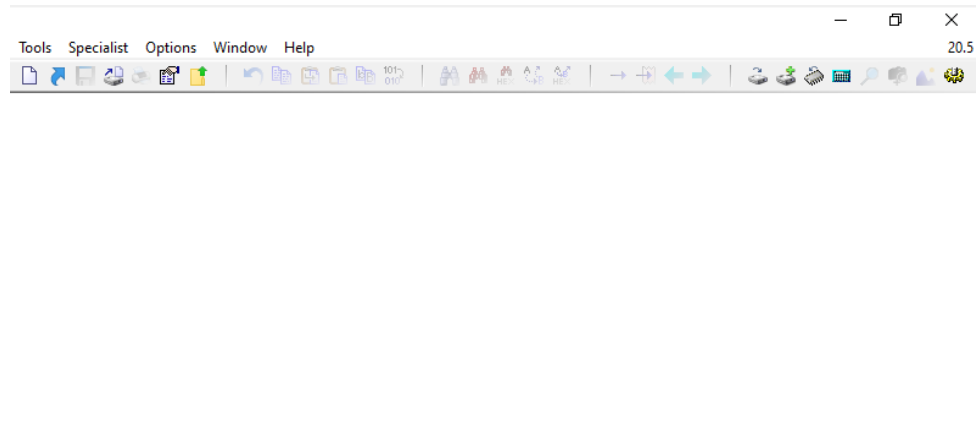


WinHex Introduction - JPG Image Analysis



- Open the Image file

Name	Date modified	Type	Size
Today (6)			
lab	5/6/2022 3:23 AM	JPG File	78 KB

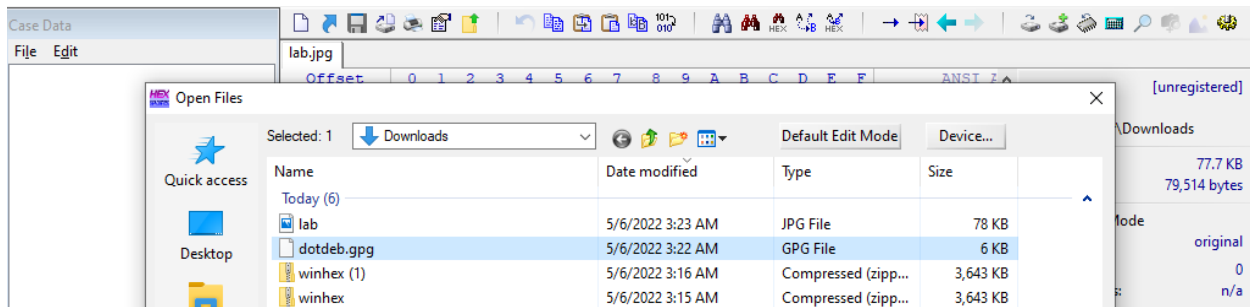
- In the below screenshot JFIF highlighted in yellow indicates it is a JPEG file.

```

00000010 00 48 00 00 FF E2 0C 58 49 43 43 5F 50 52 4F 46 H yâ XICC
00000020 49 4C 45 00 01 01 00 00 0C 48 4C 69 6E 6F 02 10 ILE HL
00000030 00 00 6D 6E 74 72 52 47 42 20 58 59 5A 20 07 CE mntRGB X
00000040 00 02 00 09 00 06 00 31 00 00 61 63 73 70 4D 53 l a
00000050 46 54 00 00 00 00 49 45 43 20 73 52 47 42 00 00 FT IEC s
00000060 00 00 00 00 00 00 00 00 00 00 00 00 F6 D6 00 01
00000070 00 00 00 00 D3 2D 48 50 20 20 00 00 00 00 00 00 Ó-HP
00000080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00000090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
000000A0 00 00 00 00 00 00 00 00 00 11 63 70 72 74 00 00 c
000000B0 01 50 00 00 00 33 64 65 73 63 00 00 01 84 00 00 P 3desc
000000C0 00 6C 77 74 70 74 00 00 01 F0 00 00 00 14 62 6B lwtpt ð
000000D0 70 74 00 00 02 04 00 00 00 14 72 58 59 5A 00 00 pt r
000000E0 02 18 00 00 00 14 67 58 59 5A 00 00 02 2C 00 00 gXYZ
000000F0 00 14 62 58 59 5A 00 00 02 40 00 00 00 14 64 6D bXYZ @
00000100 6E 64 00 00 02 54 00 00 00 70 64 6D 64 64 00 00 nd T pd
00000110 02 C4 00 00 00 88 76 75 65 64 00 00 03 4C 00 00 Å ^vued
00000120 00 86 76 69 65 77 00 00 03 D4 00 00 00 24 6C 75 tview Ó
00000130 6D 69 00 00 03 F8 00 00 00 14 6D 65 61 73 00 00 mi ø m
00000140 04 0C 00 00 00 24 74 65 63 68 00 00 04 30 00 00 $tech
00000150 00 0C 72 54 52 43 00 00 04 3C 00 00 08 0C 67 54 rTRC <
00000160 52 43 00 00 04 3C 00 00 08 0C 62 54 52 43 00 00 RC < b
00000170 04 3C 00 00 08 0C 74 65 78 74 00 00 00 00 43 6F < text
00000180 70 79 72 69 67 68 74 20 28 63 29 20 31 39 39 38 pyright (c)
00000190 20 48 65 77 6C 65 74 74 2D 50 61 63 6B 61 72 64 Hewlett-Pa
000001A0 20 43 6F 6D 70 61 6E 79 00 00 64 65 73 63 00 00 Company d
000001B0 00 00 00 00 00 12 73 52 47 42 20 49 45 43 36 31 sRGB
000001C0 39 36 36 2D 32 2E 31 00 00 00 00 00 00 00 00 00 966-2.1
000001D0 00 00 12 73 52 47 42 20 49 45 43 36 31 39 36 36 sRGB IEC
000001E0 2D 32 2E 31 00 00 00 00 00 00 00 00 00 00 00 00 -2.1
000001F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00000200 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00000210 00 00 00 00 00 00 58 59 5A 20 00 00 00 00 00 00 XYZ

