Lecture Notes For: A First Course in Logic: An Introduction to Model Theory, Proof Theory, Computability, and Complexity

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This lecture note covers my notes during my self study on the symbolic logic (mathematical logic). The main text book I have covered is the book "A First Course in Logic" by Shawn Hedman.

1 Introduction

- Formal Science: Mathematics, Logic

- Symbolic Logic: Mathematical Logic: Formal Logic and Informal Logic

- Formal Logic: Propositional Logic (zeroth order logic), First Order Logic, Second Order Logic.

> **Example: Some Simple Problems Are Very Complex to Solve!**
>
> Given a finite set of integers, are there any subset that its elements adds up to 10?

The problem stated above is an example of a **decision problem**