

# Extending The Thue-Morse Sequence

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**Abstract**—In this paper, we discuss various ways to extend the Thue-Morse sequence when used as a fair-share sequence. Included are N definitions of the original sequence, M extensions to n players, and proofs of equality for all definitions. In the appendix are several complexity analyses for both space and time of each definition.

**Index Terms**—component, formatting, style, styling, insert

## I. INTRODUCTION

## II. THE ORIGINAL SEQUENCE

A. *Definition 1*

B. *Definition 2*

C. *Definition 3*

D. *Summary*

## III. THE EXTENSIONS

A. *Definition 1*

1) *Proof of Equivalence with Orig. Def. X:*

B. *Definition 2*

1) *Proof of Equivalence with Orig. Def. X:*

C. *Definition 3*

1) *Proof of Equivalence with Orig. Def. X:*

D. *Summary*

## IV. PROVING EQUIVALENCE BETWEEN EXTENSIONS

A. *Correlating Def. 1 and Def. 2*

B. *Correlating Def. 1 and Def. 3*

C. *Correlating Def. 1 and Def. 4*

D. *Summary*

## ACKNOWLEDGMENT

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## V. APPENDIX

A. *Complexity of Extension 1*

1) *Time Complexity:*

2) *Space Complexity:*

B. *Complexity of Extension 2*

1) *Time Complexity:*

2) *Space Complexity:*

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