

What is IDA?

This facility records differences at the source code and data levels between the user's current software release and a predetermined baseline. At the source code level the difference analysis highlights and records only those changes that involve the addition, removal or modification of functional code.

Benefits of TBevolve IDA

- Detect changes to your source code
- Identifies where changes will affect functionality
- Locates software defects
- Assists with ongoing maintenance
- Enables software version comparisons

IDA Facilities

- IDA identifies and ignores any differences that are brought about purely due to positional changes and occur as a result of reordering or reformatting existing code. This removes a considerable 'noise' overhead that is a feature of less sophisticated difference facilities.
- At the data level TBevolve highlights and records changes to existing data items and the addition of new data items. In a further extension to this basic functionality TBevolve reports on the movement of data items with respect to definition and usage, e.g. if the definition of a data item is moved from the main body of source code into an included file. TBevolve also highlights and reports changes in usage of data items. An example would be if a variable was previously read in and referenced, but the program has now been modified to output the variable, then this change of usage is detected and reported.

TBbrowse

File Edit View Window Help

Program Difference Analysis Results

File under test : "D:\Server_Testbed\Accounts_System_Driver.c"
 Date of analysis : Tue Jun 17 13:58:45 2003
 by LDRA Testbed : Version 7.0.9

Baseline date : Tue Jun 17 13:46:31 2003
 by LDRA Testbed : Version 7.0.9

Text Difference Overview

Modified code areas:-

35 lines changed to 40 lines in function call_processing
 120 lines changed to 100 lines in function number_telephone_call_per
 70 lines changed to 52 lines in function system_processing
 42 lines changed to 47 lines in function cost_saving

New code areas:-

12 reformatted lines in function call_processing
 18 reformatted lines in function call_processing
 5 reformatted lines in function number_telephone_call_per

Executable Code Difference Overview

1 difference(s) containing 4 lines in call_processing
 2 difference(s) containing 198 lines in number_telephone_call_per
 2 difference(s) containing 8 lines in system_processing
 1 difference(s) containing 11 lines in cost_saving
 1 difference(s) containing 17 lines in merge_accounts_phase_one
 22 difference(s) containing 1107 lines in merge_accounts_phase_two
 1 difference(s) containing 5 lines in format_to_unix
 3 difference(s) containing 13 lines in totalize

Procedure	All Metrics	Clarity	Maintainability	Testability
call_processing	85	80	100	100
system_processing	81	70	80	85
number_telephone_call_per	85	70	100	100
cost_saving	85	80	100	100
merge_accounts_phase_one	100	100	100	100
merge_accounts_phase_two	81	80	100	100
format_to_unix	81	80	100	100
totalize	85	70	100	85
Total for Testrun.c	84	86	100	100

Intelligent Difference Analysis Display



Certificate Number FM 26376

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What is Impact Analysis?

Impact Analysis is a process of identifying the potential consequences of a change, or estimating what needs to be modified to accomplish a change [Bohner/Arnold 96]. TBevolve assists with this process by providing critical information, which enables users to monitor and assess the impact of software changes in key areas and hence implement specific, targeted processes with the aim of reducing the risks associated with such changes.

Benefits of Impact Analysis

- Identifies the impact of source code changes
- Assists with change documentation
- Assists with ongoing maintenance and risk reduction

Impact Analysis Facilities

Static Analysis

At the source code level TBevolve's [IDA](#) facility detects and records significant areas of source code change. This information is then utilised by TBevolve to provide users with a series of reporting facilities relating to the potential impact of these changes. In the static domain these may include highlighting the following:

- Additional standards violations
- Increased structural complexity
- Increased data complexity
- Reduced maintainability
- Reduced testability
- Reduced reliability

Dynamic Analysis

In addition to the reporting of this static based impact information, TBevolve extends this reporting facility into the dynamic domain, providing information on:

- Additional code statements
- Additional code branches
- Existing branches affected by code change
- Additional LCSAs (Test Paths)
- Existing LCSAs (Test Paths) affected by code change

TBbrowse

File Edit View Window Help

Program Difference Coverage Report

File under test : "D:\Server_Testbed\Accounts_System_Driver.c"
 Date of analysis : Tue Jun 17 13:58:45 2003
 by LDRA Testbed : Version 7.0.9

Ref Line	Reformatted Text	Previous Run	Current Run	Combined
function equalsides				
143	++ *increment_result;	0	1	1
144	}	0	1	1
145	if	0	1	1
146	{	0	1	1
152	++ *increment_result;	0	1	1
153	}	0	1	1
154n	serve_results =	0	1	1
155n	pointer (	0	1	1
156n	& serve_results_string) ;	0	1	1
157n	}	0	1	1
158	/*	-	-	-
159	*/	-	-	-
function system_processing				
199	system_processing (	0	1	1
200	UINT_32 i ;	-	-	-
201	UINT_32 j ;	-	-	-
202	UINT_32 k ;	-	-	-
203	UINT_32 system_match)	-	-	-
204	{	-	-	-
205n	switch (	0	1	1
206n	system_match	0	1	1
207n	)	0	1	1
208n	{	0	1	1
209n	case 0 :	0	1	1
210	if	0	1	1
211	{	0	1	1

Done

	Quality Result	Unique Standards Failure Ratio (%)
total	Fail	4
found_to_pass	Pass	0
merge_accounts_phase_two	Pass	0
merge_accounts_phase_one	Pass	0
cost_saving	Fail	1
number_telephone_call_per	Fail	2
system_processing	Conditional Pass	1
call_processing	Pass	0

Impact Analysis Display



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What is Risk Management?

Risk Management is a practice that utilises processes, methods and tools for managing project risks and to provide a disciplined management environment for proactive decision making to:

- continuously assess what could go wrong (risks)
- determine the severity and hence priority of identified risks
- implement strategies to deal with the identified risks

TBevolve assists with this practice by providing users with a means of applying a measurable, repeatable analysis process to areas of code change. This analysis process enforces industry proven Dynamic Coverage Analysis techniques and, as a result, greatly reduces the risk of software failures occurring.

Benefits of TBevolve for Risk Management

- Ability to measure the impact of the analysis techniques
- Assists with change documentation
- Assists with ongoing maintenance and risk reduction
- Assists with achieving Basel II compliance

Risk Management Facilities

Another key feature of TBevolve is its ability to drive and monitor a 'managed test process', which is specifically focused upon areas of identified software change. This facility first highlights specific statements, branches and LCSAs (Test Paths) associated with sections of changed code. It then utilises the existing Dynamic Coverage Analysis facilities of LDRA Testbed to lead users through the process of generating the necessary test data to exercise these identified statements, branches and LCSAs. In addition it reports and monitors the effectiveness of this test process as it evolves.



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