

CSE 4004

Digital Forensics

**Lab
Session 8**

TOPIC: Investigating NTFS / FAT/ Linux drives

Name: Makesh Srinivasan

Registration number: 19BCE1717

Slot: L49 + L50

Date: 30-September-2021-Monday

Faculty: Prof. Nagaraj

AIM: Exploring and Investigating NTFS/FAT/Linux drives in Linux and Microsoft Windows 10 environments

INSTRUCTIONS:

Download an evaluation version of a tool for exploring disk drives such as DiskExplorer from <https://www.runtime.org/diskexplorer.htm>

It is available for NTFS, FAT and Linux.

Use the tool to investigate your NTFS drive and conduct your data recovery, using the following features:

- 1) Navigate your NTFS drive by jumping to the partition table, boot record, Master file table or the root directory.
- 2) Choose between views such as hex, text, index allocation, MFT, boot record, partition table.
- 3) Inspect the file entry details, NT attributes etc.
- 4) Search your drive for text, partition tables, boot records, MFT entries, and index buffers.

Do a similar exercise for FAT and Linux drives.

Include screenshots in your submission.

OBSERVATION:

1) NTFS

Partition table										
Sector	Partition table									
x0008A800	Valid Partition Table									
567,296	Entry No	System	Boot	Starting Cylinder Head	Starting Sector	Ending Cylinder Head	Ending Sector	Relative Start Sector	Total Sectors	
	1	Unknown	No	x050 80	x0D 13	x0A 10	x173 371	x65 101	x33 51	x72744320 1920221984
	2	Unknown	???	x165 357	x2B 43	x04 4	x16F 367	x20 32	x34 52	x73657220 1936028192
	3	Free	???	x000 0	x0A 10	x00 0	x000 0	x00 0	x00 0	x00000000 0
	4	Free	No	x000 0	x00 0	x00 0	x000 0	x00 0	x00 0	x01A7018A 27722122
										447

(Sector:Offset)=x0008A800:x1C2 (567,296:450) Selection=x0008A800:x1C2-x0008A800:x1C2

Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 3rd GPT partition (NTFS) 486,708 MB, sectors 567,296-997,345,934

Path: NTFS\HD128:

Volume: Cluster0: 567296, Cluster size: 8 sectors, Type: NTFS Region: Boot sector

Memory in use: 586844 View: R/O Unlicensed Evaluation Copy

Boot sector

Boot sector										
Sector	Boot sector (NTFS)									
x0008A800	Valid Boot Sector									
567,296	NTFS Signature:	NTFS	Physical drive #:	x80	128					
	Bytes per sector:	x0200	512			Sectors in volume:	x00003B69A28E	996778638		
	Sectors per cluster:	x08	8			1st MFT cluster:	x000C0000	786432		
	Media descriptor:	xF8	248			1st MFT mirror cluster:	x00000002	2		
	Sectors per FAT:	x0000	0			Clusters/file record:	x000000F6	246		
	Sectors per track:	x003F	63			Clusters/index block:	x00000001	1		
	Heads:	x0OFF	255			Volume serial number:	x389F25E2	949954018		
	Hidden sectors:	x00000008A800	567296							
x0008A801	Invalid Boot Sector									
567,297	NTFS Signature:	0 0 T M				Physical drive #:	x00	0		
	Bytes per sector:	x4700	18176			Sectors in volume:	x0000000000000	0		
	Sectors per cluster:	x00	0			1st MFT cluster:	x00000000	0		
	Media descriptor:	x00	0			1st MFT mirror cluster:	x00000000	0		
	Sectors per FAT:	x0033	51			Clusters/file record:	x00000000	0		
	Sectors per track:	x0030	48			Clusters/index block:	x00000000	0		
	Heads:	xD400	54272			Volume serial number:	x00000000	0		
	Hidden sectors:	x1000240J0000	603979776							

(Sector:Offset)=x0008A800:x003 (567,296:3) Selection=x0008A800:x003-x0008A800:x003

Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 3rd GPT partition (NTFS) 486,708 MB, sectors 567,296-997,345,934

Path: NTFS\HD128\NTFS

Volume: Cluster0: 567296, Cluster size: 8 sectors, Type: NTFS Region: Boot sector

Memory in use: 587176 View: R/O Unlicensed Evaluation Copy

Root directory

PC Runtime's DiskExplorer for NTFS

MFT# x5 DIR: '.', modified 05-10-2021 09:37:40, starting at cluster x00068F, Parent dir x5[x5]

Interpretation of data:

Name	Mft#	Size	Date	Attr	Subs	
\$AttrDef	x4[x4]	0		_____		Save View
\$BadClus	x8[x8]	0		_____		Save View
\$Bitmap	x6[x6]	0		_____		Save View
\$Boot	x7[x7]	0		_____		Save View
\$Extend	x8[x8]	DIR	21-08-2020 09:23:20	_d_sh_		Save
\$LogFile	x2[x2]	0		_____		Save View
\$MFT	x0[x1]	16384	21-08-2020 09:23:20	_sh_		Save View
\$MFTMirr	x1[x1]	0		_____		Save View
\$Recycle.Bin	x25[x4]	DIR	23-08-2021 07:01:16	_d_sh_		Save
\$Secure	x9[x9]	0	21-08-2020 09:23:20	_sh_		Save View
\$UpCase	x4[x4]	0		_____		Save View
\$Volume	x3[x3]	0		_____		Save View
\$WinREAgent	x1856[x12]	DIR	17-09-2021 22:24:17	_d_h_		Save
\$WINRE^1	x1856[x12]	DIR	17-09-2021 22:24:17	_d_h_		Save
.	x5[x5]	DIR	05-10-2021 09:37:40	_d_sh_		Save
19bce1717	x4ED9[x6C]	DIR	26-08-2021 11:48:09	_d_		Save
19BCE1^1	x4ED9[x6C]	DIR	26-08-2021 11:48:09	_d_		Save
Config	x109EB[x18]	DIR	30-05-2021 10:57:22	_d_		Save
devlist.txt	x203F2[x7]		16057	21-08-2020 08:55:22	a_h_	Save View
Documents and Setti...	x4E[x3]	DIR	31-10-2020 11:33:13	_d_sh_		Save
DOCUME^1	x4E[x3]	DIR	31-10-2020 11:33:13	_d_sh_		Save
DRIVERS	x2026C[x5]	DIR	05-05-2021 11:29:21	_d_		Save