```

- Here in the below pic as shown we open dotdeb.gpg file.



- In the picture below it can be noticed there is no relevant information about what the file is about. It is compressed with gzip then it is encrypted with gpg.

set	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	ANSI ASCII
0000	2D	2D	2D	2D	2D	42	45	47	49	4E	20	50	47	50	20	50	-----BEGIN PGP P
0010	55	42	4C	49	43	20	4B	45	59	20	42	4C	4F	43	4B	2D	UBLIC KEY BLOCK-
0020	2D	2D	2D	2D	0A	56	65	72	73	69	6F	6E	3A	20	47	6E	----- Version: Gn
0030	75	50	47	2F	4D	61	63	47	50	47	32	20	76	32	2E	30	uPG/MacGPG2 v2.0
0040	2E	31	34	20	28	44	61	72	77	69	6E	29	0A	0A	6D	51	.14 (Darwin) mQ
0050	49	4E	42	45	77	35	76	70	51	42	45	41	44	58	7A	4D	INBEw5vpQBEADKzM
0060	6F	38	68	48	54	69	4A	42	46	30	6B	55	4E	41	76	54	o8hHTiJBf0kUNAvT
0070	77	36	4D	35	4B	6C	6E	67	72	64	53	6C	70	56	32	65	w6MSKIngrdSlpV2e
0080	54	75	43	62	32	2B	56	6C	49	69	57	38	61	76	0A	44	TuCb2+VliiW8av D
0090	45	46	34	65	39	39	63	4A	2B	75	78	53	73	44	34	77	EF4e99cJ+uxSsD4w
00A0	34	66	69	35	76	4C	59	4C	7A	79	7A	2F	42	72	2F	6D	4fi5vLYLzyz/Br/m
00B0	69	6E	4F	76	63	66	4C	4C	43	61	31	59	31	65	4D	73	inOvcfLLCaYleMs
00C0	57	67	65	73	45	39	67	41	4B	42	4C	75	34	6F	63	0A	WgesE9gAKBLu4oc
00D0	72	65	33	4D	36	51	53	6D	79	51	70	50	32	64	35	65	re3M6QSmYQpP2d5e
00E0	30	2B	72	4C	33	66	47	77	6F	64	64	37	6E	55	32	32	0+rl3fGwodd7nU22
00F0	66	49	56	77	6F	54	51	68	6E	75	39	50	57	4A	6F	4A	fIVwoTQhnu9FWJoJ
0100	76	6F	4C	41	30	74	33	58	56	6F	41	33	62	2F	54	67	voLA0t3XVoA3b/Tg
0110	0A	55	59	43	34	73	73	34	59	52	56	50	52	53	31	68	UYC4ss4YRVPERS1h
0120	45	62	75	49	32	51	55	61	67	64	59	63	78	64	39	49	EbuI2QUagdYcxd9I
0130	57	58	71	4F	2F	45	69	68	57	42	6A	4E	43	66	4D	42	WXqO/EihWBjNCfMB
0140	70	39	79	4D	79	48	73	71	61	52	4A	62	46	6D	51	4B	p9yMyHsqarJbFmQK
0150	30	0A	74	55	41	62	49	68	4B	72	66	2F	69	74	49	69	0 tUAbInKrf/itIi
0160	30	61	6D	42	69	4A	33	71	4B	50	48	66	70	77	65	2F	0amBiJ3qKPHfpwe/
0170	39	4C	6B	57	78	34	49	70	58	54	48	70	72	64	46	64	9LkWx4IpXTHprdFd
0180	69	54	33	7A	77	54	44	41	68	4C	36	58	6A	6A	2F	31	iT3zwTDAhL6Xjj/l
0190	5A	43	0A	77	68	6B	4A	4E	6E	54	70	62	74	64	52	48	ZC whkJNnTpbtdRH
01A0	6B	5A	6D	56	79	53	2B	35	31	39	65	78	43	58	63	48	kZmVyS+5l9exCXcH
01B0	4B	74	66	62	49	47	2F	4C	72	72	70	36	79	33	2F	5A	KtfbIG/Lrrp6y3/Z
01C0	59	36	77	33	52	79	64	39	45	46	79	4B	52	6A	32	70	Y6w3Ryd9EFyKRJ2p
01D0	51	6D	2B	0A	68	34	4F	57	66	37	4C	44	33	68	35	33	Qm+ h4OWF7LD3h53
01E0	77	50	79	34	4D	6C	59	58	35	33	54	4E	33	49	4A	36	wPy4MLYX53IN3IJ6
01F0	67	6B	39	36	55	73	4F	54	48	2F	77	71	32	51	57	72	gk96UsOTH/wq2QWr
0200	4A	55	65	64	78	55	37	35	79	63	32	36	79	4C	61	35	JUedxU75yc26yLa5
0210	5A	57	6E	72	0A	4D	70	68	62	4F	31	6B	6F	6A	56	64	ZWnr MphbO1kojVd

