**Zainab Hussein**

**Lab 8 Prelab**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| State  (Name) | PCWrite | MemWrite | IRWrite | RegWrite | ALUSrcA | Branch | IorD | MemtoReg | RegDst | ALUSrcB[1:0] | PCRsc[1:0] | ALUOp[1:0] | FSM Control Word |
| 0 (Fetch) | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 01 | 00 | 00 | 0x5010 |
| 1 (Decode) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 00 | 00 | 0x0030 |
| 2 (MemAdr) | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 10 | 00 | 00 | 0x0420 |
| 3 (MemRd) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 00 | 00 | 00 | 0x0100 |
| 4 (MemWB) | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 00 | 00 | 00 | 0x0880 |
| 5 (MemWr) | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 00 | 00 | 00 | 0x2100 |
| 6 (RtypeEx) | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 00 | 00 | 10 | 0x0402 |
| 7 (RtypeWB) | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 00 | 00 | 00 | 0x0840 |
| 8 (BeqEx) | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 00 | 01 | 01 | 0x0605 |
| 9 (AddiEx) | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 10 | 00 | 00 | 0x0420 |
| 10 (AddiWB) | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 00 | 00 | 00 | 0x0800 |
| 11 (JEx) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00 | 10 | 00 | 0x4008 |

Table . Main Decoder Control Output