Sector=x0068A80A (6858762)

Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 3rd GPT partition (NTFS) 486,708 MB, sectors 567,296-997,345,934

Path: NTFS\HD128\NTFS

Volume: Cluster0: 567296, Cluster size: 8 sectors, Type: NTFS Region: Cluster x000C0001 (786433)

Memory in use: 618068 View: FILE R/O Unlicensed Evaluation Copy

MFT (Master file table)

PC Runtime's DiskExplorer for NTFS

MFT (Master file table)

Sector	Name	Type	Attributes	Size	Date	1st cluster	NT Attributes
x0068A800	\$MFT	FILE	__sh_	639631360	21-08-2020 09:23:20	x0C0000	10 30 80 B0
6,858,752	No: x0[x1] (x0), Parent directory: x5[x5], Run: 33:C0 97 00 00 00 0C "32:80 09 68 FA 4B "32:82 59 16 0B 26 "32:FF 5B AB 38						
x0068A802	\$MFTMirr	FILE	__sh_	4096	21-08-2020 09:23:20	x000002	10 30 80
6,858,754	No: x1[x1] (x1), Parent directory: x5[x5], Run: 11:01 02						
x0068A804	\$LogFile	FILE	__sh_	67108864	21-08-2020 09:23:20	x0BB16C	10 30 80
6,858,756	No: x2[x2] (x2), Parent directory: x5[x5], Run: 32:00 40 6C B1 0B						
x0068A806	\$Volume	FILE	__sh_	0	21-08-2020 09:23:20	Resident	10 30 40 60 71
6,858,758	No: x3[x3] (x3), Parent directory: x5[x5], Run: Resident						
x0068A808	\$AttrDef	FILE	__sh_	2560	21-08-2020 09:23:20	x000023	10 30 80
6,858,760	No: x4[x4] (x4), Parent directory: x5[x5], Run: 11:01 23						
x0068A80A	.	DIR	__sh_		05-10-2021 09:37:40	x00068F	10 30 40 90 A
6,858,762	No: x5[x5] (x5), Parent directory: x5[x5], Run: 21:02 8F 06						
x0068A80C	\$Bitmap	FILE	__sh_	15574672	21-08-2020 09:23:20	x0BF16C	10 30 80 80
6,858,764	No: x6[x6] (x6), Parent directory: x5[x5], Run: 32:93 0E 6C F1 0B "31:38 96 E9 2E "21:10 10 07						
x0068A80E	\$Boot	FILE	__sh_	8192	21-08-2020 09:23:20	x000000	10 30 50 80
6,858,766	No: x7[x7] (x7), Parent directory: x5[x5], Run: 11:02 00						
x0068A810	\$BadClus	FILE	__sh_	0	21-08-2020 09:23:20	Resident	10 30 80 80
6,858,768	No: x8[x8] (x8), Parent directory: x5[x5], Run: Resident						
x0068A812	\$Secure	FILE	__sh_		21-08-2020 09:23:20		10 20 30 90 91
6,858,770	No: x9[x9] (x9), Parent directory: x5[x5], Run:						

(Sector:Offset)=x0068A800:x000 (6,858,752:0) Selection=x0068A800:x000-x0068A800:x000

Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 3rd GPT partition (NTFS) 486,708 MB, sectors 567,296-997,345,934

Path: NTFS\HD128\NTFS

Volume: Cluster0: 567296, Cluster size: 8 sectors, Type: NTFS Region: Cluster x000C0000 (786432)

Memory in use: 618940 View: FILE R/O Unlicensed Evaluation Copy

Inspect the file entry details, NT attributes etc.

C Runtime's DiskExplorer for NTFS

File Goto Link Edit View Tools Help

MFT# x0 FILE: '\$MFT', __sh_. 639631360 bytes, modified 21-08-2020 09:23:20, starting at cluster x0C0000, Parent dir x5[x5]

Structures: Interpretation of data:

Offset	Bytes	Chars
0	46 49 4C 45 30 00 03 00 CA 08 25 E2 04 00 00 00	FILE0...é.%å...
10	01 00 01 00 38 00 01 00 C8 01 00 00 00 04 00 008...É.....
20	00 00 00 00 00 00 00 00 00 07 00 00 00 00 00 00
30	E5 02 00 00 00 00 00 00 10 00 00 00 60 00 00 00	å.....
40	00 00 18 00 00 00 00 00 48 00 00 00 18 00 00 00
50	67 46 35 9C 6E 77 D6 01 67 46 35 9C 6E 77 D6 01	gF5!n..
60	67 46 35 9C 6E 77 D6 01 67 46 35 9C 6E 77 D6 01	gF5!n..
70	06 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
80	00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00
...

