ABSTRACT

The thesis is presented in 81 pages. It contains 2 appendixes and bibliography of 22 references. 16 figures and 14 tables are given in the thesis.

The goal of the thesis is to develop mathematical and software tools for long-term forecast of the number and sex and age structure of the population of Ukraine.

In the thesis, existing solutions are analyzed, such as mathematical model of queuing system with non-stationary Poisson flow of incoming applications, standalone queuing system, queuing system with five phases and three phases queuing system with two types of requests. They are compared in terms of performance of the task, the accuracy of obtained results and the number of input data. In the thesis, three phases queuing system with two types of requests is used to solve the task.

The automated system implementing the chosen method is developed. The developed system is tested.

Keywords: poisson arrival, markovian process, autonomous queuing system, moments method.