WinHex – PLAYING WITH FILES

- Here is the file which indicates it is a JPEG file

Offset	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	ANSI
00000000	FF	D8	FF	E0	00	10	4A	46	49	46	00	01	01	01	00	48	ÿà JFIF
00000010	00	48	00	00	FF	E2	0C	58	49	43	43	5F	50	52	4F	46	H yà XICC
00000020	49	4C	45	00	01	01	00	00	0C	48	4C	69	6E	6F	02	10	ILE HL
00000030	00	00	6D	6E	74	72	52	47	42	20	58	59	5A	20	07	CE	mntrRGB X
00000040	00	02	00	09	00	06	00	31	00	00	61	63	73	70	4D	53	l a
00000050	46	54	00	00	00	00	49	45	43	20	73	52	47	42	00	00	FT IEC s
00000060	00	00	00	00	00	00	00	00	00	00	00	00	F6	D6	00	01	
00000070	00	00	00	00	D3	2D	48	50	20	20	00	00	00	00	00	00	ó-HP

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- In the given file below, we will change the value from 19 to 49 as highlighted below

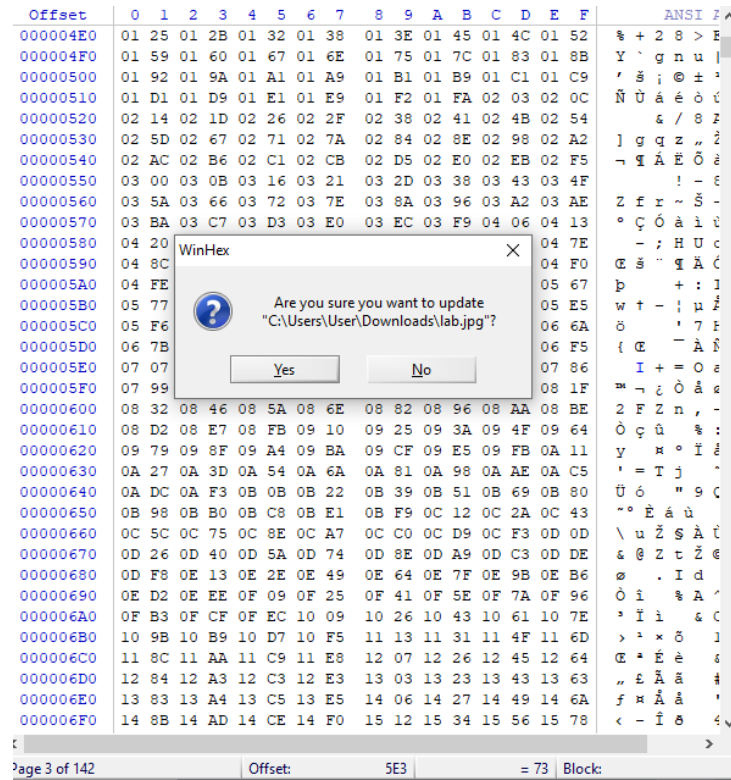
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	ANSI F
01 25 01 2B 01 32 01 38	01 3E 01 45 01 4C 01 52	% + 2 8 > E														
01 59 01 60 01 67 01 6E	01 75 01 7C 01 83 01 8B	Y ` g n u |														
01 92 01 9A 01 A1 01 A9	01 B1 01 B9 01 C1 01 C9	' š ; @ ± ²														
01 D1 01 D9 01 E1 01 E9	01 F2 01 FA 02 03 02 0C	Ñ Û á é ò ó														
02 14 02 1D 02 26 02 2F	02 38 02 41 02 4B 02 54	& / 8 F														
02 5D 02 67 02 71 02 7A	02 84 02 8E 02 98 02 A2	l g q z „ ž														
02 AC 02 B6 02 C1 02 CB	02 D5 02 E0 02 EB 02 F5	¬ Œ Á Ě Œ è														
03 00 03 0B 03 16 03 21	03 2D 03 38 03 43 03 4F	! - É														
03 5A 03 66 03 72 03 7E	03 8A 03 96 03 A2 03 AE	Z f r ~ Š -														
03 BA 03 C7 03 D3 03 E0	03 EC 03 F9 04 06 04 13	° Ç Ó à ì ù														
04 20 04 2D 04 3B 04 48	04 55 04 63 04 71 04 7E	- ; H U c														
