

Memory Dump Analysis Anthology

Volume 14

Dmitry Vostokov
Software Diagnostics Institute

OpenTask

Published by OpenTask, Republic of Ireland

Copyright © 2021 by Dmitry Vostokov

Copyright © 2021 by Software Diagnostics Institute

All rights reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without the prior written permission of the publisher.

Product and company names mentioned in this book may be trademarks of their owners.

OpenTask books are available through booksellers and distributors worldwide. For further information or comments, send requests to press@opentask.com.

A CIP catalog record for this book is available from the British Library.

ISBN-13: 978-1-912636-14-3 (Paperback)

Revision 1.00 (August 2021)

Table of Contents

Preface	6
Acknowledgments	7
About the Author	8
PART 1: Crash Dump Analysis Patterns	9
False Frame	9
Procedure Call Chain.....	11
C++ Object.....	12
COM Exception	16
Structure Sheaf	19
Saved Exception Context (.NET).....	20
Rough Stack Trace (Managed Space).....	25
PART 2: Pattern Interaction	27
Exception Reporting Thread, Stored Exception, Exception Stack Trace, Exception Module, Foreign Module Frame, and Stack Trace Motif	27
PART 3: Software Trace Analysis Patterns	35
Flag.....	35
Strand of Activity	36
Cord of Activity	37
Text Trace	39
Weave of Activity	41
Multidimensional Message.....	43
Message Metadata	44
Trace Quilt.....	46
Feature of Activity.....	48
Trace Schema	50
Definition Trace	52
Serial Trace.....	53
Container Trace.....	55

Trace Join	56
PART 4: Cloud Analysis Patterns.....	57
Introducing Methodology and System of CAPS	57
PART 5: Software Diagnostics, Root Cause Analysis, Troubleshooting, and Debugging	67
The Fractal Nature of Software Traces and Logs	67
General Architecture of Analysis Pattern Networks	68
PART 6: Software Narratology.....	73
Exercises in Tracing Style	73
<i>Prologue</i>	73
Literary Theory Terms.....	75
<i>Ab ovo, in medias res, flashback, abridged edition</i>	75
<i>Abstract, accent, act, action, adaptation, address</i>	76
PART 7: Fun with Debugging, Crash Dumps, and Traces	79
Reading Capital	79
INSECuTy.....	79
Desperate AI	79
Imperator	79
Buratino and Security	79
Two Types of Dump Analysis Jobs	79
Debugging Slang.....	80
<i>POET</i>	80
<i>ijit</i>	80
<i>DREAM</i>	80
<i>Logistics</i>	80
<i>Poorrific</i>	80

PART 8: Art and Photography.....	81
Chasing a Trace	81
Love of Logs	82
When Anomaly Detection is Your Bread.....	83
Observability of Traces	84
Array[T]	85
Old Card Bookmark.....	86
Cloud Tea Break	87
Fiber Bundle in the Wild	88
PART 9: A Bit of Science, Philosophy, and Religion.....	89
Plotinus on Overflow	89
Ereignis and Error.....	90
PART 10: Miscellaneous	91
WinDbg Notes.....	91
Quotes	95
My Favorite Category Theory Books (Continuation)	96
Data Pathology.....	101
FP Police.....	102
The Seed of Trace and Log Analysis Patterns.....	103
My Number Theory Book Collection (Continuation)	104
Artifacts for Lockdown.....	110
Books that Influenced Me.....	111
Streaming Architecture of Pattern-Oriented Software Diagnostics Publications	178
Appendix	179
My IT Reading List in 2006	179
Index of WinDbg Commands.....	189