Introduction.

Anybody who has looked more than incidentally at HyperCard must have wanted to know, one time or another, what made a certain stack work the way it did.
The novice hacker then, will soon come to the conclusion that the same modular, object-oriented structure that makes HyperCard the flexible, user friendly programming environment it is, can make an complete analysis of a stack's configuration confusingly difficult.
Little bits of code, which, taken together, determine the way a stack behaves, can be **very** diffusely dispersed all over the stack, and in your search through the stack it's very easy to overlook an (invisible) field or button.
The sudden proliferation of script-dumping stacks, right after the introduction of HyperCard, all meant to tackle this problem, therefore came as no surprise. The main purpose of these stacks was to compile complete (and comprehensive) script listings. They traced all scripts of a stack and after some formatting of the list, wrote them to disk as TEXT-file for later study.
The origin of StackDetective™ lies at this stack-dumper boom, but has since then become a fully developed analyzing & diagnosing tool for HyperCard stacks.

WHAT IS STACKDETECTIVE™ ?

StackDetective™ is fully dedicated to analyzing HyperCard stacks. It is capable of making a complete analysis & breakdown of all the objects in a stack, optionally making a list of all attached scripts.
Complete means here that every object is listed with all its properties (like its name, location, ICON [for its button], style, etc), including the new ones introduced with HyperCard version 2. You can also get a list of all global variables a stack declares, any resources it contains or a fully annotated text-dump of all text from the background and card fields.
StackDetective™ uses two custom menus for most of its actions and funtions, the StackDetective™ and DetectiveEdit menus.

Note: for all you curious ones and hackers out there, if you're wondering how StackDetective™ works, StackDetective™ **can** work on **itself**; the stack is in no way protected.

Although StackDetective™ is a stack-analyzer first and by no means a professional wordprocessor, it does contain a number of editing and printing facilities that will be sufficient to process and manipulate the listings into a preferred edited and formatted form most of the time. However, it is always possible to export the reports to TEXT files for editing and printing the listings in your favourite wordprocessor.

The reason for writing my own script–dumper at that time –spring '89– was the firm belief that such stacks should and could do more than just collect scripts.

The layout for most of StackDetective's listings were inspired by a former US Macintosh magazine, "Macintosh Hands On", but the implementation of that idea, and probably 99% of the script code are the products of my own sweat (and cause of 100% of the frustration when tracking down all the nasty bugs).
The evolution of StackDetective™ to what is is today could not have been possible without the existence of XFCNs & XCMDs. Some of these I wrote myself, to suit my specific needs, others were taken from stacks, floating around the local bulletin boards.
To my knowledge, all XFCNs & XCMDs used are public domain or shareware, no commercial ones are used. A list of all Xternals StackDetective™ uses is at the back of this document.

ABOUT THIS VERSION

This is the first international release of StackDetective™. All earlier versions were done in Dutch, and distributed only through local bulletin boards.
It is a fully HyperCard version 2 compatible stack, and meant to work on stacks created with **any** version of HyperCard; from 1.0.1 to 2.0v2. (I have not tried HyperCard version 2.1 yet, but I doubt it will give you any trouble).
HyperCard 2.0v2 has no problem opening stacks not yet converted to the new file format, so neither has StackDetective™. The only problem you might run into is when you want to edit the script of a non–converted stack. To do this you have to convert it first to the new HyperCard 2 stack format.