Raw data:

```
46 49 4C 45 30 00 03 00 CA 08 25 E2 04 00 00 00 FILE0...é.%å...
01 00 01 00 38 00 01 00 C8 01 00 00 00 04 00 00 ....8...É...
00 00 00 00 00 00 00 00 00 07 00 00 00 00 00 00 ...
E5 02 00 00 00 00 00 00 10 00 00 00 60 00 00 00 å...
00 00 18 00 00 00 00 00 48 00 00 00 18 00 00 00 ...
67 46 35 9C 6E 77 D6 01 67 46 35 9C 6E 77 D6 01 gF5!n..gF5!n..
```

Sector=x0068A800 (6858752) Details

Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 3rd GPT partition (NTFS) 486,708 MB, sectors 567,296-997,345,934

Path: NTFS\HD128\NTFS\\$MFT

Volume: Cluster0: 567296, Cluster size: 8 sectors, Type: NTFS Region: Cluster x000C0000 (786432)

Memory in use: 608628 View: R/O Unlicensed Evaluation Copy

Hex

C Runtime's DiskExplorer for NTFS

File Goto Link Edit View Tools Help

Sector Offset Hex values Ascii values

Sector	Offset	Hex values	Ascii values
x0068A800	x000	46 49 4C 45 30 00 03 00 CA 08 25 E2 04 00 00 00	F I L E 0 ... É . % å . . .
6,858,752	x010	01 00 01 00 38 00 01 00 C8 01 00 00 00 04 00 008...É.....
	x020	00 00 00 00 00 00 00 00 07 00 00 00 00 00 00 00
	x030	E5 02 00 00 00 00 00 00 10 00 00 00 60 00 00 00	å.....
	x040	00 00 18 00 00 00 00 00 48 00 00 00 18 00 00 00H.....
	x050	67 46 35 9C 6E 77 D6 01 67 46 35 9C 6E 77 D6 01	gF5!n..gF5!n..
	x060	67 46 35 9C 6E 77 D6 01 67 46 35 9C 6E 77 D6 01	gF5!n..gF5!n..
	x070	06 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x080	00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00
	x090	00 00 00 00 00 00 00 00 30 00 00 00 68 00 00 00O...h...
	x0A0	00 00 18 00 00 00 03 00 4A 00 00 00 18 00 01 00J.....
	x0B0	05 00 00 00 00 05 00 67 46 35 9C 6E 77 D6 01	gF5!n..
	x0C0	67 46 35 9C 6E 77 D6 01 67 46 35 9C 6E 77 D6 01	gF5!n..gF5!n..
	x0D0	67 46 35 9C 6E 77 D6 01 00 40 00 00 00 00 00 00	gF5!n..@.....
	x0E0	00 40 00 00 00 00 00 06 00 00 00 00 00 00 00 00	@.....
	x0F0	04 03 24 00 4D 00 46 00 54 00 00 00 00 00 00 00	..\$.M.F.T.....
	x100	80 00 00 00 78 00 00 00 01 00 40 00 00 00 06 00	€...x...@.....
	x110	00 00 00 00 00 00 00 FF 61 02 00 00 00 00 00ÿa.....
	x120	40 00 00 00 00 00 00 00 20 26 00 00 00 00	@.....&.....
	x130	00 00 20 26 00 00 00 00 20 26 00 00 00 00&.....&.....
	x140	33 C0 97 00 00 00 0C 32 80 09 68 FA 4B 32 82 59	3ÀI...2€.húK2IY

(Sector:Offset)=x0068A800:x000 (6,858,752:0) Selection=x0068A800:x000-x0068A800:x000

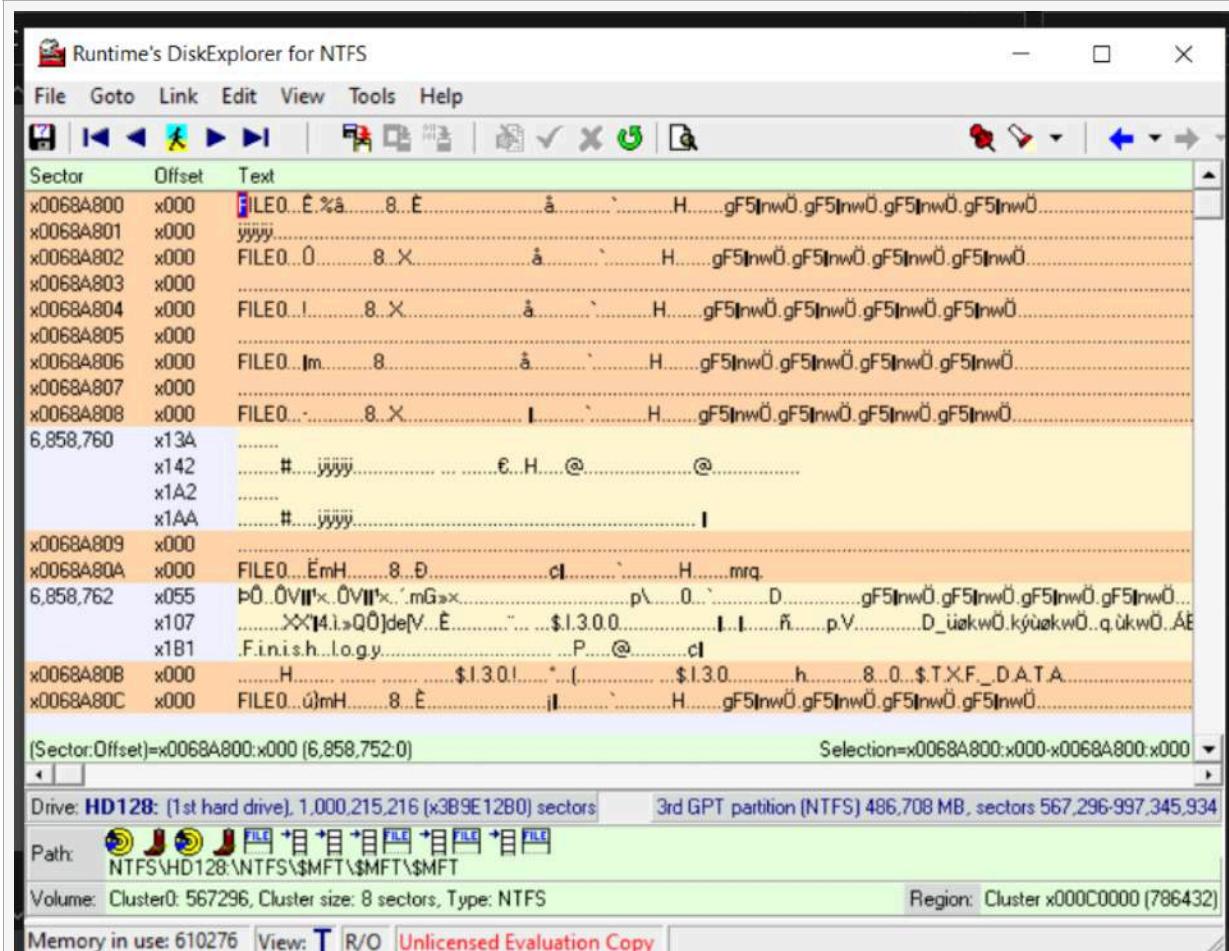
Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 3rd GPT partition (NTFS) 486,708 MB, sectors 567,296-997,345,934

