

Nov 30

COMPSCI 3331

Fall 2022

What's next?

- ▶ Please complete feedback for the course:
`feedback.uwo.ca`
- ▶ Assignment 4: due Dec 7, gradescope available. **Error in Q1 fixed.**
- ▶ Quiz 7, Asst 3: being marked.
- ▶ Quiz 5,6: grades available.
- ▶ Solutions up to Q7, A2 marking guide, MT solutions available.
- ▶ Yes, there will be review questions before the final!

Encodings of TM

- ▶ One transition $\delta(q_i, \alpha_j) = (q_k, \alpha_\ell, D)$. Encoding:

$$0^i 10^j 10^k 10^\ell 10^{m(D)}$$

where $m(D)$ is 1, 2, 3 if D is L, S, R , respectively.

- ▶ **Entire** TM M : Let C_1, C_2, \dots, C_m be the encodings of the m transitions of the TM. Encoding of M :

$$e(M) = C_1 11 C_2 11 C_3 11 \cdots 11 C_m$$

Encodings of TM

- ▶ Halting problem: $H = \{(e(M), w) : w \in L(M)\}$.
- ▶ H is r.e., but not recursive.
- ▶ Reduction: $E = \{e(M) : \varepsilon \in L(M)\}$ is r.e. but not recursive.