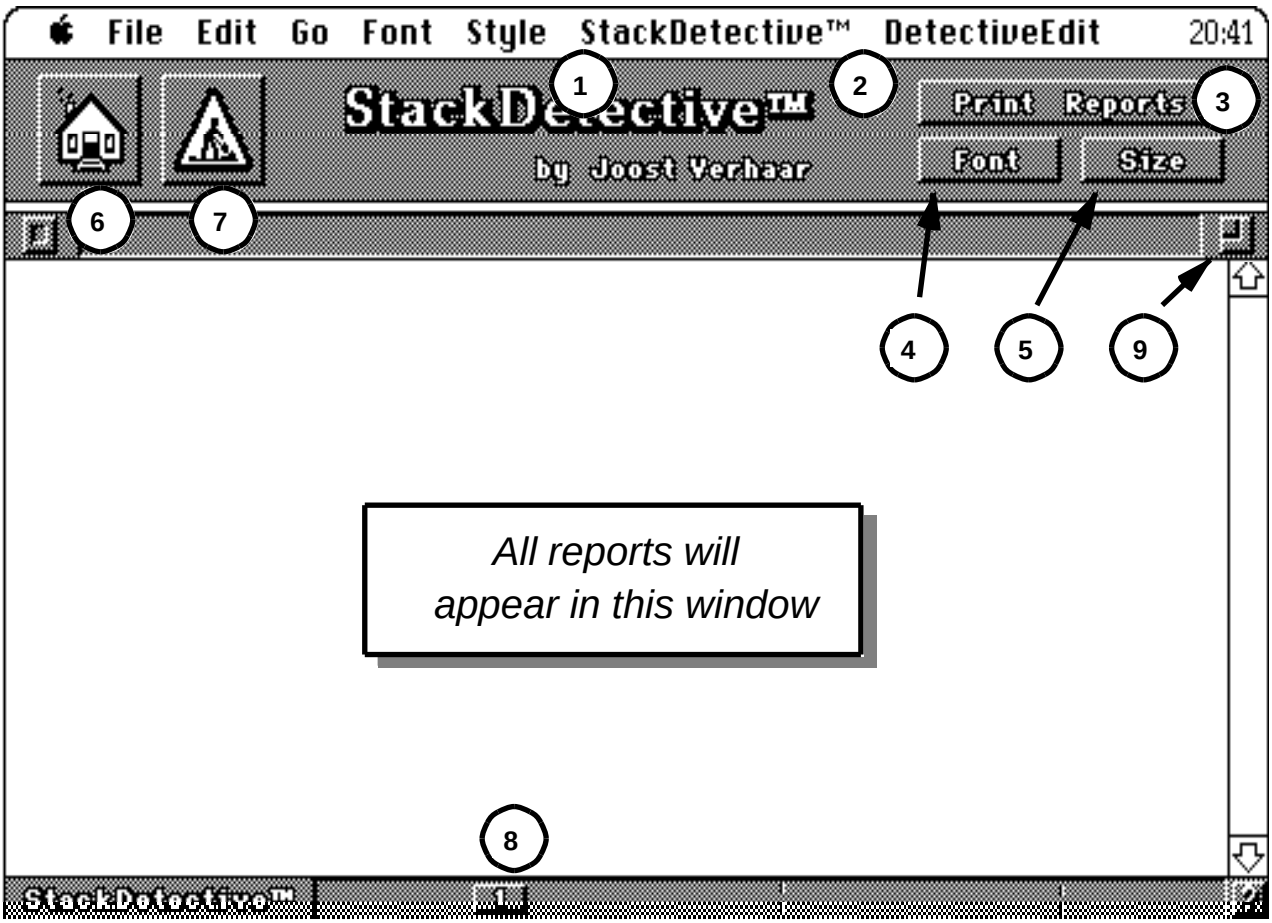
Working with StackDetective™

SETTING THINGS UP :

After opening StackDetective™ you will notice a small delay while we are initializing stack globals, setting up the menu bar and making a few housekeeping checks.
Among other things it checks the current version of HyperCard it is being used with; if by any chance you would succeed at opening StackDetective™ with a version of HyperCard prior to 2, you will be notified of this impossibility and be returned Home. The menu bar will be rearranged, to accommodate the two custom menus and finally we do some internal housekeeping to keep track of declared global variables and to dispose of them when closing the stack.

THE STACKDETECTIVE™ MENU :

Most functions in this menu will result in a listing, appearing in the main textfield.
Each menu-item creates its own report, each new report being added to the contents of the main textfield. If you want to clear the textfield, or save its contents before adding something new, use the options in the DetectiveEdit menu (see below).