04 8C 04 9A 04 A8 04 B6	04 C4 04 D3 04 E1 04 F0	Œ š " Œ Ā Ć														
04 FE 05 0D 05 1C 05 2B	05 3A 05 49 05 58 05 67	þ + : 1														
05 77 05 86 05 96 05 A6	05 B5 05 C5 05 D5 05 E5	w t - ! u ž														
05 F6 06 06 06 16 06 27	06 37 06 48 06 59 06 6A	ö ' 7 F														
06 7B 06 8C 06 9D 06 AF	06 C0 06 D1 06 E3 06 F5	{ Œ - Ā Œ														
07 07 07 0B 07 2B 07 3D	07 4F 07 61 07 74 07 86	Œ + = O æ														
07 99 07 AC 07 BF 07 D2	07 E5 07 F8 08 0B 08 1F	™ ¬ Ć Œ ā æ														
08 32 08 46 08 5A 08 6E	08 82 08 96 08 AA 08 BE	2 F Z n , -														
08 D2 08 E7 08 FB 09 10	09 25 09 3A 09 4F 09 64	Ò ç ù % :														
09 79 09 8F 09 A4 09 BA	09 CF 09 E5 09 FB 0A 11	y « ° Ĭ ž														
0A 27 0A 3D 0A 54 0A 6A	0A 81 0A 98 0A AE 0A C5	' = T j ^														
0A DC 0A F3 0B 0B 0B 22	0B 39 0B 51 0B 69 0B 80	Ŭ ó " 9 C														
0B 98 0B B0 0B C8 0B E1	0B F9 0C 12 0C 2A 0C 43	" ° È á ù														
0C 5C 0C 75 0C 8E 0C A7	0C C0 0C D9 0C F3 0D 0D	\ u ž \$ Ā Ŭ														
0D 26 0D 40 0D 5A 0D 74	0D 8E 0D A9 0D C3 0D DE	& @ Z t ž æ														
0D F8 0E 13 0E 2E 0E 49	0E 64 0E 7F 0E 9B 0E B6	ø . I d														
0E D2 0E EE 0F 0F 25	0F 41 0F 5E 0F 7A 0F 96	Ô î % A ^														
0F B3 0F CF 0F EC 10 09	10 26 10 43 10 61 10 7E	³ Ĭ ì & C														
10 9B 10 B9 10 D7 10 F5	11 13 11 31 11 4F 11 6D	> ² × ö 1														
11 8C 11 AA 11 C9 11 E8	12 07 12 26 12 45 12 64	Œ ° È è æ														
12 84 12 A3 12 C3 12 E3	13 03 13 23 13 43 13 63	" £ Ā ā #														
13 83 13 A4 13 C5 13 E5	14 06 14 27 14 49 14 6A	f x Ā ā '														
14 8B 14 AD 14 CE 14 F0	15 12 15 34 15 56 15 78	< - Ĭ ø 4														

