InCOPYnito™
Code Listings for Copyright

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InCOPYnito is a Windows™ 3.1 program that helps in preparing partially blanked out code listings for US copyright applications. Due to an author's legitimate needs to protect trade secrets, a portion of copyrighted code can be blacked out or hidden in the registration application.

InCOPYnito provides a convenient facility for choosing lines to hide. You may search for and hide all lines containing chosen text strings. You may call up a list of functions   in a separate function window, and choose those functions whose lines are to be blanked out.

There is also a report window which will tell you how many file lines are in your file and how many of these are blanked out. The full version will also do the same for printer lines. Such a convenient facility will aid the user in protecting as much of his trade secret code as possible. As of this writing, there are limitations concerning how much of your code can be covered over.

While it is strongly recommended that you carefully read the references listed below, nothing here should be thought of as the giving of   legal advice. If you have legal sorts of questions, you should contact your lawyer. The purpose of this software is to make it easier for the programming author to protect his rights. The parameters of those rights, and an estimation of how a jury may think about the particulars of a case, can only be properly answered by a lawyer.

OVERVIEW

COMMENTS ON USAGE

FILE MENU

REPORT MENU

GENERAL OPTIONS

ADVANCED OPTIONS

OTHER OPTIONS

SEARCHING

USING THE MOUSE

BUGS/IMPROVEMENTS

REFERENCES

AUTHOR

Overview

To use InCOPYnito, power it up, read in a source code file, use the mouse to choose which lines should be covered over in the printout. Printout one copy for the Copyright Office registration (File | Print Masked File), and another for your files (File | Print File). You may wish to keep an actual copy of what is sent to the Copyright Office for your files too. That's all there is to it.

Of course there are some complications, options and enhancements. Some options deal with what you put on the screen. Other options deal with what appears on the printed page.

The first, most basic choice you have is whether you want file lines or printer lines on the screen. File lines are the source code lines as they appear on your computer. Printer lines are the lines split according to the width of your printer. The program will split lines between words if the character string is less than the width of the printer page output. One advantage to using printer lines on the screen is that it makes sense to paginate on the screen. This can be helpful as copyright registration deals with only a limited number of pages of your source code (see REFERENCES).

Another choice is whether you wish to have line numbers on your screen and printed output. If you are using printer lines, changing this option means that the current lines would change size. To preserve the fact that the user wants printer lines on the screen, the file must be read in again and split into lines appropriately.

You may pick the colors of parts of the main window from a limited selection. The color of text, the general background, text on clicked lines, and the region just behind clicked lines (corona) can be chosen by the user.

One unusual aspect of this program is that it comes with three windows. The main window shows the file you have chosen to work on. There is also a Report window and a Functions window. In the Report window is a listing of the number   masked and unmasked lines in the main window. This list is split into counts of blanks, comment lines and program lines. A comment line is defined here as a line that contains only comment. A blank line is one that is only blank. A program line is a line that contains at least one non-comment character. While this is different from a count of program lines as decided by your compiler, the count performed by InCOPYnito may be more or less reasonable for the purposes of copyright. If you have questions, consult your lawyer!

In the Functions window, the leading line(s) and line numbers of functions are presented. Clicking on the leading line(s) will blank or unblank all the lines between the line numbers indicated. At the moment, there is support for C and FORTRAN 77 functions. In the case of C, a function is considered as the highest pairing of open and closing braces that occur outside of comments. This criteria will include some global arrays and structures in addition to functions. The user might wish to mask such important structures also. Scrolling in this window is by mouse only.

While the program will try to determine which function splitting algorithm to use on the basis of

the file extension, the user can force InCOPYnito to consider the file a C or FORTRAN 77 file by using the File Style option.

The Function and Report windows can be moved and resized, as can the main window. When the main window is resized, or expanded from an icon, the two auxiliary windows move into default position with respect to the main window. The user is then free to change the size and position of the two minor windows.

Other options include choosing Fonts, Margins, and the number of spaces per Tab. Each of these options will change the amount of information on a printer line, and thus the file will be read in again. As these options are saved to an INI file, it may be wise to use a small file to determine the choices comfortable to the user, and   then stick with these choices.

Orphan lines occur when using the printer lines option, when a file line is too long for the width of the printed page. The tail end of the file line goes onto a new line   (or multiple lines as the case may be). These are called orphan lines. For ease of readability, orphan lines can be adjusted to be flush left or flush right of the page.

Pagination makes sense when using printer lines on the screen. The Report on Pages option gives the user a choice of which pages the Report window will calculate numbers for. The pages analyzed will be listed towards the top of the report window, and can be checked by clicking the Report on Pages option again.