StackDetective™ in overview:

1 *StackDetective™ Menu*
2 *DetectiveEdit Menu*
3 *Report PopUp*
4 *Default Font PopUp*
5 *Default Size PopUp*
6 *Home button*
7 *Work in Progress button*
8 *Field Selector button*
9 *Text Overview button*

Info: returns information about the physical condition on disk of a stack. Besides the normal file-info of:

- Name
- Size
- Date of creation
- Date of last modification

it also gives you:

- the number of backgrounds & cards in a stack
- the amount of free space
- the size of data & resource fork
- the version of HyperCard that created the stack
- the file format
- the size of the stack and card window rectangles

Fields & Buttons: tracks all fields & buttons in a stack and organizes the information into a hierarchical table. This way, all card objects (fields & buttons) are grouped by card, all cards and all background objects (fields & buttons) are grouped by background, etc. All specific field and buttons properties are listed in the table, such as: Number, Name, font, fontSize, rectangle (given in x_1,y_1,x_2,y_2 format), visibility, ICON and presence of script and/or text.
The listed scripts and texts are numbered continuously, in order of occurrence; these numbers correspond to the numbering of scripts & texts by the Just Scripts, Just Texts & Scripts & Texts menu options.

Those properties that have boolean values are listed in the tables as "t" for true, "f" for false.

Two card and background properties (*marked* & *DontSearch*), are also listed in the table, whenever appropriate. The characters "√" and "Ds", appearing with the name of a card or background means that for that object the *marked* respectively the *DontSearch* property is set to true.

```
Background 1  Name: (Untitled)  begins at card 1 (Ds)  (has script # –)

 Background fields:
# Name       Font St  Sz Lh Al Vs     Rectangle Styl Wm Sl Lk Ds Dw Fh At Tx Sc
_____________________________________________________________________________
1 "Example"   Geneva pl  9 12 l f   177,0,249,55 scro f f f f f t f – –

 Background buttons:
# Name       Font St  Sz Lh Al Vs     Rectangle Styl Au Sn Hl Sh ICON Sc
_____________________________________________________________________________
1 "Example"   Chicago pl  12 16 c f    0,24,12,36 tran f f f f 2 17 7 5 –

√ Card 1   Name: "intro"  (has script # 2) (Ds)

 Card fields:
# Name       Font St  Sz Lh Al Vs     Rectangle Styl Wm Sl Lk Ds Dw Fh At Tx Sc
_____________________________________________________________________________
1 (Untitled)   Geneva pl  9 12 l t   6,79,197,328 scro f f t f f f f 1 –

 Card buttons:
# Name       Font St  Sz Lh Al Vs     Rectangle Styl Au Sn Hl ICON Sc
_____________________________________________________________________________
1 (Untitled)   Chicago #1  12 16 c t    0,0,512,342 opaq t t t — 3
```

Example of a Fields & Buttons Table

List of used abbreviations in the Fields & Buttons-table:

Shared properties:

#	button or field number (Nó ID#)
Name	Name of button or field ("Untitled" if no name)
Font	TextFont of button or field
St	Default textStyle (plain, bold, italic, underline, outline, shadow)
Sz	Default textSize (points)
Lh	Default lineHeight (points)
Al	Default textAlign (left / right / centered)
Vs	Visible property
Rectangle	x_1,y_1,x_2,y_2 -coördinates of object
Styl	Style of object
Sc	Script # (if present)

Unique Field properties

Wm	WideMargin property
Sl	ShowLines property
Lk	lockText property
Ds	dontSearch property (used in conjuntion with a Find-command)
Dw	dontWrap property
Fh	fixedHeigth property
At	Autotab property
Tx	Text-number (if present)

