CPSC 421: Introduction to Theory of Computing **Winter Term 1 2018-19**

Lecture 16: October 12

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A = statement on the left is False. B = statement on the right is True. If A is true $\Rightarrow$ B is false $\Rightarrow$ A is false.

$\{0,1\}^* = \{\epsilon, 0, 1, 00, 01, \cdots\}$ countable

$B = \{0000\cdots, 111\cdots, 010101\cdots\}$

Why not apply diagonalization to $\{0,1\}^*$?

We need to define a_n. Each row $f(n)$ has finite length. If $f(n)$ has finite length $\geq n$, then a_n is undefined.

2^{Σ^*} is uncountably infinite.

There are many TMs

$\Rightarrow$ countably many decidable many languages (each decided by some TM)

$\Rightarrow$ countably many recognizable languages (each recognized by some TM)