This work is a research on Test-Driven Development (TDD), the existing literature about TDD and techniques used for implementing TDD with particular focus on the system NUnit (www.nunit.org). The primary goal was to design and implement system suitable for testing software modules, which would be backward compatible with NUnit 2.2. The designed system should implement support for testing modules that run in parallel environment, performance testing and detailed analysis of errors in modules. The work includes a console application that allows running selected tests in automated fashion. Test results as an output of this application are stored in the XML format suitable for further processing. The work also includes a GUI application that gives users interactive access to tests. This application offers a list of available tests,
lets users to run selected individual tests or their groups and presents results of running tests in the graphical form. The work should include the user guide, technical specification of the designed system and the source code of all implemented modules in the language C#.