MISTAKE - BOUNDED LEARNING MODEL

Definition:

> A learner is said to have mistake-bounded t if for every sequence of challenges, learner makes at most t mistakes

Example:

Given:
- hypothesis class H contains all monotone disjunctions of n variables (function of OR sequence, where ↑ input, ↓ output)
  - In other words, $H = \{$ monotone disjunctions on n variables $\}$
- Domain $X = \{0,1\}^n$

If $n = 3$,
- examples of $h \in H$ is
  - $h_1(x) = x_1 \vee x_2 \vee x_3$
  - $h_2(x) = x_1 \vee x_3$
  - $h_3(x) = x_2$
  - ...
- examples of $x \in X$ is
  - $x_1 =$ "010"
  - $x_2 =$ "111"
  - $x_3 =$ "000"
  - ...

Let f be the target hypothesis, and the learner is trying to pick $h \in H$ that as close to f as possible (learn f)

Mistake-bounded model says that the learner will make at most n mistakes before it learned f.