- Before changing the value, we can open the file it looks like this



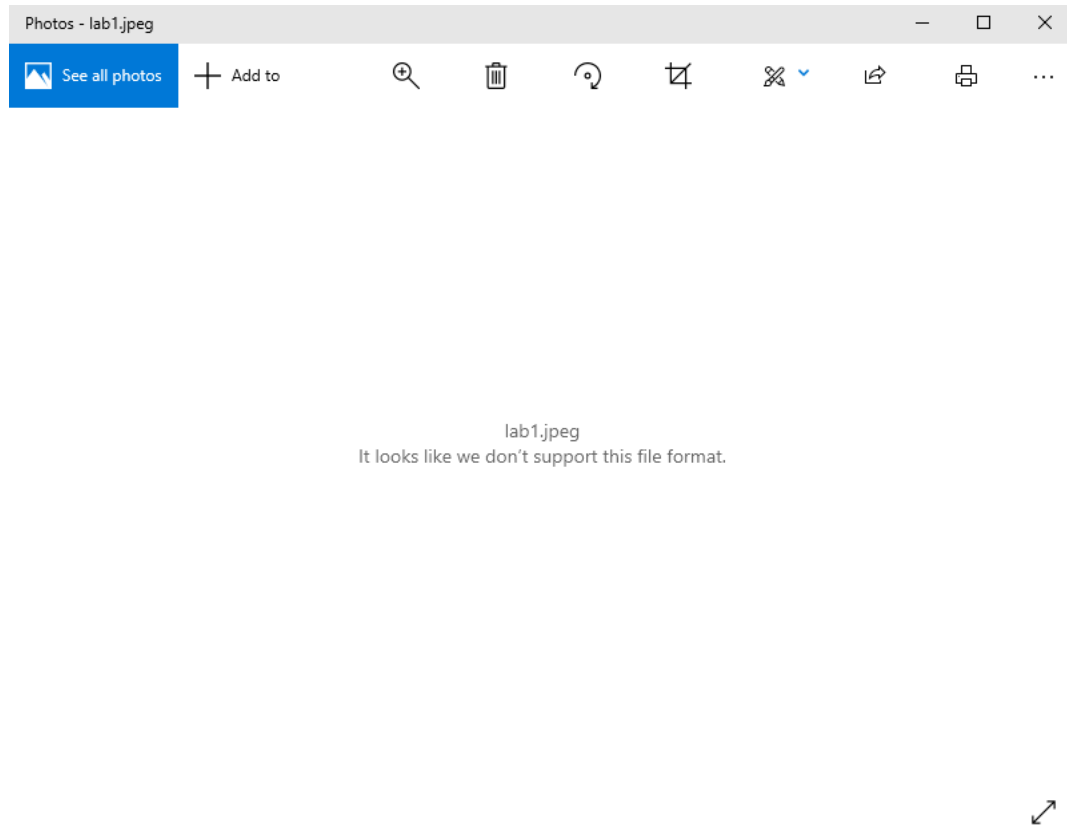
- After the value has been changed save the file with a different name > I have changed to

