Computation Structures — Microcode (part 2)

November 25, 2020

Microcode for β-machine with bus

1. Give symbolic microcode for the following instruction:

```
JMPODD(Ra, Rb, Rc): PC <- PC + 4
                    TMP <- Reg[Rb] % 2
                    EA <- Reg[Ra]
                    Reg[Rc] <- PC
                    if TMP = 1 then PC <- EA
```

   Where `a % b` is the modulo operator, computing the remainder of integer division of a by b. You can assume that the ALU has been augmented with function `ONE` (`0b0000`) that simply puts the value 1 on its output.

2. Give symbolic microcode for instruction `BRTBL(Ra,Label,Rc)`.

```
BRTBL(Ra, Label, Rc): PC <- PC + 4
                      EA <- (PC + 4 * Lit + Reg[Ra])
                      Reg[Rc] <- PC
                      PC <- EA
```

   The value of the `Lit` field in the instruction is computed by the assembler as in `BEQ(Ra,label,Rc)`.