

21 Branch Predictors

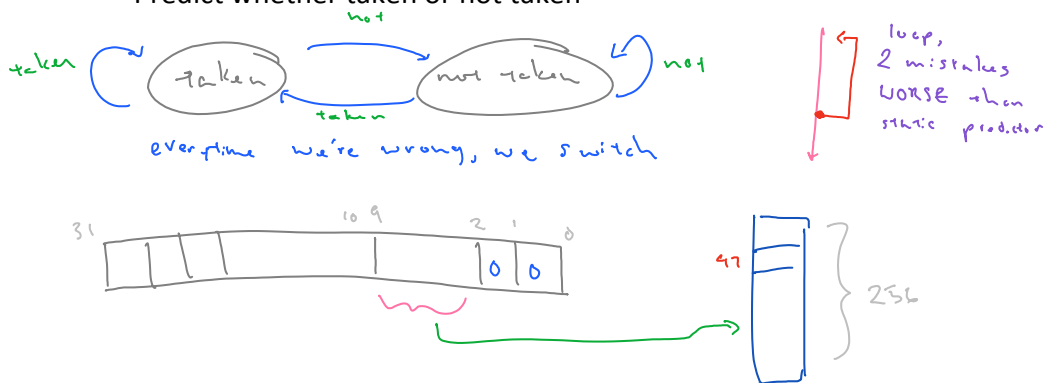
Friday, October 23, 2015 10:01

Why are we interested in Branch Prediction?

- To optimize the speed of the CPU
- Helps us execute things in the pipeline faster without having to wait
- All about the pipeline
- Want to keep the pipeline filled, want to know what the branch does before the branch is reached

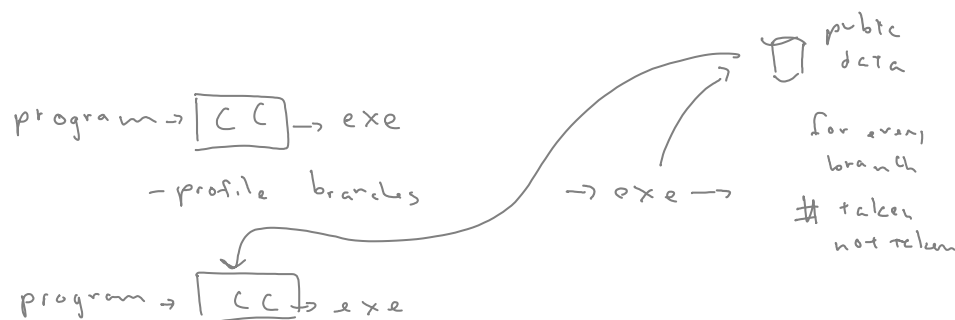
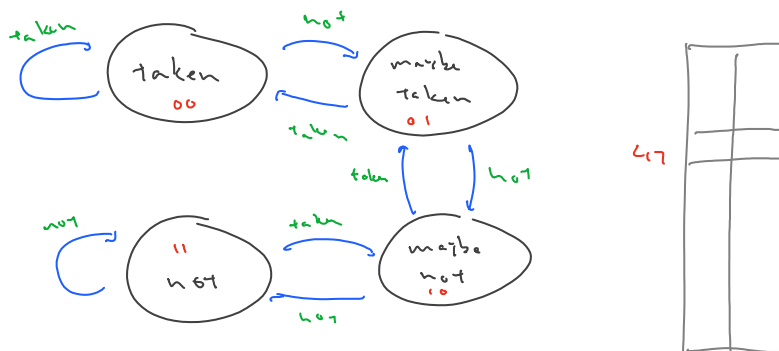
1-bit per branch

- Predict whether taken or not taken



Since it always changes the opinion, after 1000 taken's, one not taken will change its opinion, so not the perfect branch predictor

Saturation counter



Including profile data into your compiler to more accurately predict branches

Complex patterns

-need more history

Two level, dynamic predictor

