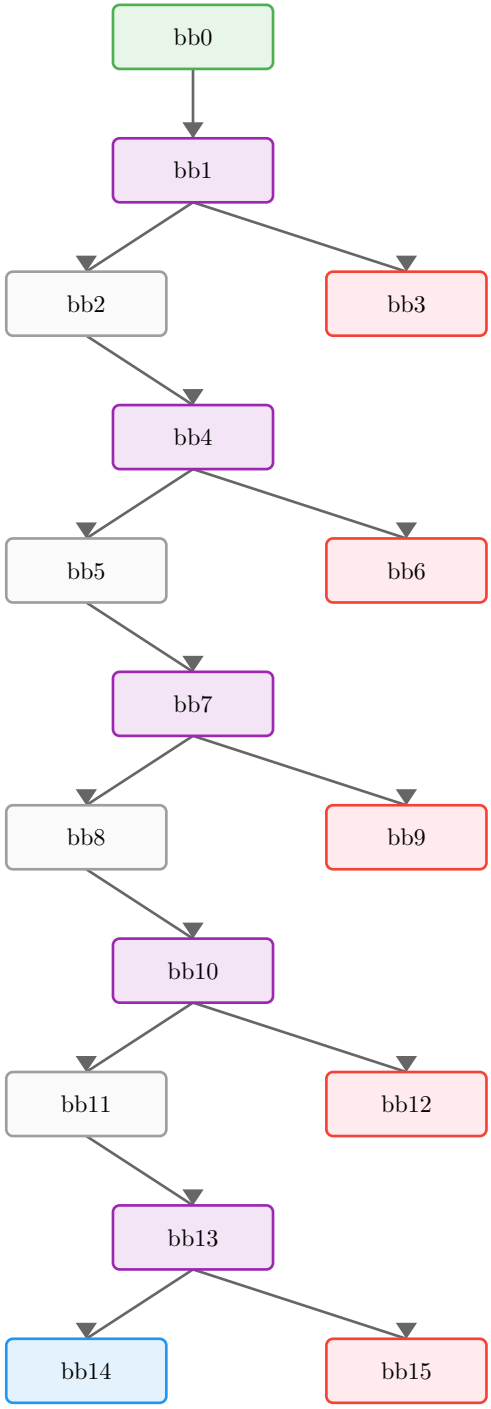
1.2 Function Overview

- **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

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1.7 Takeaways

TODO: One or two sentences to generalize this example