

Sept-28.

Note Title

28-09-2011

1) Branch Prediction

2) Exceptions

3) Multiple Issue

Branch Prediction (Assume all Instructions are Branches)

$$CPI = CPI_{ideal} + (1-p) \times mp$$

$p \rightarrow$  br. prediction rate

$mp \rightarrow$  miss penalty.

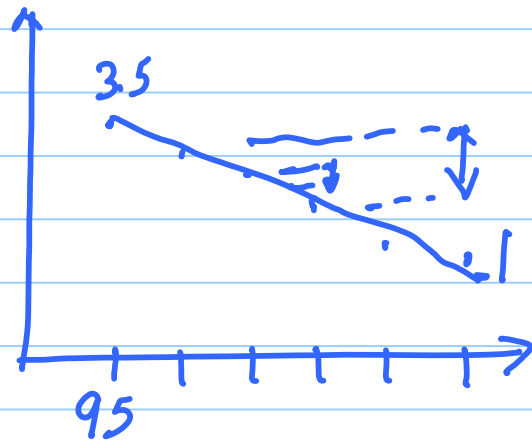
$$\begin{aligned}
 &= 1 + 0.05 \times 50 \\
 &= 1 + 2.5 \\
 &= 3.5
 \end{aligned}$$

$$\begin{aligned}
 &= 1 + 0.04 \times 50 \\
 &= 3
 \end{aligned}$$

$$\begin{aligned}
 &= 1 + 0.2 \times 50 \\
 &= 2
 \end{aligned}$$

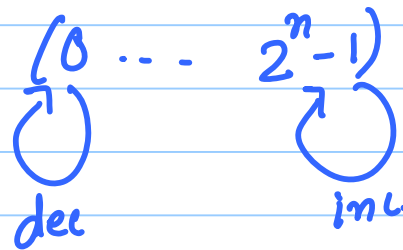
$$\begin{aligned}
 &= 1.5
 \end{aligned}$$

$$\begin{aligned}
 &= 1
 \end{aligned}$$

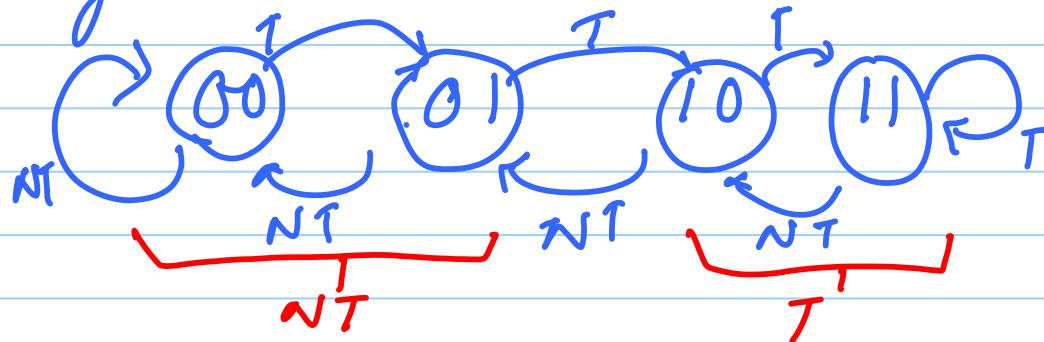




Saturating Counter (n bit)



1) Saturating Counter Predictor.



00 → strongly Not Taken  
01 → Weakly Not Taken  
10 → Weakly Taken  
11 → strongly Taken.

2). Bimodal Predictor.