Unique Button properties

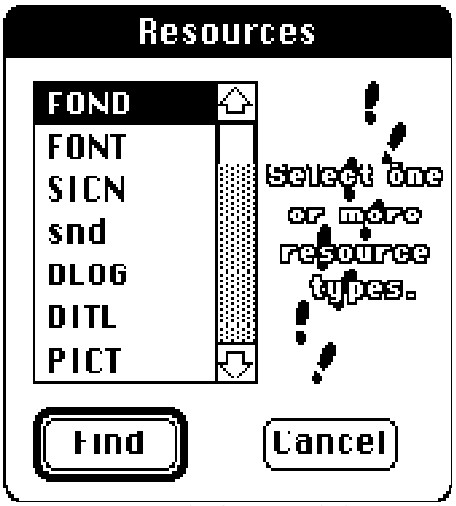
Au	Auto-highlight status
Sn	showName property
Hl	Highlight status
Sh	Shared highlight status (bg. buttons)
ICON	ICON ID # (if present)

Just Scripts: collects all scripts of a stack, in hierarchic order. Script numbering is conform the numbering in the Fields & Buttons table.

Just Text: collects all texts of a stack, in hierarchic order. Text numbering is conform the numbering in the Fields & Buttons table. The contents of background fields are looked at and numbered at the card level. Background fields with *sharedText* are recognized as such and their text will be numbered correctly.

Scripts & Texts: collects all scripts and texts of a stack; a combination of the last two functions.

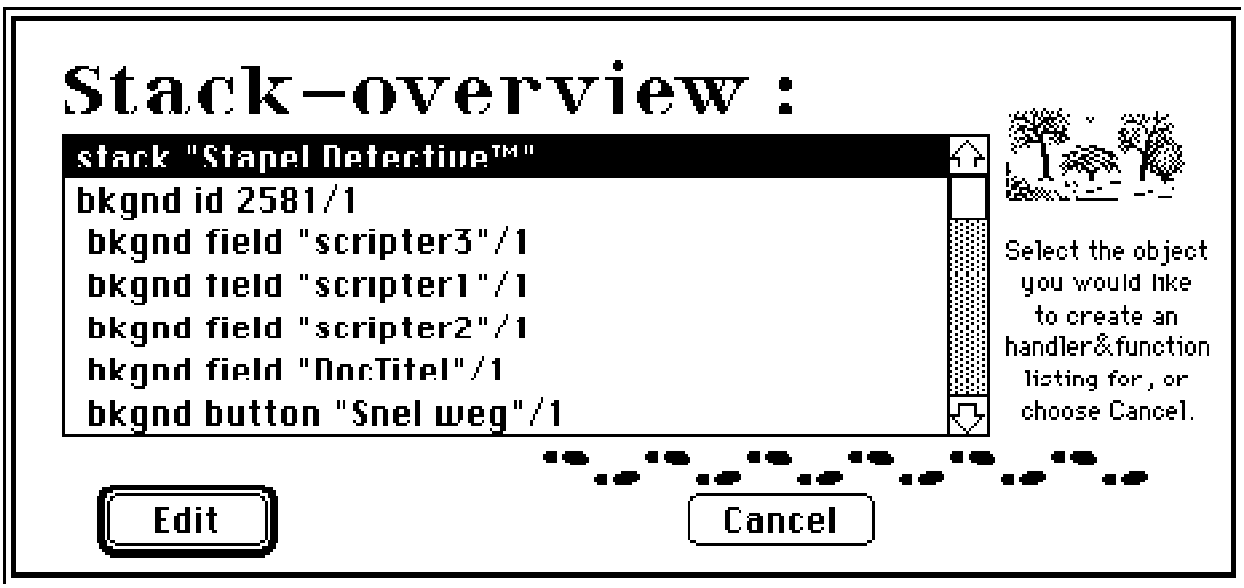
Global vars.: searches all scripts of a stack for global variables. When it finds a global, it lists the name of the global with the name of the object whose script contains it.
Once a global is declared, it remains active even after the originating stack is closed, until you quit from HyperCard. To prevent such flotsam clogging the free memory available, it is recommended to empty these globals as soon as possible, preferrably in a *closeStack* handler.
This can also be done with the help of XCMDs – see the *openStack* & *closeStack* handlers of StackDetective™ – but each external adds to the size of a stack. Besides, these Xternals can only detect **active** globals of **open** stacks; this function enables you to get hold of all globals of a stack without opening it.



