

CIT 596 Recitation, Week 11

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Critical thinking matters, as always.

The biggest breaking news this week!

- ▶ the tragedy that one makes false assumption
- ▶ OpenSSL Heartbeat Vulnerability *link*



[Exercise] @Hopcroft01 [p.281] example
7.2.5

Do you know $\{a^n b^n c^i \mid i \neq n\}$ is actually **not** context-free.

- ▶ But it is Turing-recognizable.
- ▶ Describe it informally first.
- ▶ Write out the configurations for the input $abcc$.

[Exercise] @NYU CS HW

Try to build a Turing machine that transforms a unary string into its binary representation.

- ▶ Describe it informally first.
- ▶ Write out the configurations for the input 11111.

[Exercise] @from no where else

Try to build a Turing machine that can operate division on two unary strings (0 excluded).

- ▶ Describe it informally first.
- ▶ Write out the configurations for the input 1111#11.

[Exercise] @Sipser13 [p.157] exercise 2.33

Show that

$\{a^i b^j \mid i = kj \text{ for some positive integer } k\}$ is
Turing-recognizable.

[Exercise] @Sipser13 [p.157] exercise 2.30

Show that

$\{w\#t \mid w \text{ is a substring of } t, \text{ where } w, t \in \{a, b\}^*\}$ is Turing-recognizable.