

Question 1: C to RISC-V Translate the following C code snippet shown in class into RISC-V assembly code. You can use additional registers in your solution.

Question 2: Memory Instruction Translation Translate the following instruction into machine code and use the templates.

sw20, -12(x9)

imm7	source register 2 (rs2)	source register 1 (rs1)	funct3	imm5	opcode
31	25 24	20 19	15 14	12 11	7 6 0

Question 3: Memory Accesses Given the integer array whose base address is 0x00004000 answer the following questions. The size of an int is 4 bytes. Assume x10 = 0x00004000.

5	90	100	40	11
0	1	2	3	4

3.1. What is the value of x11 after executing the instruction `lw x11 0(x10)` ?

3.2. What is the value of x12 after executing the instruction `lw x12, 4(x10)` ?

3.3. What is the value of x12 after executing the instructions `addi x10, x10, 4`
`lw x12, 8(x10)` ?

3.4. What are the contents of the array after executing the instruction `sw x7, 12(x10)` ?