Path: NTFS\HD128\NTFS\\$MFT\\$MFT\\$MFT

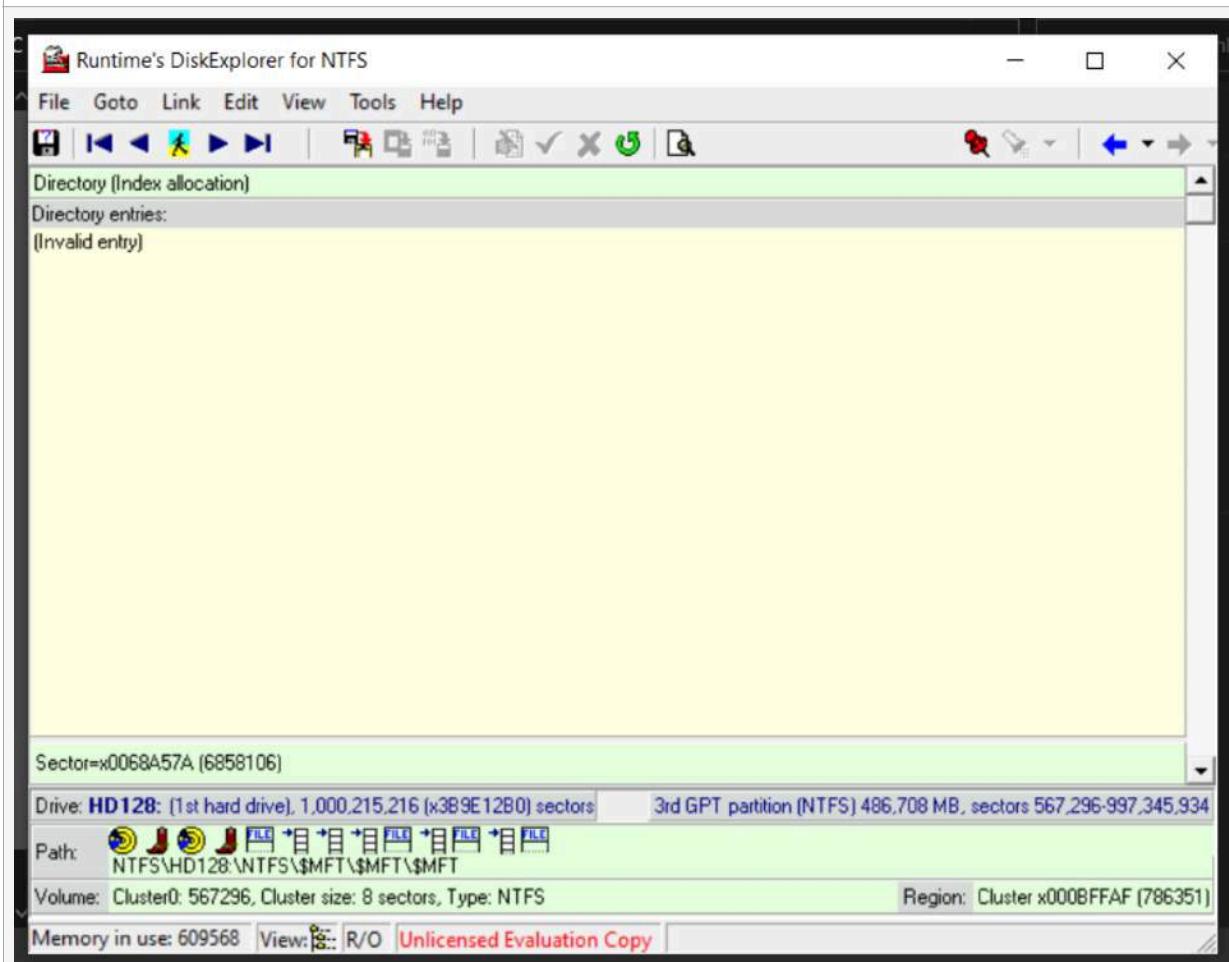
Volume: Cluster0: 567296, Cluster size: 8 sectors, Type: NTFS Region: Cluster x000C0000 (786432)

