Gem5 with RISC-V and Adding Custom Instructions

Create the Development environment.

Steps:

- Clone the repository [gem5 repository]
    - Please use the docker images provided so that building becomes somewhat "painless"
- Clone and build the RISCV toolchain.
- Implement the combination formula ${}^{n}C_{r}$ as a custom instruction. This would also require you to implement factorial n! as a custom instruction.
- Show the performance gain using the custom instruction to evaluate the coefficients in the Binary Expansion series [Given three integers, A, X and n, the task is to print terms of below binomial expression series.

    $(A+X)^{n} = {}^{n}C_{0}A^{n}X^{0} + {}^{n}C_{1}A^{n-1}X^{1} + {}^{n}C_{2}A^{n-2}X^{2} +....+ {}^{n}C_{n}A^{0}X^{n}$

This link has a nice tutorial which you can follow to complete the assignment.

Submission:

A document similar to the link detailing all the steps that you have done. All the screenshots should have your name in the command prompt. A single PDF file containing the charts/tables showing the performance gain along with the steps followed should be uploaded.