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## **THE DEVELOPMENT OF A CROSS PLATFORM BY USING QT FRAMEWORK**

In our modern world, people get new challenges that require available and effective solutions at a current stage of informatization of all spheres of life. The development of information and communication technologies causes the spreading of such operating systems as Android, Linux, MacOS. As a result of such tendency, we face a problem of the repeated program rewriting for different OS among the developers. So there is a need to find the solution of this problem. The task is to write a program, which will be able to run on the most common platforms. Present day tools give such capabilities for writing the cross-platform applications, which are called Qt.

Qt is a cross-platform toolkit for developing application software with the C++ language. It includes all general classes, which may be needed in the development of software, starting from GUI libraries to OpenGL or databases modules. Also, there are Ruby, Pascal, Python, Php, Ada editions [1].

Havard Nord and Eirik Chambe-Eng started the Qt development in 1991. The project has got such name because of the beautiful Q letter in a font of Havard Emacs, and T because of the “toolkit” word [2]. The company was registered on the 4<sup>th</sup> of March, 1994. Originally it was called «Quasar Technologies», then «Troll Tech», and «Trolltech». Now it is «Qt Software» after the purchase of the company by Nokia [3]. Today the Qt library is used by such companies as AMD, Valve, AutoDesk, Siemens, Kitware, Lucasfilm etc. At library is formed a basis for such projects as a voice application over IP Skype, network world map Google Earth, a image processing application Adobe Photoshop Album, Workspace Desktop KDE, which comprises many of Linux distributions[4].

Qt project is open-sourced. It has public Git-repository [5]. It allows monitoring the development, and proposes its corrections and improvements.

Among other libraries the Qt feature is a meta-object compiler – pre-processing system source code. The Meta-Object Compiler (moc) is the program that handles Qt's C++ extensions. The moc tool reads a C++ header file. If it finds one or more class declarations that contain the Q\_OBJECT macro, it produces a C++ source file containing the meta-object code for those classes. Among other things, meta-object code is required for the signals and slots mechanism, the run-time type information, and the dynamic property system.

It is the most comfortable to use Qt Creator for creating the programs with Qt libraries using, which can use Microsoft VC++ or GCC as compilers and GDB as a debugger. There is a support of working both classic C++ language program and using QML (Qt Meta-Object Language) for designing windows. For comfortable creating of graphical interfaces Qt Creator is also completed by QTDesigner tool, which allows creating dialogue windows and forms in WYSIWY (What You See Is What You Get) mode by using mouse.[1] It allows abstracting the development of graphic elements on high level.

So, the main Qt advantages as a tool for creating software are:

- The great set of tools, which can be easily expanded, hundreds of libraries, which are divided into modules for convenience, can be complemented and emulated.
- Signals and slots of mechanism, which provides great flexibility in programming, with a high level of abstraction.
- Documentation – each class has full documentation, which includes a description of all the methods, functions and examples. Moreover, it has comfortable class classification and search for user.
- High working speed and good optimisation by using C++ as a main programming language.

#### **LITERATURE**

1. Qt [Electronic resource] Access mode: <https://uk.wikipedia.org/wiki/Qt>.
2. Qt – openSUSE [Electronic resource] Access mode: <https://ru.opensuse.org/Qt>
3. История Qt Software [Electronic resource] Access mode: <http://habrahabr.ru/post/45764>
4. About Qt – Qt Wiki [Electronic resource] Access mode: [https://wiki.qt.io/About\\_Qt](https://wiki.qt.io/About_Qt)
5. Qt - C++ фреймворк [Electronic resource] Access mode: [http://www.opensource-brothers.ru/программирование/c\\_plus\\_plus/qt](http://www.opensource-brothers.ru/программирование/c_plus_plus/qt)