

Introduction

This note delves into the theoretical foundation of computer science, focusing on the lambda calculus. Despite its name, lambda calculus is not a calculus in the traditional sense. Instead, it is a formal system to formalize the process of computation. Besides, lambda calculus, though once hated by many mathematicians, has a profound connection to many mathematical notions, binding the study of pure mathematics and theoretical computer science. We will show interesting examples throughout this note to illustrate these connections.

Definizione 0.1 Lambda calculus is a formal system in mathematical logic for expressing computation based on function abstraction and application using variable binding and substitution. It is a universal model of computation that can be used to simulate any Turing machine.

What is Lambda Calculus?

Historical Background

Lambda Calculus and Computation