Find resources…: searches for resources in the resource fork of a stack.
Select the resource types you want to look at in the *Resources* window. Multiple selection is possible by *Shift* clicking items in the list. The windows will display only those resource types actually present in the stack. Nameless resources will be listed as "Untitled". When a selected stack has no resource fork (and therefore no resources), you will be notified of this.

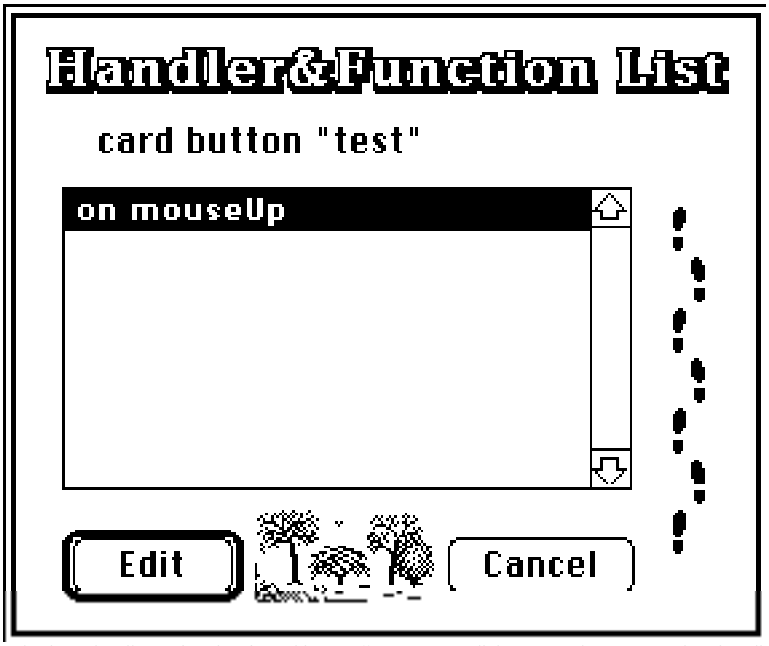
Script Search & Edit : this function lets you inspect all scripts of objects in a stack, and even edit them if you'd want to. With some stacks it is hard to get into HyperCard's ScriptEditor, because of some sort of (attempted) protection, while other stacks will foul up if they're being altered while busy. Most of these problems are avoided by using this StackDetective™ function.

After choosing this function you will be asked to select a stack to work on and will be transferred to that stack if you didn't choose Cancel. After a short pause, the *Stack–overview* dialog below appears, listing all objects in the stack. The time to wait between opening of the stack and the displaying of the dialog depends on the size of the stack, since the object list is assembled on the fly. From this list you select an object to open with the ScriptEditor, or choose Cancel to return to StackDetective™.



Note: the /X suffixes with the items in the list are used by StackDetective™ for internal housekeeping, they are not part of the object names.

After selecting an object, its script is scanned for handlers and functions. If the object's script is empty you'll be informed of this and returned to the *Stack–overview* dialog, otherwise you're presented with a list of all the handlers and functions in the script.



Selecting a handler or function from this *Handler&Function* dialog opens the HyperCard ScriptEditor with the selected handler or function name as the *scriptFindString*. Choosing Find again from the Script menu, or typing ⌘-G, takes you to the handler or function in the window.

Note: at this point you have the full power of the ScriptEditor at your service, to change or add to the script as you like.

When closing the ScriptEditor for the current object, you may return to the *Stack–overview* dialog and choose another object in this stack to edit, or choose Cancel to return to StackDetective™.

Note: the *Handler&Function* dialog may be used to scan objects for specific handlers, without opening all their scripts.

