1 Introduction

Have you never wondered if those Guru numbers ever made any sense ? And, suprise suprise, they do. I do admit, they are cryptic at first, but once you know the system, things get quite easy, and you can very well find out where what went wrong. But reading the newsgroups c.s.a.* people sometimes asked, what a certain guru number meant, so I finally decided to write a nice guru number guide. I must admit that the explanations are not too exact, but they can give you an idea, how the error was produced. This text does not claim to be the bible of guru numbers (although I did name it GuruBible) nor that it is complete.

2 Credits

- `mcp.gurudat`
  about 98 % of the gurunumbers were taken from that.
  Thanks go to Stefan Sommerfeld and Michael Knoke
- `LastAlertPatch`
  that is were the other 2 % came from
- `My own Guru document (on paper)`
  where the bootup colours were written down (but don't ask me where I got those, as the document is about 3-4 years old)
- `include/exec/alerts.i`
  where information was that well hidden and of no use
- `"You too can be an Amiga Guru" by Dave Boulton`
  Where a lot of background information was explained and some other things (like suberrode, gerneral error code)
- `Gaff`
  Whose extensive knowledge of EMACS and its Regular expression replace facility helped me a little.
- `Undernet Channel AmigaCafe`
  I don't really own credits to them concerning the GuruBible, but I wanted to just greet them from this point. You are cool guys.

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If I made any mistakes, or I have left out some guru numbers, or you have more explicit error explanations for the numbers, feel free to email me with the information and I will try to include it in the next release.

4 System Error Messages

4.1 How the GuruNumber is constructed

The guru number is, what you might expect, not a randomly chosen one (thank christ) but quite to the contrary, very sophisticated.
for example: `8401000B` = not enough memory to open window

subsystem number	general error code	specific error code
`84`	`01`	`000B`

the first two digits are the subsystem number `84` = intuition.library
the 3rd and 4th digit is the general error code `01` = insufficient memory
and the other 4 represent the specific error code `000B` = open window (in this case)

Another thing is, that if you encounter an 8 or greater as first digit, you want to subtract 8 (remember that you are dealing with hex numbers) to get the correct guru number.

If you can not find a displayed guru number in this list, you can try tracking down the error with the help of the specific and general error codes.

4.1.1 Bootup colours

- normal:
  dark grey ⇒ Processor working
  light grey ⇒ ROM Checksum correct
  white ⇒ Enough Ram available (minimum 256kb)
- Error:
  green ⇒ Error in Chipram
  yellow ⇒ Processor Exeption
  red ⇒ Rom Checksum Incorrect
  blue ⇒ Custom Chip failure (but was never compiled in the KS)
- Keyboard LED: (capslock)
  1x ⇒ Rom Chechsum failure
  2x ⇒ Ram Error
  3x ⇒ Failure of internal timer
  4x ⇒ shortcut in the keyboardmatrix

  (this is a bit weird, because it does sometimes blink for no reason)

4.1.2 Guru Numbers

Main error codes:

- Subsystem Error Codes

	Libraries		Devices
01	Exec	10	Audio
02	Graphics	11	Console
03	Layers	12	Gameport
04	Intuition	13	Keyboard
05	Math	14	Trackdisk
06	CList	15	Timer
07	Dos	20	Cia
08	RamLib	21	Disk
09	Icon	22	Misc
0A	Expansion	30	Bootstrap
0B	Diskfont	31	Workbench
33	Gadtools	32	DiskCopy
34	Utility	35	Unknown/Custom

- General Error Codes

01	NoMemory
02	MakeLib
03	OpenLib
04	OpenDev
05	OpenRes
06	IOError
07	NoSIgnal
08	BadParam
09	CloseLib
0A	CloseDev
0B	ProcCreate

4.1.3 Actual Guru Numbers

- Processor Exeptions (System)

`00000002`	Hardware bus fault / access error / timing error
`00000003`	Illegal address access
`00000004`	Illegal instruction
`00000005`	Divide by zero
`00000006`	Check instruction error
`00000007`	TRAPV instruction error
`00000008`	Privilege violation error
`00000009`	Trace error
`0000000A`	Line 1010 Emulator error
`0000000B`	Line 1111 Emulator error
`0000000C`	Reserved Vector
`0000000D`	CoProcessor Protocol error
`0000000E`	Stack frame format error
`00000018`	Spurious interrupt error
`00000019`	AutoVector Level 1 interrupt error
`0000001A`	AutoVector Level 2 interrupt error
`0000001B`	AutoVector Level 3 interrupt error
`0000001C`	AutoVector Level 4 interrupt error
`0000001D`	AutoVector Level 5 interrupt error
`0000001E`	AutoVector Level 6 interrupt error
`0000001F`	AutoVector Level 7 interrupt error
`00000020`	uninitilized TRAP #0 vector
`00000021`	uninitilized TRAP #1 vector
`00000022`	uninitilized TRAP #2 vector
`00000023`	uninitilized TRAP #3 vector
`00000024`	uninitilized TRAP #4 vector
`00000025`	uninitilized TRAP #5 vector
`00000026`	uninitilized TRAP #6 vector
`00000027`	uninitilized TRAP #7 vector
`00000028`	uninitilized TRAP #8 vector
`00000029`	uninitilized TRAP #9 vector
`0000002A`	uninitilized TRAP #A vector
`0000002B`	uninitilized TRAP #B vector
`0000002C`	uninitilized TRAP #C vector
`0000002D`	uninitilized TRAP #D vector
`0000002E`	uninitilized TRAP #E vector
`0000002F`	uninitilized TRAP #F vector
`00000030`	FPCP branch or set on unordered condition
`00000031`	FPCP inexact result
`00000032`	FPCP divide by zero

