

**Sofia University “St. Kliment Ohridski”**  
**Faculty of Mathematics and Informatics**  
**Department of Information Technologies**

**Thesis subject:** Web based information system for storage and management of genetic analysis data

**Student:** Stoyo Vanev Venkov

**Scientific adviser:** Anotni Popov

**Consultant:** Radka Kaneva

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**Key words:** information system, web-based, management, laboratory, medicine, DNA, analysis, sample, Java

**Annotation:** The thesis is developed for Molecular Medicine Center in Bulgaria. Its main goals are:

- to describe the processes of DNA sample registration and analysis
- to specify the base functionality of a system for data storage and management of the processes for sample analysis in the laboratory of the Center
- to develop base functionality of the application

The specified systems belong to the so called “Laboratory Information Management Systems”, which are computer programs for management of laboratory processes and instruments.

In the system the process of sample analysis is divided into small steps. These steps are specific to the Center and they are fulfilled in a predefined order. The system stores the date and time of beginning and completion of every step. This information gives the possibility to analyze the efficiency of work. It helps the decision making for improvement of productivity and action plans. The users of the systems manage the process by defining the current steps and registering material movement and distribution.

In the analysis process the system keeps track of the locations where the material of every sample is placed. The users have an easy access to list of all working samples, i.e. the samples which are not completed yet.

The application is web based. It is developed using the well-known MVC (Model–View–Controller) architecture pattern. The web container is Tomcat 5.5.20. The database server is PostgreSQL 8.2. The programming language is Java 1.5.

Technologies used: J2EE, JSP / Servlets, JSTL, Apache Struts Framework, Spring Framework, Hibernate Framework, XML, XSLT. The IDE is IntelliJ IDEA 4.5.4. The database modeler application is ERwin data modeler r7.