

Low Level Implementation of a Turing Machine

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1 Turing Machine Definition

The following Turing Machine T decides $A = \{a^n b^n c^n d^n e^n | n \geq 0\}$:

T = "on input $\langle M, R \rangle$ where M is a DFA and R is a regular expression:

0. On empty input string accept, otherwise go to step 1
1. Mark one a with an u
2. Mark one b with an v, if there are not b's to mark reject
3. Mark one c with an x, if there are not c's to mark reject
4. Mark one d with an y, if there are not d's to mark reject
5. Mark one e with an z, if there are not e's to mark reject
6. Repeat steps 1-5 until no a's remain
7. If any b's, c's, d's, or e's remain on the tape reject." 7. If no a's, b's, c's, d's, or e's remain on the tape reject."

2 Turing Machine Implementation

3 Turing Machine Testing

4 Turing Machine Analysis

References

- [1] Project github,
<https://github.com/rodger79/CS5930-project>