Decoding Instructions

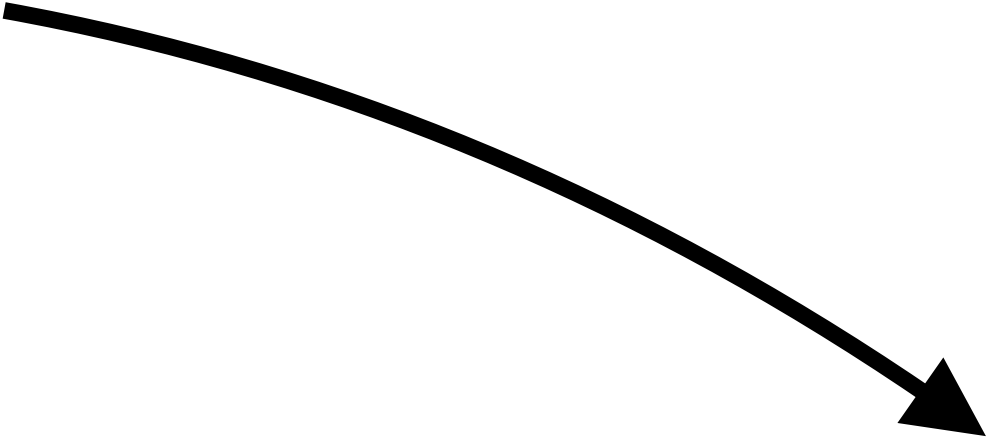
- Each instruction can be uniquely identified by certain parts of the 32 bits called **opcode**, **funct3** and **funct7** code.

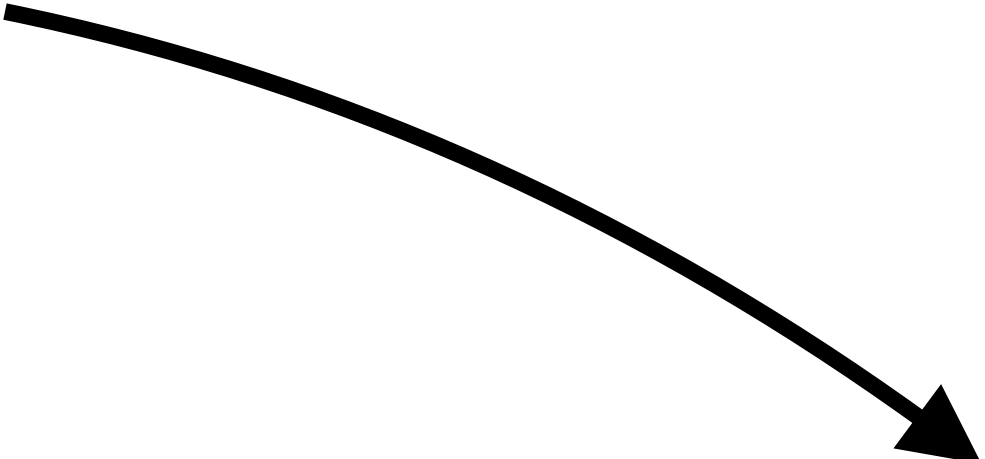
- When the instruction is known, the meaning of the remaining bits of the instruction becomes clear.

opcode

funct3

funct7





The opcode specifies the format in which the instruction is encoded.

The Opcode might already uniquely identify the instruction that has to be decoded. If not, the funct3 code is looked at next.

The opcode in combination with the funct3 code might already identify the instruction. Not part of all instruction formats.

The instruction definitely known at this point. Not part of all instruction formats.

Level 1

Level 2

Level 3

Instructions and Machine State

- Selfie uses special procedures (`_before()` & `_after()`) that show on which part of the machine state they depend, which part they modify and the modification itself.

rs1	|- rd	-> rd
read only dependency in control flow	will be modified	new value after modification

- This information is enough to determine the machine state at any point of execution (completely deterministic).

- The only way to inject information from outside that is not known beforehand is through the read call.

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