00000033	FPCP underflow
00000034	FPCP operand error
00000035	FPCP overflow
00000036	FPCP signalling NAN
00000038	MMU configuration error
00000039	68851 illegal operation
0000003A	68851 access level violation

- exec.library

01000001	68000 exception vector checksum (obs.)
01000002	Execbase checksum bad (obs.)
01000003	Library checksum failure
01000004	Not enough memory for a library
01000005	Corrupt memory list detected in FreeMem
01000006	No memory for interrupt servers
01000007	InitStruct() of an APTR source (obs.)
01000008	A semaphore is in an illegal state at ReleaseSemaphore()
01000009	Freeing memory that is already free
0100000A	Illegal 680x exception taken (obs.)
0100000B	Attempt to reuse an active IORequest
0100000C	Sanity check on memory list failed during
0100000D	IO attempted on closed IORequest
0100000E	Stack appears to extend out of range
0100000F	Memory header not located
01000010	An attempt was made to use the old message semaphores
810000FF	A quick interrupt has happened to an uninitialized vector

- graphics.library

02010001	MonitorSpec alloc, no memory
02010002	Not enough memory for copperlist
02010003	Copperlist is or was full
02010004	Copperlist corrupt
02010005	Not enough memory for copperlist header
02010006	long frame, no memory
02010007	short frame, no memory
02010008	fill, no memory for TmpRas
02010009	text, no memory for TmpRas
0201000A	BltBitMap, no memory
0201000B	regions, memory not available
02010030	MakeVPort, no memory
0200000C	GfxNewError

0200000D	GfxFreeError Could not free graphics
02011234	Emergency memory not available
02000401	unsupported font description used

- layers.library

03000001	layers out of memory

- intuition.library

04000001	unknown gadget type
04010002	create port, no memory
04010003	item plane alloc, no memory
04010004	sub alloc, no memory
04010005	plane alloc, no memory
04000006	item box top < RelZero
04010007	open screen, no memory
04010008	open screen, raster alloc, no memory
04000009	open system-screen, unknown type
0401000A	add SW gadgets, no memory
0401000B	open window, no memory
0400000C	Bad State Return entering Intuition
0400000D	Bad Message received by IDCMP
0400000E	Weird echo causing incomprehension
0400000F	couldn't open the Console Device
04000010	Intuition skipped obtaining a semaphore
04000011	Intuition obtained a sem in bad order

- dos.library

07010001	no memory at startup
07000002	EndTask didn't end
07000003	Qpkt failure
07000004	Unexpected packet received
07000005	Freevec failed
07000006	Disk block sequence error
07000007	Bitmap corrupt
07000008	Key already free
07000009	Invalid checksum
0700000A	Disk Error
0700000B	Key out of range
0700000C	Bad overlay
0700000D	Invalid init packet for cli/shell
0700000E	A filehandle was closed more than once

- ramlib.library

`08000001`	Overlays are illegal for library segments

- expansion.library

`0A000001`	Freeed free region

- console.device

`11000001`	Console can't open initial window

- trackdisk.device

`14000001`	calibrate: seek error
`14000002`	delay: error on timer wait

- timer.device

`15000001`	bad request
`15000002`	power supply – no 50/60hz ticks

- disk.resource

`21000001`	get unit: already has disk
`21000002`	interrupt: no active unit

- bootstrap

`30000001`	boot code returned an error
`30018002`	no memory for Bootpicture during boot

- Workbench

`31000001`	WBBadStartupMsg1 (3.0) ; no Font (2.0)
`31000002`	WBBadStartupMsg2
`31000003`	WBBadIOMsg
`31010004`	WBInitPotionAllocDrawer
`31010005`	WBCreateWBMenusCreateMenus1
`31010006`	WBCreateWBMenusCreateMenus2
`31010007`	WBLayoutWBMenusLayoutMenus
`31010008`	WBAddToolMenuItem

`31010009`	WBReLayoutToolMenu
`3101000A`	WBInitTimer
`3101000B`	WBInitLayerDemon
`3101000C`	WBInitWbGels
`3101000D`	WBInitScreenAndWindows1
`3101000E`	WBInitScreenAndWindows2
`3101000F`	WBInitScreenAndWindows3
`31010010`	WBMAlloc
`31038009`	LoadWB error

- Foreign Hard/Software

`35010100`	no Retina hardware present
`35010110`	Retina does not have any memory at all
`35010111`	tried to free memory although no memory is in use
`35010112`	tried to free memory which has not been allocated
`35010113`	no Amiga memory for memory listnode
`35010114`	still some memory in use at library expunge
`35010115`	Retina internal
`35010116`	Retina internal
`35010117`	Retina internal
`35010121`	tried to remove a library internal monitor
`35010122`	LIB_Expunge and not all monitors removed
`35010123`	Retina internal
`BADCODE1`	BAD CODE 1 (as used with ALF-Software $\Rightarrow$ Checksum-Error)