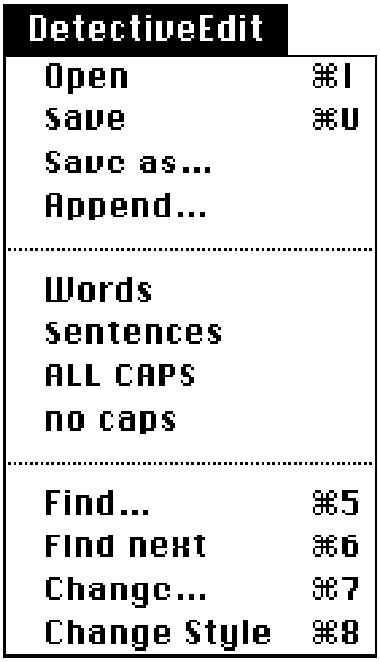
Deprotect…: enables you to remove passwords from password–protected stacks, at the same time setting the *cantPeek* and *cantModify* property of the stack to false if the stack is an editable, version 2, stack; otherwise you'll have to convert the stack first. If it was unsuccessful in removing the password, StackDetective™ will tell you so.

Convert…: allows you to convert old stacks to the new file format from within StackDetective™. This action is irreversible; older versions of HyperCard can't deal with the new file format.

THE DETECTIVEEDIT MENU:

So, now you have a report staring at you, but you want to clean it up a little before saving or printing it. Therefore, unless you can't live without super-de-luxe text editing routines, StackDetective™ has a few functions you might want to try, before reaching for your heavy duty word processor or GREP (for you UNIX buffs and Nisus/QuedM Hackers) utility.

Note: Most functions in the DetectiveEdit menu work equally well with a selection of the report as with the entire report.



Open…: opens a TEXT-file and puts it into the main text field, replacing any old contents in the process. If there were any unsaved changes to the old text you'll be asked what to do about them.

Save: saves all or part of the report as a plain TEXT-file. You'll be prompted for a filename if necessary.

Save as…: saves all or a selection of the report as a plain TEXT-file, under a different name.

Append…: adds the current report or part of it to an existing TEXT-file.

Words: capitalizes words.

Sentences: put a capital at the start of each sentence.

ALL CAPS: converts all characters to uppercase.

no caps: converts all characters to lowercase.

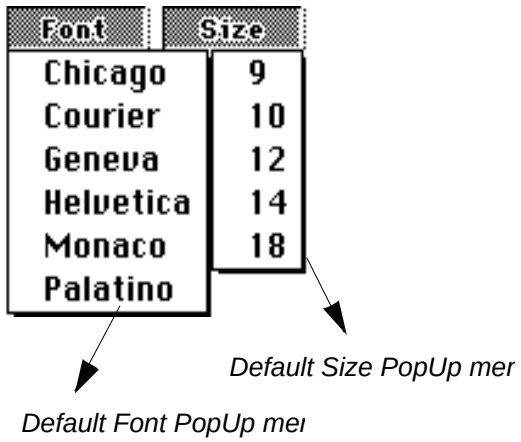
Find…: searches a word or string in the report.

Find next…: finds the next occurrence of a word or string previously defined as **Find…** criterion.

Change…: searches for and replaces a word or a string (with another word or string). Accepts "return" as search-string for the special character *carriage return*.

Change style…: searches for and changes the formatting style of a word or string.

MORE FORMATTING OPTIONS:

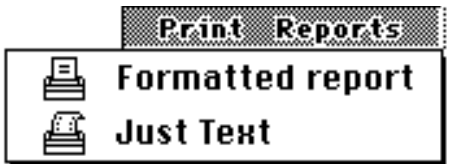


The reports StackDetective™ produces are nothing more than bare text, displayed in one (default) font; a custom condensed Monaco.
It doesn't mean the reports have to stay that way. Beginning with HyperCard v.2 it is possible to mix fonts and styles in one text field, but a field still has to have its default settings.
To change the font ot size of the entire, unformatted report, use the **Font** & **Size** popUp menus (4&5).
To change the font, size or style of individual words within the report, use the Font & Style menus in the main menu bar.
The **Size** popUp menu always shows the available fontsizes of the current default report font (it also works with TrueType fonts, if a bit slow).

Note: The Fields & buttons table needs a monospaced font for best readability. That's why the default report font is Monaco. If you want to change the font, please use another monospaced font, like Courier, for best results.