Memory in use: 609364 View: R/O Unlicensed Evaluation Copy

Text format view



As index allocation



2) FAT

Partition table

Sector Partition table											
2,048	Entry No	System	Boot	Starting Cylinder	Head	Sector	Ending Cylinder	Head	Sector	Relative Start Sector	Total Sectors
x00000800	1	Unknown	???	x061	x73	x20	x06B	x79	x20	x74207965	x6572206F
	2	Reserved	???	x172	x74	x21	x000	x0D	x0A	x1948285285	1701978223
	3	Free	No	x000	x00	x00	x000	x00	x00	x00000000	x00000000
	4	Free	No	x000	x00	x00	x000	x00	x00	x01AC0000	x000001B9
				0	0	0	0	0	0	28049408	441

(Sector:Offset)=x00000800:x1C2 (2,048:450) Selection=x00000800:x1C2-x00000800:x1C2

Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 1st GPT partition (EFI System partition) 260 MB, sectors 2,048-534,527

Path: 800T32\HD128:

Volume: Cluster0: 10224, Cluster size: 8 sectors, Fat1: 9214, Fat2: 9727, Type: FAT32 Region: Boot sector

Memory in use: 523240 View: R/O Unlicensed Evaluation Copy

Boot sector

The screenshot shows the 'Runtime's DiskExplorer for Fat' application window. The main pane displays the 'Boot sector (FAT32)' details for sector x00000800. The data is organized into two columns:

Sector	Boot sector (FAT32)	
x00000800	Valid Boot Sector	
2,048	OEM name: MSDOS5.0 Bytes per sector: x0200 512 Sectors per cluster: x08 8 Reserved sectors: x1BFE 7166 FATs: x02 2 Root dir entries: x0000 0 Sectors on drive: x0000 0 Media descriptor: xF8 248 Sectors per FAT: x0000 0 Sectors per track: x003F 63 Heads: x00FF 255 Hidden sectors: x00000800 2048 Big sectors on drive: x00082000 532480	Big sectors per FAT: x00000201 513 Active FAT: x0 0 FAT mirrored: Yes (bit 7 clear) Minor FS version: x00 0 Major FS version: x00 0 1st root cluster: x00000002 2 FS info sector: x0001 1 Backup boot sector: x0006 6 Physical drive #: x80 128 Boot record signature: x29 41 Volume serial number: xA69AB65F 2795157087 Volume label: NO NAME File system: FAT32

At the bottom, status bars show the current selection (Sector:Offset=x00000800:x000), the drive information (Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors), the active partition (1st GPT partition (EFI System partition) 260 MB, sectors 2,048-534,527), the path (Path: BOOT32:), the volume details (Volume: Cluster0: 10224, Cluster size: 8 sectors, Fat1: 9214, Fat2: 9727, Type: FAT32), the memory usage (Memory in use: 523780), the view mode (View: R/O), and the license status (Unlicensed Evaluation Copy).

Root directory

Runtime's DiskExplorer for Fat

Sector	Offset	Name	Ext	Status	Type	Attributes	Size	Date	Time	Cluster	Created	Cr.
x00002800	x000	SYSTEM			DIR	_I_	0	2020-08-20	19:53:18	x00000000	2020-08-20	19:53:18
10,240	x020	Tools		deleted	LFN			Check Sum: xAB				
x040	sOOLS			deleted	DIR	_d_	4096	2020-08-20	19:53:14	x00000003	2020-08-20	19:53:14
x060	EFI				DIR	_d_	0	2020-08-20	19:55:46	x0000009E	2020-08-20	19:55:46
x080	Information			#2 last	LFN			Check Sum: x72				
x0A0	System Volume			#1	LFN			Check Sum: x72				
x0C0	SYSTEM^1				DIR	_d_sh_	0	2020-08-20	20:02:44	x00001B26	2020-08-20	20:02:44
x0E0					unused FILE		0		00:00:00	x00000000		00:00:00
x100					unused FILE		0		00:00:00	x00000000		00:00:00
x120					unused FILE		0		00:00:00	x00000000		00:00:00
x140					unused FILE		0		00:00:00	x00000000		00:00:00
x160					unused FILE		0		00:00:00	x00000000		00:00:00
x180					unused FILE		0		00:00:00	x00000000		00:00:00
x1A0					unused FILE		0		00:00:00	x00000000		00:00:00
x1C0					unused FILE		0		00:00:00	x00000000		00:00:00
x1E0					unused FILE		0		00:00:00	x00000000		00:00:00
x00002801	x000				unused FILE		0		00:00:00	x00000000		00:00:00
10,241	x020				unused FILE		0		00:00:00	x00000000		00:00:00
x040					unused FILE		0		00:00:00	x00000000		00:00:00
x060					unused FILE		0		00:00:00	x00000000		00:00:00

(Sector:Offset)=x00002800:x000 (10,240:0) Selection=x00002800:x000-x00002800:x000

Drive: HD12B: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 1st GPT partition (EFI System partition) 260 MB, sectors 2,048-534,527

Path: 32 32 FAT32 32 32 BOOT32\BOOT32:

Volume: Cluster0: 10224, Cluster size: 8 sectors, Fat1: 9214, Fat2: 9727, Type: FAT32 Region: Cluster x00000002 (2)