Under the Report menu item, the Show Report and Show Functions options will update the selected auxiliary window. Since the Report window is not automatically updated after every click, you should periodically click on Show Report to see the current status of your work.

GRA files are files with the same base name as your source code but with the GRA extension. They contain information about which lines were clicked in the source code as rendered on the screen. Since you can save and apply this information, you may be able to work with a particular file over a number of work sessions. Be aware that GRA information is sensitive to the options chosen, and a warning will come up in case incompatibilities are found. GRA files may be reasonably used when you have settled on your choice of options.

Comments on Usage

There are speed concerns when the program deals with large files. One category of concerns revolves around using printer lines on the screen (i.e. the lines presented to you on the screen display have already been processed to fit the width of your printer). Since a number of options will change the amount of text appearing on a line, the program will read the file in again to recalculate the lines as appropriate. You may wish to experiment with these options on small files to determine which ones you feel are best suited.

The options which require re-reading files are Line Numbers, Tabs, Line Style, Margins and Fonts.

Fonts available are only fixed width. Some say computer code reads better with fixed width fonts. Splitting into printer lines is faster too with fixed width fonts. If TrueType fonts are rendered slowly to the screen it may be worthwhile to use a raster font instead.

Experience with a 486DX/33 computer with 20 meg RAM is that roughly 28,000 lines can be read in and split into printer lines per minute under Windows 3.1. Your mileage may vary.

Another consideration is the need to periodically update the Report Window by clicking on the Show Report menu selection under Report on the menu bar. Performance for large files would suffer if the Report Window were updated every time the line counts changed. The user should click Show Report periodically to get the current line counts.

Some printers may leave the impression of letters that can be seen in blacked out areas under the right lighting conditions. Sometimes this is due to the image of letters carried over on the platen from a non-blacked out line that's already been printed. If the last is not the case, one work around would be to photocopy these pages and check for invisibility on the photocopied sheets.

File Menu Items

Read File gives you the standard file choice dialog box.

Print File will bring up the standard printing dialog box. The options for collation and the number of copies are ignored. When you have chosen which pages are to be sent to the printer, those lines that were marked as masked will be printed with a gray background. This includes line numbering if enabled.

Print Masked File option will perform just as the Print File option does, except that masked files are printed with the text areas blacked out. Line numbers of masked lines will be printed with a gray background if the line numbering option was chosen. This will help the users keep track of exactly what was masked.

The Print Report option will send a copy of the Report window to the printer.

Report Menu Items

Show Report will compute and print a report on how many screen lines are masked. Blank lines, comment lines, and program screen lines are reported on. Here, a screen line that is neither blank nor completely taken up by comments is considered a program line.

Show Functions breaks out C and FORTRAN 77 functions from the file. FORTRAN 77 functions are sets of program lines terminated by END statements. For C programs, a function is considered the highest level of bracketed code blocks. This may also include some global structures, typedefs, and other bracketed items. When a C function is found, its top line is calculated by attempting to run backwards from the left brace. Be aware that this technique will sometimes stall on empty or comment lines, leaving out the actual function header.

Functions under the Show Functions option are listed in the Function window. The first line or two of the function, together with the upper and lower line bounds of the function are listed. By clicking on the function listing in this window, all the lines of the function can be simultaneously clicked, or unclicked. This is really a three phase button, since some of the functions lines may be in either a clicked or unclicked state. Thus the first click will mask all lines, and the second click will unmask all lines. Repeated clicking in the function window will cycle between masking all lines, and unmasking all of them.

Use Clear All to unmask all the lines in your file. The Clear Blanks option will unmask only the blank lines.

General Options

Screen Lines option gives you the choice of placing on the screen either the lines as they appear in the file `(File Lines)` or the lines as they will appear on paper output `(Printer Lines)`. The difference is that printer lines are split according to the width of the printed page.

TheVertical Spacing option lets you choose how much space there is between lines in screen and printer output. The choices are double spacing, one and a half spacing, single spacing, and 1.2 (or TeX) spacing. The default choice is single spacing.

Adjust Orphans tells the program where the user wants to place the parts of a line that extend beyond the width of the printer. You can choose to place these orphans either flush left, or flush right. Programmers might find it easier to read code with orphans flush right.

The Function window can list functions with one or two of the leading lines. The Function Top option lets the user choose how many leading lines are shown.

The File Style of a file is automatically computed from the extension of the file. However, the File Style dialog gives the user a means to override the automatic choice if necessary. Currently, C, FORTRAN 77, and None are the possible styles. The File Style naturally affects the list of functions in a program. A C function is not a FORTRAN function, and vica versa.

