Bouns report

# Why Are Strings Immutable?

Strings are immutable in many programming languages, including C# and Java, meaning that once a string is created, it cannot be changed. This immutability ensures that strings are thread-safe and can be shared across different parts of a program without unintended side effects. It also allows for optimizations like string interning, where identical strings are stored only once in memory, improving performance and reducing memory usage.

# Jump Tables

Jump tables, also known as dispatch tables, are data structures used to implement efficient multi-way branching. They typically consist of an array of function pointers or references, allowing for constant-time (O(1)) selection of functions to execute based on an index. Jump tables are commonly used in switch statements, finite state machines, and interpreters to quickly dispatch execution to the appropriate code block.

# Complexity

Time complexity is a computational complexity that describes the amount of time it takes to run an algorithm as a function of the length of the input. It provides an upper bound on the running time, allowing us to estimate how the runtime increases as the size of the input increases.

taking the first program as an example for calculating the complexity **PrintNumber**

- Each individual step in this program is O(1), meaning they take constant time.