Memory in use: 525908 View: R/O Unlicensed Evaluation Copy

FAT 1

Runtime's DiskExplorer for Fat

Sector	Offset	Fat32 values
x000023FE	x000	0xFFFFF8 FFFFFFFF <eof>
9,214	x020	00000009 00000004 00000008 0000000C 0000000D 0000000E 0000000F 00000010
	x040	00000011 00000012 00000013 00000014 00000015 00000016 <eof> 00000018
	x060	00000019 0000001A 0000001B 0000001C 0000001D 0000001E 0000001F 00000020
	x080	00000021 00000022 00000023 00000024 00000025 00000026 00000027 00000028
	x0A0	00000029 0000002A <eof> 0000002C 0000002D 0000002E 0000002F 00000030
	x0C0	00000031 00000032 00000033 00000034 00000035 00000036 00000037 00000038
	x0E0	00000039 0000003A 0000003B 0000003C 0000003D 0000003E <eof> 00000040
	x100	00000041 00000042 00000043 00000044 00000045 00000046 00000047 00000048
	x120	00000049 0000004A 0000004B 0000004C 0000004D 0000004E 0000004F 00000050
	x140	00000051 00000052 <eof> 00000054 00000055 00000056 00000057 00000058
	x160	00000059 0000005A 0000005B 0000005C 0000005D 0000005E <eof> 00000060
	x180	00000061 00000062 00000063 00000064 00000065 00000066 00000067 00000068
	x1A0	00000069 0000006A 0000006B 0000006C 0000006D 0000006E 0000006F 00000070
	x1C0	00000071 00000072 <eof> 00000074 00000075 00000076 00000077 00000078
	x1E0	00000079 0000007A 0000007B 0000007C 0000007D 0000007E 0000007F 00000080
x000023FF	x000	00000081 00000082 00000083 00000084 00000085 00000086 <eof> 00000088
9,215	x020	00000089 0000008A 0000008B 0000008C 0000008D 0000008E 0000008F 00000090
	x040	00000091 00000092 <eof> <eof> 00000095 <eof> 00000097 00000098
	x060	<eof> 00000000 00000000 00000000 00000000 <eof> <eof>
	x080	00000093 <eof> 000000A3 000000A4 000000A5 000000A6 000000A7 000000A8

(Sector:Offset)=x000023FE:x000 (9,214:0) Selection=x000023FE:x000-x000023FE:x000

Drive: HD12B: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 1st GPT partition (EFI System partition) 260 MB, sectors 2,048-534,527

Path: 32 32 FAT32 32 32 BOOT32\BOOT32:

Volume: Cluster0: 10224, Cluster size: 8 sectors, Fat1: 9214, Fat2: 9727, Type: FAT32 Region: Fat1 x00000000 (0)

Memory in use: 524084 View: R/O Unlicensed Evaluation Copy

FAT 32

Runtime's DiskExplorer for Fat

File Goto Link Edit View Tools Help

Sector Offset Fat32 values

Sector	Offset	54535953	20204D45	08202020	00000000	00000000	9EA90000	00005114	00000000
10,240	x020	6F0054E5	6C006F00	0F007300	0000AB00	FFFFFFFF	FFFFFFFF	0000FFF	FFFFFFFF
	x040	4C4F4FE5	20202053	10202020	9EA91C00	51145114	9EA70000	0035114	00001000
	x060	20494645	20202020	10202020	9EF63D00	51145114	9EF70000	009E5114	00000000
	x080	49002042	66006E00	0F006F00	00727200	00610060	00690074	0000006F	0000006E
	x0A0	79005301	74007300	0F006500	006D7200	00560020	006C006F	00000075	0065006D
	x0C0	54535953	317E4D45	16202020	A0556900	51145114	A0560000	1B265114	00000000
	x0E0	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x100	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x120	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x140	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x160	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x180	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x1A0	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x1C0	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x1E0	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x00002801	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
10,241	x020	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x040	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x060	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
	x080	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

(Sector:Offset)=x00002800:x000 (10,240:0)

Selection=x00002800:x000-x00002800:x000

Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 1st GPT partition (EFI System partition) 260 MB, sectors 2,048-534,527

Path: FAT32 FAT32 FAT32 FAT32

Volume: Cluster0: 10224, Cluster size: 8 sectors, Fat1: 9214, Fat2: 9727, Type: FAT32 Region: Cluster x00000002 (2)

Memory in use: 527652 View: R/O Unlicensed Evaluation Copy New Notice - Olympia Sequel - Local Panchavati el

Hex

Runtime's DiskExplorer for Fat

File Goto Link Edit View Tools Help

Sector Offset Hex values Ascii values

Sector	Offset	Hex values	Ascii values
x00002800	x000	53 59 53 54 45 4D 20 20 20 20 20 08 00 00 00 00 00	SYSTEM
10,240	x010	00 00 00 00 00 00 A9 9E 14 51 00 00 00 00 00 00 00@I.Q.....
	x020	E5 54 00 6F 00 6F 00 6C 00 73 00 0F 00 AB 00 00	åT.o.o.l.s...<..
	x030	FF	ÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿ
	x040	E5 4F 4C 53 20 20 20 20 20 20 10 00 1C A9 9E	åOOLS....@I
	x050	14 51 14 51 00 00 A7 9E 14 51 03 00 00 10 00 00	.Q.Q..\$I.Q.....
	x060	45 46 49 20 20 20 20 20 20 20 10 00 3D F6 9E	EFI.....=öI
	x070	14 51 14 51 00 00 F7 9E 14 51 9E 00 00 00 00 00 00	.Q.Q..+I.QI.....
	x080	42 20 00 49 00 6E 00 66 00 6F 00 0F 00 72 72 00	B.I.n.f.o...rr.
	x090	6D 00 61 00 74 00 69 00 6F 00 00 00 6E 00 00 00 00	m.a.t.i.o...n..
	x0A0	01 53 00 79 00 73 00 74 00 65 00 0F 00 72 6D 00	.S.y.s.t.e...rm.
	x0B0	20 00 56 00 6F 00 6C 00 75 00 00 00 6D 00 65 00	.V.o.l.u...m.e.
	x0C0	53 59 53 54 45 4D 7E 31 20 20 20 16 00 69 55 A0	SYSTEM~1...iU
	x0D0	14 51 14 51 00 00 56 A0 14 51 26 1B 00 00 00 00 00	.Q.Q..V.Q&.....
	x0E0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x0F0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x100	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x110	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x120	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x130	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x140	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

