Branch Predictor - Assignment

Branch prediction is a technique used to find the outcome of a conditional operation and gives the result. When a condition operation like if-else is executed then branch prediction speculates which condition will be executed, it then executes the instruction ahead of time.

To make the forecast we have to perform the following operations. For each instruction we have to store binary label components separately. Then we have to combine the bits of the global history register with the most significant bits of the program counter to perform XOR operation. Then to generate the final string we have to combine the result with the remaining bits of the program counter.

To predict an output we need to have a decimal value, so we have to convert the result into the decimal form then if the result is greater than or equals to 2 then we have to predict as taken or else not taken. Then we have to compare actual and predicted values, if they are not equal then increase the count of misprediction. At the current entry based on actual value and taken value we have to increase or decrease the counter by 1. Then we have to left shift the global history register based on the outcome value.