The thesis focuses on measuring the performance of ECS libraries for the C# programming language. Unlike the often conducted simple tests, the goal of this thesis is to perform more complex measurements on a sample game. The result of this thesis is a sample non-interactive game simulating villagers harvesting resources in an open world. To enable the measurement of ECS libraries performance, an abstraction layer was prepared, allowing a single game implementation to launch with different ECS libraries. Before the actual measurement, we categorized the individual ECS libraries and formulated a hypothesis regarding the expected performance for these categories. In the end, we conducted a series of measurements that allowed us to confirm our hypothesis.