

Microinstruction

- Contains all the bits necessary to carry out an instruction
- In Mic-1 there are 6 groups of bits
 - Addr - address of a potential next microinstruction
 - JAM - determines how the next microinstruction is selected
 - ALU - ALU and shifter functions
 - C - select which registers are written to from the C bus
 - Mem - memory functions
 - B - select the B bus source

The Stack

- Many other names: call stack, execution stack, etc.

- Can store a few types of variables

 - Procedure (function) parameters

 - Local variables

 - Temporary arithmetic results

$$d = \underline{(a + b)} * c$$

 - These are usually stored in registers, but JVM stores them on the stack

- When a procedure is called, memory is allocated on the top of the stack to store that procedure's variables

- Stack frame (or local variable frame)

 - Area of the stack that belongs to a procedure that is being executed

JVM's stack

- LP register points to the bottom of the currently executing procedure's stack frame
- SP points to the top

JVM's memory model

- Areas

- Constant pool

- Read-only

- Stores constants and strings

- Loaded when the program is brought into memory

- CPP stores the beginning of the constant pool

- Local variable frame and operand stack

- Area of the call stack between LP and SP

- Method area

- Contains the program itself, PC stores the address of the next instruction

- Often called the "text segment" in UNIX programs