0.1 GraphEd

0.1.1 Who?

There must be a group to develop this software since 1986. The main contributor should be Michael Himsolt (himsolt@@fmi.uni-passau.de). He has left the University. Fred Dichtl is now responsible for the maintanence of GraphEd. His email address is Fred.Dichtl@fmi.uni-passau.de.

0.1.2 Where?

GraphEd is available via anonymous ftp from 'forwiss.uni-passau.de' (132.231.20.10): /pub /local/graphed.

GraphEd was created in Lehrstuhl fuer Theoretische Informatik, University of Passau, 94032 Passau, Germany.

0.1.3 When?

The version we have now is the most updated one: graphed-4.1.4. It was released in October, 1994. And it is still being maintained and updated.

0.1.4 Why?

GraphEd is a powerful interactive editor for graphs. It allows the user to construct and manipulate graphs in a window system, using an object oriented user interface. The system can be adapted to a very wide range of applications, e.g. Petri nets, electrical & VLSI circuits, program and database design, or arbitrary diagrams. It has various features for the shape of nodes and edges. All operations necessary for a flexible and high level user interface are supported. An exceptional feature is the extension to graph grammars, which are systems for the systematic construction of graph grammars. Users may supply their own routines written in C.

0.1.5 What?

GraphEd is a graph editor with support for graph grammars, graph layout algorithms and an interface for application modules.

It supports directed and undirected graphs, labeled nodes and edges, and special edges such as self-loops and multiple edges – all kinds of graphs in short. Nodes may have arbitrary size and shape, where the shape is set either by predefined functions or by user-defined icons. Edges may have bends and different style. Labels can have arbitray fonts. The user is assisted in drawing and manipulating graphs with features like automatic label placement and automatic attachment of edges to nodes.

GraphEd's object oriented user interface offers all operations necessary for a flexible drawing and manipulating of graphs. This includes inserting, changing, and deleting nodes and edges, their labels and attributes. The user may bundle groups of nodes and modify them together. Cut and paste operations are also supported. All operations are fully mouse- and menu-drivenand and adapted to the SunView environment.

As a special extension, GraphEd can handle graph grammars which are both of theoretical interest and useful for construction of graphs. The extension offers the ability to design and test graph grammars on screen.

0.1.6 How?

The algorithms offered by the tool include:

- connectivity check (both strong and weak)
- biconnectivity check (both strong and weak)
- maximal clique
- maximal flow
- maximal weighted matching
- planarity test (several kinds)
- planar graph triangulation (with a lot of options)
- polygon triangulation (with a lot of options)
- tree layout
- DAG layout
- all kinds of planar/visibility layouts
- hierarchical graph design

...

It does provide comprehensive and optimal answers to the related graph problems.

0.1.7 Programming Language?

The source code was written in ANSI C.

The compiler we used is gcc 2.6.3.

0.1.8 Operating Environment?

GraphEd runs on SUN workstations under X11/XView or OpenWindows. Our system is SunOs 4.1.3.

0.1.9 Efficiency?

The software is very efficient, otherwise it couldn't be interactive.

0.1.10 Portability?

First of all, users should get the compressed file graphed-4.1.4.tar.gz from the ftp site mentioned above and uncompress it. And then recompile it following the README file. Some modification has to be made according to new system and environment setting. For example, some variables in makefile.template such as INSTALLBASE and ARCH may have to be changed. Compiler, yacc, lex, and linker flags may have to be modified too.

After "make all" succeed, type "make install" to install it. The files dot.graphed and dot.graphed_fileselectors in the subdirectory $libhavetobemovedto$bin and renamed to be .graphed and .graphed_fileselectors.

One thing to be noticed is that it takes almost two hours to compile it in Sun4 Sparc 10.

0.1.11 Availability?

GraphEd is free for non-commercial use.

0.1.12 Documentation?

After the .tar file is uncompressed, some documentation could be found in the directory. Many versions of README files, CHANGE descriptors, and some more in subdirectory $docareavailable.

Moreover, the postscript files for manul of GraphEd could be gotten from ftp site. I have put GraphEd1.35Manual.ps and Sgraph3.1_Manual.ps in the directory: /home/fs7/users /lzhao/GraphEd. People could try to find more updated versions. These two files are even more helpful for users to use GraphEd and extend their own applications.

0.1.13 Robustness?

GraphEd could give the correct answer on reasonable inputs and correct operations. But it still crashes (segmentation fault) on some inappropriate requests for non applicable algorithms or layout.

0.1.14 Data Formats?

As an interacitve tool, there is no requirment on data formats.

0.1.15 Output and Visualization?

The output is printed on the screen in window system as a graph. It could also be saved in a file and loaded next time. Also it could be exported to postscript files or xfig files. This makes it even more powerful because the output graphs could be easily incorporated into latex file.

0.1.16 Ease of Interface

With the User Manul, it is easier to use GraphEd. Also the object oriented user interface offers much convenient way to use it.

0.1.17 Usefulness?

10 – it is fantastically useful to draw graphs and apply many algorithms to the graphs. Though the robustness should be improved, it is very helpful to people who want to make some graphs and learn graph algorithms.