

# Research Project Plan

## Research question

What are the performance differences between Python 3.11 (PyCharm) and C# 11 (.NET 7.0, Visual Studio) in executing Object-Oriented Programming (OOP) paradigm?

## Research method

In this study, the performance of Python 3.11 (PyCharm) and C# 11 (.NET 7.0, Visual Studio) for object-oriented programming (OOP) on the M1 Pro 8-core CPU is compared. Statistical analysis is done, and various OOP tasks are benchmarked. Results show that Python excels in ease of development and a rich library ecosystem, while C# excels in execution speed and memory efficiency. Recommendations take into account the needs unique to each project. Further hardware architectures and optimizations may be the subject of future study.