(Sector:Offset)=x00002800:x000 (10,240:0)

Selection=x00002800:x000-x00002800:x000

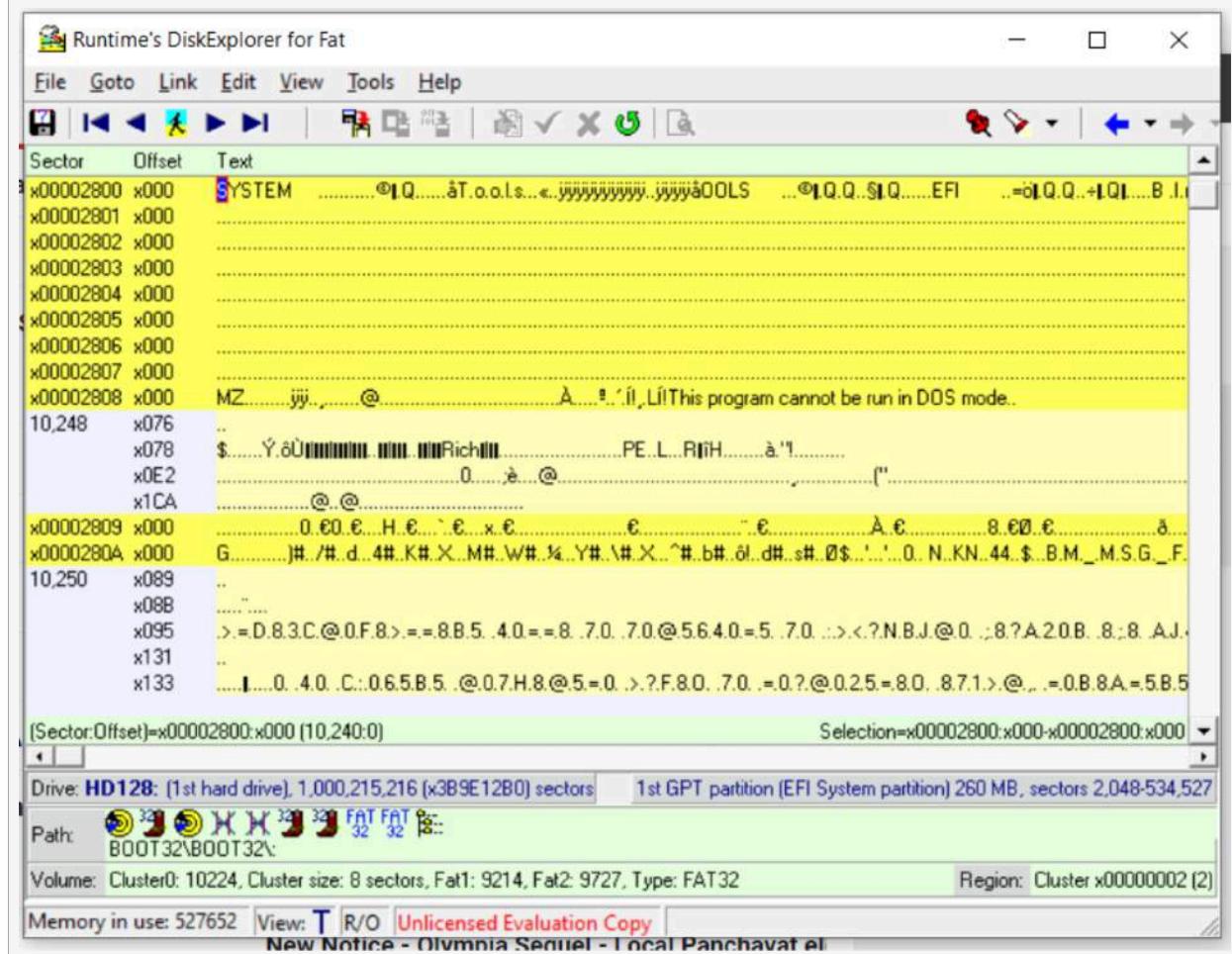
Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 1st GPT partition (EFI System partition) 260 MB, sectors 2,048-534,527

Path: FAT32 FAT32 FAT32 FAT32

Volume: Cluster0: 10224, Cluster size: 8 sectors, Fat1: 9214, Fat2: 9727, Type: FAT32 Region: Cluster x00000002 (2)

Memory in use: 526916 View: R/O Unlicensed Evaluation Copy

Text format view



Linux

Partition table

The screenshot shows the 'Partition table' view of Runtime's DiskExplorer for Linux. The table displays four entries for a GPT partition on drive HD128. The columns represent Sector, Entry No, System, Boot, Cylinder, Head, Sector, Ending Cylinder, Head, Sector, Relative Start Sector, and Total Sectors.