The Margins option lets the user choose the margins surrounding text on the printed page. Margins are calculated in terms of inches.

Line Numbers lets you choose whether to include the number of the line with screen and printer output. The line number is the position of the line on the screen.

Spaces per tab lets the user choose the number of spaces a tab is interpreted as. There is an upper limit because of the potential to overflow the maximum line width of 1000 characters.

Advanced Options

The Printer GDI Calls lets you choose which set of graphics functions are used to print to paper. Because printer drivers vary more widely than expected in the interpretation of standard Windows graphics functions, the user may try the second version if the first version does not work.

Other Options

The Color Scheme option lets you choose among a limited selection of color possibilities for the color of plain text, color of clicked text, color of the near background of clicked text (called the `corona`) and the color of the general background of the window (called the `backdrop`). It is advised that the user choose these colors carefully since when the color of the text equals the color of the region behind the text, it becomes invisible!

The Report on Pages option is only applicable when printer lines are on the screen. In this case, the information in the Report window is calculated only for the pages the user has chosen in this dialog box. Scrolling the Report window to its top will verify the range of pages that are currently under consideration.

Fonts invokes a standard font dialog box. Only fixed width fonts are used, since we are dealing with computer code.

Using the Mouse

The mouse is the tool used to gray or cover lines. A single mouse click (both down and up motion of left mouse button) will change that line's gray or cover status. If you hold down the left mouse button and drag the mouse, the lines in the part of the window the mouse has traveled over will have their gray status changed. Going above or below the client area of the main window will cause the window to scroll in addition.

Such scrolling is ineffective if a great number of lines are to be grayed (or ungrayed as the case may be). InCOPYnito is sensitive to the pageup and pagedown keys while the mouse remains inside the client area. Pageup and pagedown keypresses that occur while the mouse is above or below the client area are deleted without effect.

Searching

The Search option appears on the main window menubar. Bringing down this menu item gives a list of search options. To initiate a search, click on the Find String choice to bring up a dialog box. This dialog box includes an enter screen for the string you wish to search for. You may also choose to mask all lines with matching strings. The search is independent of case, and starts at the top of the main window or file viewing screen.

If a match is found, the line containing the match will appear at the top of the viewing screen and the color of the letters will differ from the color used for masked and unmasked text. If the match is found at the bottom of the file, it is possible that the matching line may be too far down to appear at the top of the main window.

The last string searched for is always retained in the Find String dialog box. Matching is always done in the direction towards the end of the file. Searching does not extend across lines.

When you have already performed a search for a match of a string, you may conveniently look further down the file by clicking the Next menu option under Search on the menubar.

Bugs/Improvements

Character constants enclosed in single quotes (') are expected to be contained in a single line. Counts of comment and program lines may be incorrect if character constants are split across lines.

Masked empty lines are not shown as masked if the line number option is turned off. There is an option to unmask all blank lines to compensate for this.

Some color combinations might not work well in some monitors. The colors chosen to highlight search string finds might not contrast sufficiently with the background or text color. Try other color combinations if this occurs.

The common Print dialog box has a page number limitation of about 65,000. This limitation is in effect in the program.

Lines are limited to being 1000 bytes in size.

The program supports only fixed width fonts. Given that computer programs can run to hundreds of pages in length, the use of variable spaced fonts may entail a significant speed hit when the file is converted to printer lines. Of course, being a report to the government, fancy fonts aren't a necessity.

There is also a shimmer effect when using TrueType fonts on the screen. This occurs whenever the screen or a portion is updated. Apparently the screen writing mechanism for TrueType fonts includes a local background blanking out that some people might not like. A program that uses the Edit control, like Petzold's Poppad program, can demonstrate this effect in Windows 3.1 by using the mouse to mark and unmark 2 or 3 lines repeatedly. Interestingly, the default Write program that comes with Windows does not exhibit this behavior.

This effect was partially, but by no means entirely, suppressed in the current version of InCOPYnito. If the shimmer effect is bothersome, please use a raster font such as FixedSys or (non TrueType) Courier for as much of your work as possible.

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References

Some references relevant to copyright are listed here.

Copyright FAQ's on the net.

Circular 1 - Copyright Basics, Copyright Office, Library of Congress, Washington DC 20559.

Circular 61 - Copyright Registration for Computer Programs, Copyright Office, Library of Congress, Washington DC 20559.

Gene Landy, The Software Developer's and Marketers Legal Companion, Addison-Wesley Publishing Co, Reading Massachusetts, 1993

Registration

Please contact the author for registration information.

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