Lab1

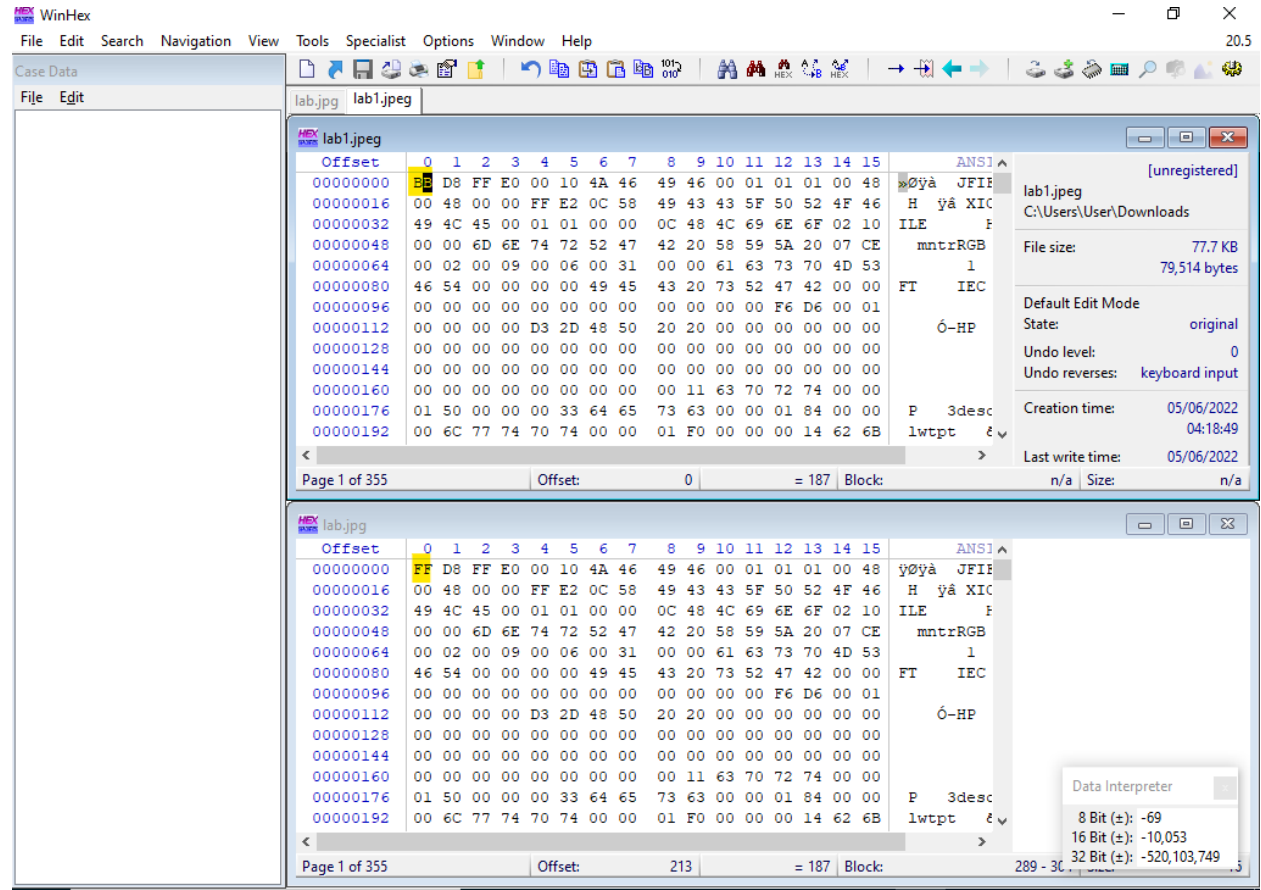


- After making the changes we are not able to open the file

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CYB 528
UNIT 4



- As you can see below the changes made in the values are made.



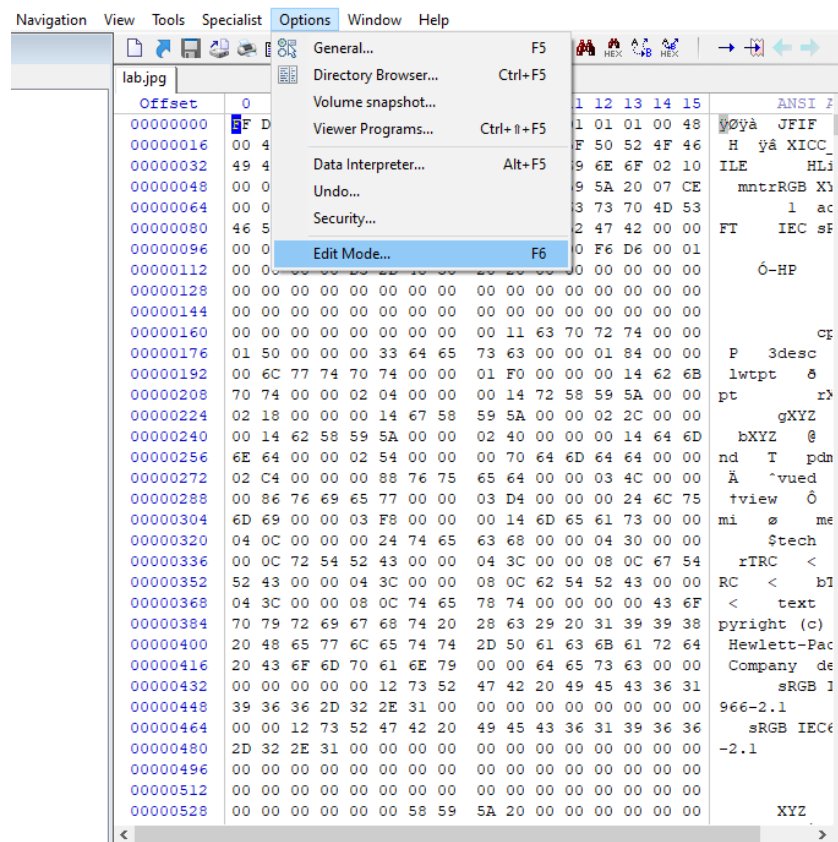
These values should be changed back to its original value to get image file working.

