Project Details:

Phase-1

1. Write the following 3 programs using RISC-V ISA
    a. Find a number if it is a prime number or not. The number is stored in memory
    b. Calculate factorial of a number stored in some memory location. Store the result back in memory
    c. Calculate GCD and LCM of two numbers stored in memory. Store results back in memory.
2. Find the encoding of the instructions for each program
3. Write an assembler for conversion of the assembly code to machine encodings using the instructions
4. Write a code to read the encoded data

Phase-2

5. Design a simulator for RISC-V instruction execution
6. Ensure that your code gives the correct result on the RISC-V simulator
7. Assume an ideal memory hierarchy

Phase-3

8. Write a simple cache simulator
9. Integrate your cache sim with core sim
10. Ensure your code works on the integrated system

Phase-4

11. Write a 2-page report on the above work

There will be plagiarism checks for the code and report.

Bonus:
Design a GUI for the above core part only. Only the best 3-GUIs and project (decided by me during grading) will be waved off the quiz mark.