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THE DEVELOPMENT OF A LIBRARY FOR TECHNOLOGICAL PROCESS TRENDING IN QT

E. P. Shutova, Yu. A. Chursin

National Research Tomsk Polytechnic University,

Russia, 634050, Tomsk, Lenin Avenue, 30

E-mail: elizabethshoo@mail.ru

The aim of the work is to develop a C++ class for trending technological processes using Qt framework.

Trend is an ordered set of values of a technological variable, each being written at certain time intervals. Creating trends and storing information about parameters is needed for further analysis and control design. Graphical representation of process variable changes over time promotes a better understanding of the dynamics of technological process.

Due to the existing huge array of technological data, which takes up gigabytes, it is important to provide means for handling it. Thus, a C++ class containing methods for saving data to file, compressing them, loading desirable set of data from file and displaying them was created. The file format chosen for storing data is a binary file as it takes up least memory (compared to text and xml-formats) and is compressed efficiently.

The class was created within the framework of Qt, a cross-platform application framework widely used for developing application software that can be run on various software and hardware platforms. Due to the variety of its modules, such as Qt Core, Qt GUI, Qt Widgets, Qt Multimedia etc., Qt provides the programmers with a convenient set of class libraries and a certain model of application development allowing them for writing less code. Within this framework the mechanism of signals and slots is realized.

Using the Qt classes for data streaming, serialization/deserialization (translating data structures into a byte array) is carried out, thus, data being saved to a binary file. Pre-selected data type (double, QDateTime) allows for seeking within the file and loading only a part of it without having to load the whole file. Embedded classes for compressing/uncompressing byte arrays are used in file shrinking methods.

In order to test the class a graphic user interface (GUI) application was created. It consists of four classes with three of them containing forms for choosing a file, displaying the file information and a table containing selected variable values from a certain time period. To this end, Qt visual objects were used, some of them being dynamically created and cast, and were connected through signal and slot mechanism.

REFERENCES

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ПРОЕКТ «ГОВОРЯЩИЙ ЗАМОК»

Э. Е. Акулов, А.А. Серенко, А.К. Фомичев, И.В. Кыштымков

Национальный исследовательский Томский политехнический университет,

Россия, г.Томск, пр. Ленина, 30, 634050

E-mail: eduard.akulov.1995@mail.ru

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