WinHex – WRITE BLOCKING

- Open the image file

Offset	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	ANSI F
00000000	FF	D8	FF	E0	00	10	4A	46	49	46	00	01	01	01	00	48	00yá JFIF
00000016	00	48	00	00	FF	E2	0C	58	49	43	43	5F	50	52	4F	46	H yá XICC
00000032	49	4C	45	00	01	01	00	00	0C	48	4C	69	6E	6F	02	10	ILE HLi
00000048	00	00	6D	6E	74	72	52	47	42	20	58	59	5A	20	07	CE	mntrRGB Xl
00000064	00	02	00	09	00	06	00	31	00	00	61	63	73	70	4D	53	1 ac
00000080	46	54	00	00	00	00	49	45	43	20	73	52	47	42	00	00	FT IEC sF
00000096	00	00	00	00	00	00	00	00	00	00	00	00	F6	D6	00	01	
00000112	00	00	00	00	D3	2D	48	50	20	20	00	00	00	00	00	00	ó-HP
00000128	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
00000144	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
00000160	00	00	00	00	00	00	00	00	00	11	63	70	72	74	00	00	cp
00000176	01	50	00	00	00	33	64	65	73	63	00	00	01	84	00	00	P 3desc
00000192	00	6C	77	74	70	74	00	00	01	F0	00	00	00	14	62	6B	lwtpt ô
00000208	70	74	00	00	02	04	00	00	00	14	72	58	59	5A	00	00	pt rX
00000224	02	18	00	00	00	14	67	58	59	5A	00	00	02	2C	00	00	gXYZ
00000240	00	14	62	58	59	5A	00	00	02	40	00	00	00	14	64	6D	bXYZ @
00000256	6E	64	00	00	02	54	00	00	00	70	64	6D	64	64	00	00	nd T pdn
00000272	02	C4	00	00	00	88	76	75	65	64	00	00	03	4C	00	00	Å ^vued
00000288	00	86	76	69	65	77	00	00	03	D4	00	00	00	24	6C	75	tview ô
00000304	6D	69	00	00	03	F8	00	00	00	14	6D	65	61	73	00	00	mi ø me
00000320	04	0C	00	00	00	24	74	65	63	68	00	00	04	30	00	00	\$tech
00000336	00	0C	72	54	52	43	00	00	04	3C	00	00	08	0C	67	54	rTRC <
00000352	52	43	00	00	04	3C	00	00	08	0C	62	54	52	43	00	00	RC < bI
00000368	04	3C	00	00	08	0C	74	65	78	74	00	00	00	00	43	6F	< text
00000384	70	79	72	69	67	68	74	20	28	63	29	20	31	39	39	38	pyright (c)
00000400	20	48	65	77	6C	65	74	74	2D	50	61	63	6B	61	72	64	Hewlett-Pac
00000416	20	43	6F	6D	70	61	6E	79	00	00	64	65	73	63	00	00	Company de
00000432	00	00	00	00	00	12	73	52	47	42	20	49	45	43	36	31	sRGB I
00000448	39	36	36	2D	32	2E	31	00	00	00	00	00	00	00	00	00	966-2.1
00000464	00	00	12	73	52	47	42	20	49	45	43	36	31	39	36	36	sRGB IEC6
00000480	2D	32	2E	31	00	00	00	00	00	00	00	00	00	00	00	00	-2.1
00000496	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
00000512	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
00000528	00	00	00	00	00	00	58	59	5A	20	00	00	00	00	00	00	XYZ

- Go to Options and then to EDIT mode.

