



Vidyavardhini's College of Engineering & Technology

Department of Computer Engineering

Academic Year : 2025-26

Assignment No.3

Code/Sub: 2113114/Computer Organization & Architecture

Year/Sem: SE-III

Date of Announcement:

Date of Submission:

Course Outcome 2113114.3: Apply knowledge of control unit to make a simple microinstruction sequence for a given set of operations using microprogramming concepts and identify addressing mode

Q. No	Question	Bloom Level
1	<p>You are assigned to a team designing a simple custom CPU for a teaching simulator. The CPU supports only 4 instructions: LOAD, STORE, ADD, and JUMP. The instruction format is 8 bits: 4 bits for the opcode and 4 bits for the operand (memory address or jump location).</p> <p>Make design of simple control unit architecture that can decode and execute these instructions. Illustrate the major components and control signals required. Interpret how your control unit handles each instruction.</p>	Apply
2	<p>A team is building a processor for a programmable calculator that may need to support new instructions in future upgrades. You are asked to propose a microprogrammed control unit instead of a hardwired one.</p> <p>Make design of microprogrammed control unit design for such a processor. Illustrate its structure, components, and how it provides flexibility over a hardwired unit. Illustrate with one example instruction.</p>	Apply



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3	<p>Your team is expanding an educational RISC processor with a new instruction:</p> <p>MOVE R1, R2 – Copy data from register R2 to R1.</p> <p>You are assigned to create the control signal sequence needed for this instruction and modify the control unit accordingly.</p> <p>Make design of the micro-operations and required control signals for executing the MOVE instruction. Illustrate how your control unit will process it step by step.</p>	Apply
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