PRINTING IN STACKDETECTIVE™ :

Now, when you've done your best to edit and format your report, it would be a shame not being able to print it from within StackDetective™; even more so as exporting the report is only possible as unformatted TEXT. StackDetective™ offers two print options, by means of the **Print Reports** popUp menu.



Formatted report : prints the report (all the report fields), exactly the way it is formatted on screen.

Just Text : prints the report in draft, without formatting, using Geneva or Helvetica 10 (depending wheter you use an ImageWriter or a LaserWriter (driver)).

Note: For best quality printing with the default Monaco font, using an ImageWriter II, the stack contains an 18 point version Monaco, to complement the 9 point screenfont.

MISCELLANEOUS OPTIONS & FUNCTIONS:

StackDetective™ supports some extra features, contributing to the ease of use of this stack, which not on any of the menus. Some of the more obvious ones are listed in the overview picture.

The analysis of very large stacks can cause the report to exceed the maximum size of approx. 30,000 characters a textfield can hold. This could cause parts of, or the entire report to be lost, if there isn't some sort of safeguard.
When a report gets to big for one field, the surplus text is directed to one of the extra report fields. Normally these are kept invisible when not filled with text, to avoid an overcrowded display.
The usage of more than one report field will become apparent immediately when returning from an analysis function. The main report window will be split in two, or three, to show all filled text fields.

For easier reading/editing of the fields, it is possible to zoom a field out to its normal proportions, by using the slider button (8) at the bottom of the screen. The numbers correspond to the part of the report you want zoomed out. To return to the report overview click at the button at the right hand of the report titlebar (9).

If your report gets really, monstrously big, StackDetective™ can add extra cards to itself to enlarge its storage capacity. These extra cards are completely identical to the first (main) card. Because StackDetective™ is a one-card-only stack most of the time, it doesn't have navigation buttons. Please use the *navigator palette* or HyperCard's Command–Key shortcuts to go to different cards when necessary.

The closebox, at the left in the reports titlebar, acts very much the way you'd expect. It empties the report field(s), asking to save its contents first – if necessary.
The buttons numbered **6**&**7** in the overview picture are transfer buttons.
Button **6** is a standard Home button, guaranteeing a clean exit. It empties the report fields, removes the extra menus from the menu bar, resets all globals, removes the stack from the *stacksInUse* and compacts it, before returning to Home.
Button **7** can be used to switch between stacks without all this cleaning up. StackDetective™'s custom menus won't be visible while in another stack, to prevent errors; once back in StackDetective™, they'll re-appear.
By the way, why shouldn't you look under the -menu, just because it's a HyperCard stack?

Error messages & Alerts.

Listed below are most of the error messages (or "HyperCard Helper" messages in HyperCard lingo) and alerts that can show up, using StackDetective™.

Out of memory: HyperCard itself already uses, and thus reserves, a lot of memory, but some of StackDetective's functions (including Xternal functions) may need still more memory. When you're working on a 1 MB machine, are working under MultiFinder or with the new system 7, situations can arise that causes this Alert to appear. If this happens to you, please check if you can free up some memory by disabling any large INIT's or restart and try again (also try to increase HyperCard's MultiFinder memory allottment in it's Get Info box).

The next two messages both are caused by a lack of free disk space:

Couldn't set that field.

That disk is too full.

Both appear when you want to add new text to the report field(s) and HyperCard discovers there is not enough room on the disk to accommodate this expansion of the stack.
If HyperCard notices this condition during the run of one of StackDetective's functions, the first message comes up, the current action is aborted and you'll be returned to StackDetective™.
The second messge appears when, while in the idle state, HyperCard found the diskSpace insufficient to add more to the stack.
A precautionary check for the available diskspace could prevent a lot of frustration due to these messages, but Hey, we're all using Húúge Hard Disks, aren't we?? If you still want an automatic check, please tell me and I'll try to get it into the next version.

The next messages indicate situations when StackDetective™ can't continue with the current action and returns you to StackDetective™ in idle condition. These are however **not** fatal errors!

