CPSC-354 Report

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September 4, 2025

Abstract

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1 Introduction

2 Week by Week

2.1 Week 1

2.1.1 Homework

Here is my work on the MU Puzzle:

$$MIU \to MIUIU \to MIUIUIU \to \cdots$$

$$MI \to MII \to MIIII \to MUI \quad \Rightarrow \quad MUI$$

$$MUI \to MUIU$$

$$MUI \to MUIU \to MUIUIU \to MUIUIUIU \to MUUIU \to MUUIUIU \to \cdots$$

$$MUIIU \to MUIIUUIU \to MUIU$$

$$MUIIU \to MUUIU \to MUIU$$

$$MUIU \to MUUIU \to MUIUIU \to MUIUIUIU \to \cdots$$

$$MUIUIUIU \to MUIUIUIUIU \to MUIUIUIUIUIU \to \cdots$$

The MU Puzzle is unsolvable because it is impossible to reach the string `MU` starting from `MI` using the given rules. After a little research and thinking on my part it is the number of `I`'s that make this impossible: rule applications can double the count, add one, or remove three at a time, however, none of these operations ever reduce the number of `I`'s to exactly zero. Since `MU` has no `I`'s, it can never be derived.

2.1.2 Questions

What rules could we add or remove in order to make this possible? I was thinking are there any ways to make this question solvable by adding only one more rule or maybe altering a rule. I think that this is an interesting question and concept.

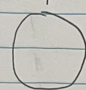
2.2 Week 2

2.2.1 Homework

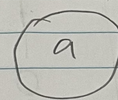
Here is my work on the Rewriting Homework:

Rewriting

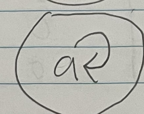
1. $A = \{\}$



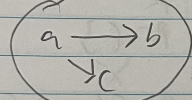
2. $A = \{a\}$ $R = \{\}$



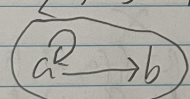
3. $A = \{a\}$ $R = \{(a,a)\}$



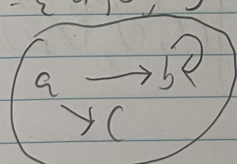
4. $A = \{a,b,c\}$ $R = \{(a,b),(a,c)\}$



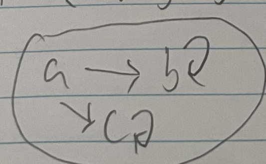
5. $A = \{a,b\}$ $R = \{(a,a),(a,b)\}$

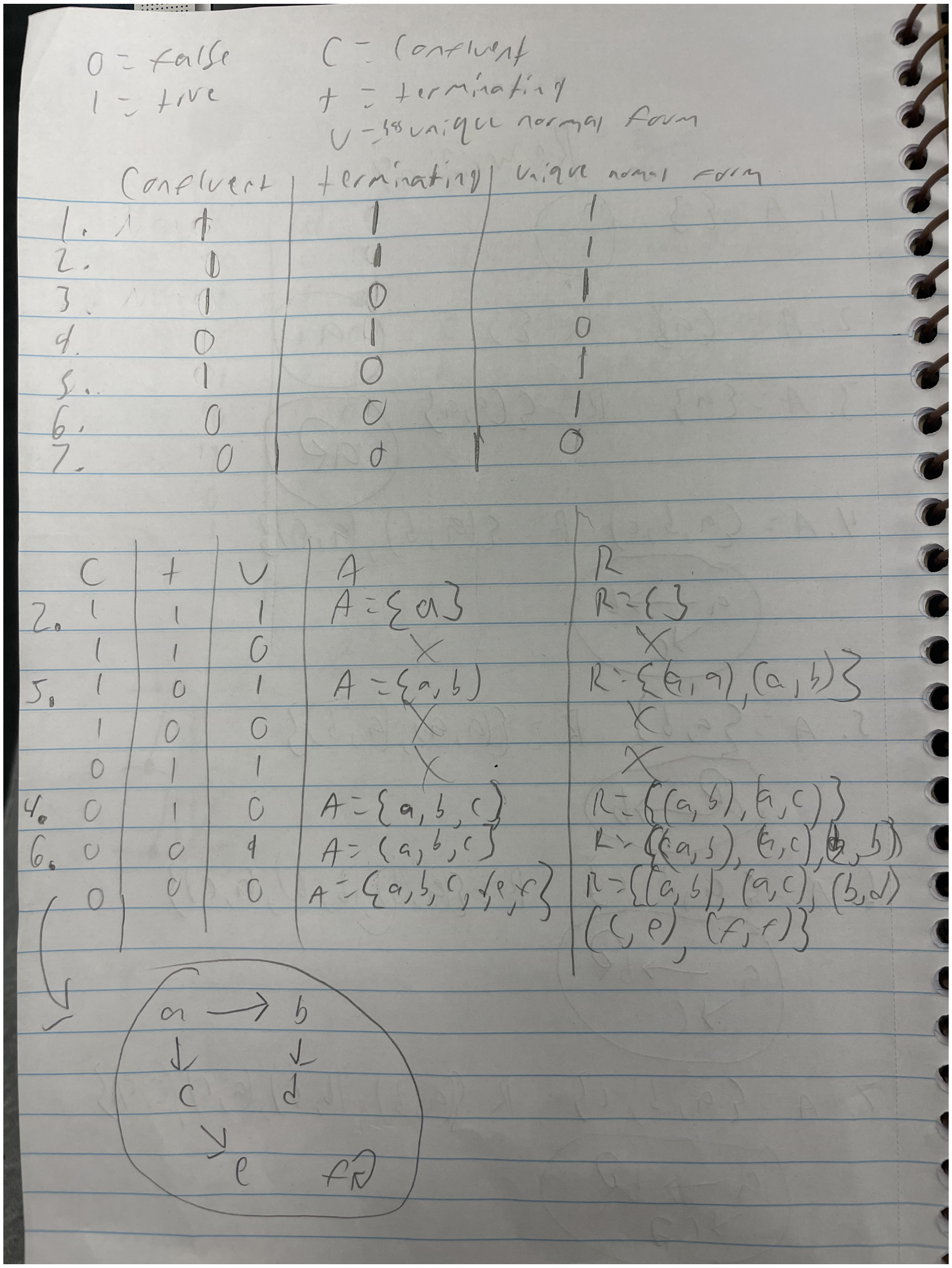


6. $A = \{a,b,c\}$ $R = \{(a,b),(b,b),(a,c)\}$



7. $A = \{a,b,c\}$ $R = \{(a,b),(b,b),(a,c),(c,c)\}$





2.2.2 Questions

When relating to programming, if a system is confluent but not terminating, like in some programs with infinite loops, how does confluence still guarantee that the result of a program is unique when it exists?

3 Essay

4 Evidence of Participation

5 Conclusion

References

[BLA] Author, Title, Publisher, Year.