Report

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Coding Approach:

I have implemented the pipeline stall detector in C++ which asks you for the case number.

I have defined a function called tokenise which helps in getting the registers as a separate string which helps in checking if there is any dependency between the instructions.

Case1 prints the modified assembly program with added nops and number of cycles assuming no data forwarding and no hazard detection is implemented

Case2 prints the modified assembly program with added nops and number of cycles assuming that data forwarding without hazard detection is implemented

For this I have used few functions isR, isLd, R_R, ld_R, R_Ld, Ld_Ld which checks if it there is any dependency between instructions which takes next and i as input(the index(next) of the instruction is checked for dependency with instruction with index (i)) which have add, sub, or, and, ld in the instructions.

Depending on the dependencies required number of nops are added

Testing:

To check my code I have used the example given in the Lab5 assignment and have used few questions from previous assignment to check my answers. I have also checked with few test cases which I have checked on RIPES.