# **CDA 4101** **Assignment: IJVM-Mic 2** **Spring 2017**

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**Typed solutions only. Upload in SCIS Moodle no later than Wednesday April 19.**

1. From page 338, Tanenbaum:
2. Problem 21.
3. Problem 22.
4. Problem 17, page 338, Tanenbaum*.*
5. A Mic**1** implementation of the **IINC** instruction is shown here. Show how to derive the Mic**2** implementation starting from the Mic**1**.

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| **IINC** *varnum const*  iinc1: H = LV;  iinc2: MAR = H + MBRU; rd;  iinc3: PC = PC + 1; fetch;  iinc4: H = MDR;  iinc5: PC = PC + 1; fetch;  iinc6: MDR = H + MBR; wr; goto Main1; |

1. If a Mic**1** microinstruction is removed in Mic **2**, explain why.
2. Explain each use of MBR1, MBR1U, MBR2, MBR2U.
3. Explain why the Mic**2** implementation has 3 microinstructions instead of 2.
4. Write a MAL Mic**2** microcode implementation of the JVM instruction **ISHR**.

The instruction is described in problem 14, page 339. Tanenbaum.