Sector	Partition table	x00000800 Valid Partition Table	2,048	Entry No	System	Boot	Cylinder	Head	Sector	Starting Cylinder	Ending Head	Sector	Relative Start Sector	Total Sectors
1	Unknown	???	x061	x73	x20	x068	x79	x20	x74207965	x6572206F				
2	Reserved	???	x172	x74	x21	x000	x0D	x0A	x1948285285	x00000000	x00000000	x00000000	x1701978223	0
3	Free	No	x000	x00	x00	x000	x00	x00	x00000000	x00000000	x00000000	x00000000	x00000000	0
4	Free	No	x000	x00	x00	x000	x00	x00	x01AC0000	x28049408	x441	x000001B9		

[Sector:Offset]=x00000800:x1C2 (2,048:450) Selection=x00000800:x1C2-x00000800:x1C2
Drive: HD128: [1st hard drive], 1,000,215,216 (x3B9E12B0) sectors 1st GPT partition (EFI System partition) 260 MB, sectors 2,048-534,527
Path: BOOT32\HD128: Volume: Cluster0: 10224, Cluster size: 8 sectors, Fat1: 9214, Fat2: 9727, Type: FAT32 Region: Boot sector
Memory in use: 546960 View: R/O Unlicensed Evaluation Copy

Root directory

The screenshot shows the 'Root directory' view of Runtime's DiskExplorer for Linux. The table lists files in the root directory of a GPT partition on drive HD128. The columns represent Inode and Name.

Inode	Name
x4D9058EB	5.0

[Sector=x00000800 (2,048)
Drive: HD128: [1st hard drive], 1,000,215,216 (x3B9E12B0) sectors 1st GPT partition (EFI System partition) 260 MB, sectors 2,048-534,527
Path: BOOT32\HD128: Volume: Cluster0: 10224, Cluster size: 8 sectors, Fat1: 9214, Fat2: 9727, Type: FAT32 Region: Boot sector
Memory in use: 548172 View: R/O Unlicensed Evaluation Copy

Hex

Sector	Offset	Hex values	Ascii values
1	x120	66 58 66 58 66 58 66 58 EB 33 66 3B 46 F8 72 03	f X f X f X f X e 3 f ; F o r .
	x130	F9 EB 2A 66 33 D2 66 0F B7 4E 18 66 F7 F1 FE C2	ù e " f 3 0 f .. N . f + n b Å
	x140	8A CA 66 8B D0 66 C1 EA 10 F7 76 1A 86 D6 8A 56	È f Ð f Å è . + v . Ö V
	x150	40 8A E8 C0 E4 06 0A CC B8 01 02 CD 13 66 61 0F	@I è Å ä . . l . . f a .
	x160	82 74 FF 81 C3 00 02 66 40 49 75 94 C3 42 4F 4F	t y Å . . f @I u Å B 0 0
	x170	54 4D 47 52 20 20 20 20 00 00 00 00 00 00 00 00	T M G R
	x180	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x190	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x1A0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 0D 44 69 Di
	x1B0	73 68 20 65 72 72 6F 72 FF 00 0A 50 72 65 73 73	s k e r r o r y . . P r e s s
	x1C0	20 61 SE 79 20 68 65 79 20 74 6F 20 72 65 73 74	a n y k e y t o r e s t a r t .
	x1D0	61 72 74 0D 0A 00 00 00 00 00 00 00 00 00 00 00 00
	x1E0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x1F0	00 00 00 00 00 00 00 00 AC 01 B9 01 00 00 55 AA U ^
x00000801	x000	52 55 61 41 00 00 00 00 00 00 00 00 00 00 00 00	R R a A
2,049	x010	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x020	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x030	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x040	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x050	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	x060	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

(Sector:Offset)=x00000800:x1C2 (2,048:450) Selection=x00000800:x1C2-x00000800:x1C2

Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 1st GPT partition (EFI System partition) 260 MB, sectors 2,048-534,527

Path: BOOT32\HD128

Volume: Cluster0: 10224, Cluster size: 8 sectors, Fat1: 9214, Fat2: 9727, Type: FAT32 Region: Boot sector

Memory in use: 547332 View: R/O Unlicensed Evaluation Copy

Text format view

Sector	Offset	Text
2,048	x080	öA.tþF.e-IV@'.i.s.yj n.1E@f. Nc?+å Åf.Af. Èf+å F f~..u9 ~.w3 F.fA..€!..è..é.. e Å ð- Åt.<jt.'.. e j ù e ä)€ e
	x14C	ÖIV@ é å .
t	x157	l..f.a.llyÅ.f@luÅBOOTMGR
	x1AE	Disk errory..
	x1BB	Press any key to restart..
	x1D5 -^..U^
x00000801	x000	RRaA..
x00000802	x000
x00000803	x000
x00000804	x000
x00000805	x000
x00000806	x000	ëXMSDOS5.0..þ...ø..?j..... €_ N NO NAME FAT32 3E N 46 A Ü% V@ N V@ A » U .r.0U%
2,054	x080	öA.tþF.e-IV@'.i.s.yj n.1E@f. Nc?+å Åf.Af. Èf+å F f~..u9 ~.w3 F.fA..€!..è..é.. e Å ð- Åt.<jt.'.. e j ù e ä)€ e
	x14C	ÖIV@ é å .
t	x157	l..f.a.llyÅ.f@luÅBOOTMGR
	x1AE	Disk errory..
	x1BB	Press any key to restart..
	x1D5 -^..U^
x00000807	x000	RRaA..
x00000808	x000

(Sector:Offset)=x00000800:x1C2 (2,048:450) Selection=x00000800:x1C2-x00000800:x1C2

Drive: HD128: (1st hard drive), 1,000,215,216 (x3B9E12B0) sectors 1st GPT partition (EFI System partition) 260 MB, sectors 2,048-534,527

Path: BOOT32\HD128

Volume: Cluster0: 10224, Cluster size: 8 sectors, Fat1: 9214, Fat2: 9727, Type: FAT32 Region: Boot sector

Memory in use: 548004 View: T R/O Unlicensed Evaluation Copy