Something may have gone wrong! Would you like to try again?:
This is a general alert. You'll see it for instance if no file was selected in a Standard File dialog. Most of the time this is by deliberate action, hitting the Cancel button, but the possibility exists that StackDetective™ encountered some internal error and lost some information, so better be safe than sorry!

<object> has no script !: You tried to open the ScriptEditor with the Script Search & Edit function for an object, which has no script. While this is a normal action within HyperCard (to get the scripts in, in the first place!), this function's purpose is to check on existing scripts.

This stack has no resource fork !

Empty resource fork.
You selected a stack to check for resources that has no resource fork or an empty one. It is therefore useless to continue the search.

stack <stackName> can not be converted in the current condition. The stack is locked ! Please check the disk or Finder info !:
The stack you selected to convert to the new file format is locked. This is possible when the stack's disk is write protected, the stack is on a read-only medium (eg. CD-ROM), or locked in the Finder's Get Info dialog.

There's no need for this stack to be converted !:
The selected stack is already in the new file format, so there is no need to convert it again.

Sorry, StackDetective™ just nééds HyperCard 2 to function properly!: Congratulations, you've just achieved the impossible! You have opened StackDetective™ with an older version of HyperCard, despite the difference in file format.

Sorry, not enough diskspace available to compact StackDetective™!:
This appears when there is insufficient diskSpace to compact this stack. Because of the way HyperCard compacts a stack, it always needs free disk space roughly the size of the stack to be compacted, to hold a temporary copy of the stack; otherwise HyperCard makes a complaint.

There are no fatal consequences because of this error; you only now have a stack that takes more room on your disk than is strictly necessary.

Used XFCNs & XCMDs

StackDetective™ uses a number of XFCNs & XCMDs to help in its various functions. The popUp menus are made by an Xternal, all the find-functions in de DetectiveEdit menu uses an Xternal that works better and faster than HyperCard's own *find* function and most of the special dialogs are maintained by Xternals. All the needed Xternals are stored in the resourcefork of this stack, together with the rest of its resources. Using the HyperTalk command *start using* <*stack*>, these resources are always available to StackDetective™.

The following XFCNs & XCMDs are used by StackDetective™ :

XCMDs

Name	version	origin (name of stack)	author
ChangeCurs	1.0	ChangeCurs XCMD 1.0	Jay Hodgdon
ClearStackGlobals	1.0	GlobalMaster1.0	Frederic Rinaldi
Deprotect	1.3	HyperZap/X-Tools/Dev. stack	Ned Horvath/Allan Foster
FindInXCMD	?	Compatibility Checker 1.0	Phil Beisel, Apple Computer
Progress	1.1	Progress XCMD 1.1	Jay Hodgdon
SaveCurrentGlobals	1.0	GlobalMaster 1.0	Frederic Rinaldi
ShowDialog	1.6	ShowDialog XCMD 1.6	Jay Hodgdon

XFCNs

Name	version	origin (name of stack)	author
EditString	1.3	EditString stack	Mark S. Wall
FileNames	?	FileNames	Maarten Meijer
FontSize	?	Get fonts	Guy de Piciotto
GetFileInfo	?	GetFileInfo.resc	?
LeafName	1.5	DarthMouth XCMD's Vol I-III	Kevin Calhoun
PopUpMenu	1.1	PopUpMenu XFCN stack	Joost Verhaar
ResInfo	1.0	ResInfo XFCN stack	Joost Verhaar

A last word…

StackDetective™ is distributed as ShareWare. This means that you're free to copy and distribute it, as long as you keep this documentation with the stack and don't charge any distributing fee. If after a trial period of, let's say a month, you decide to keep StackDetective™, please do me the honour and become a registered user by sending $15 to the following address:

Joost Verhaar
Warande 57
NL–3705 ZD Zeist
The Netherlands

Registered users will be the first to hear of changes and how to get an update.

Any suggestions to improve StackDetective™, or questions and bug reports (Aargh…, I know there shouldn't **be** any, but then again I'm only human…) can be sent to the same address.

August 26, 1991

P.S. the author can also be reached indirectly through the Internet address of his brother, Henk Verhaar. His address is:

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