

Pandas is a Python library widely used for data-manipulation. The code written with Pandas lacks any type-safety and everything is decided at runtime. This can potentially be a source of errors and crashes at runtime. One way to deal with that is to use another, type-safe, language and a library with better safety guarantees and compile-time checks. This approach is not widely used as it is not very user-friendly. An alternative approach could be to use program verification method Abstract Interpretation to perform some checks before the run of the program. The goal of this thesis is to design a framework for analyzing data-manipulation programs and implement an analyzer for the Pandas library. The framework will be based on the Abstract Interpretation. The capabilities of the resulting analyzer will be evaluated on a set of small but realistic case studies.