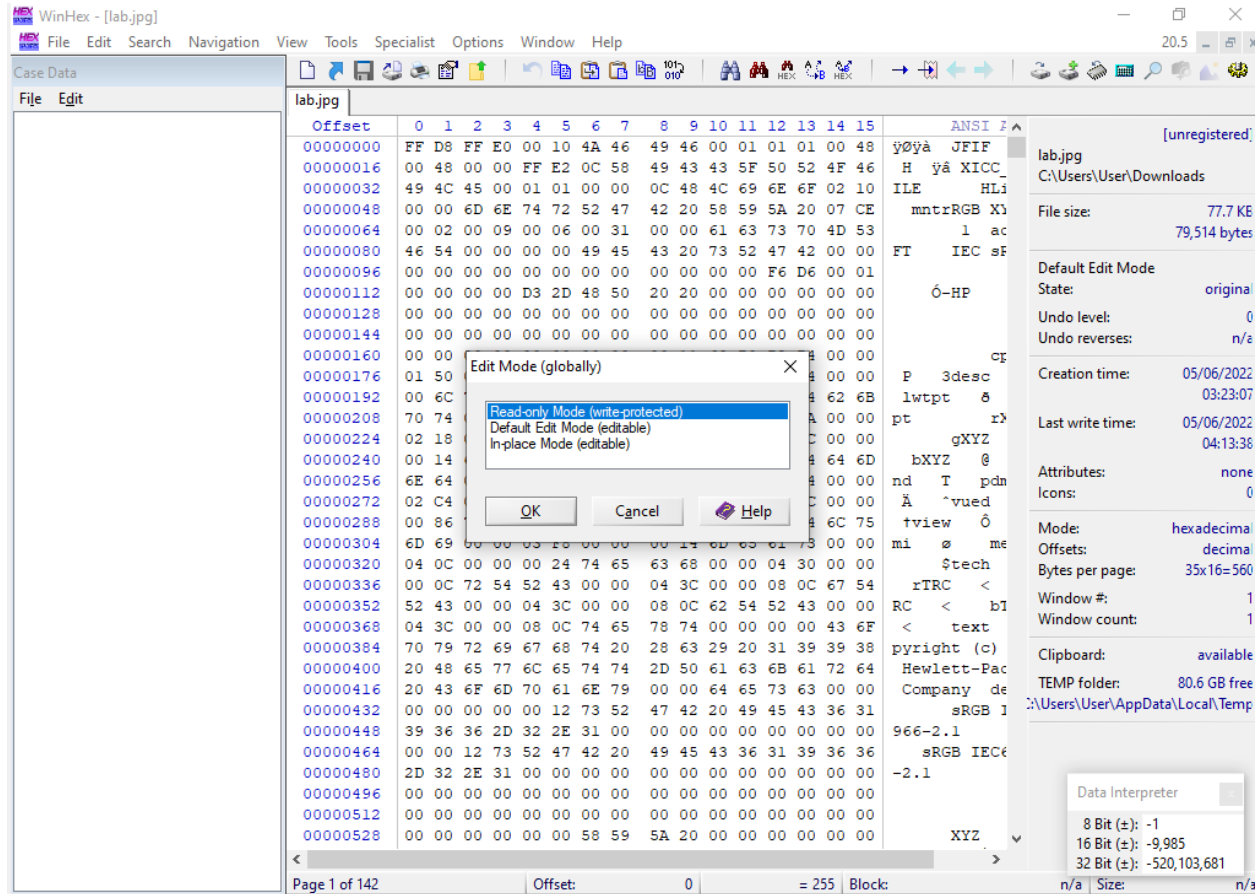


- Now select the read only mode and click OK.

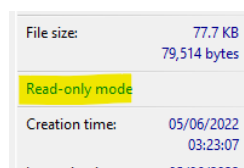
Farzad Kheirabadi

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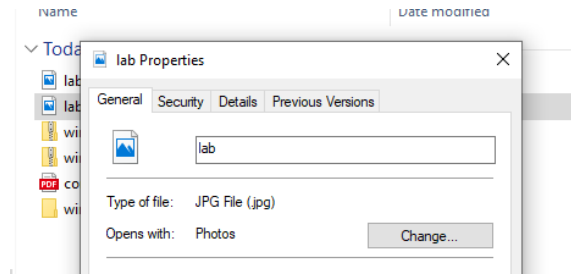
UNIT 4



- Now below you can see the highlighted text where it shows read only mode



- Right click on the disk image file and go to properties and in attributes check mark the “READ ONLY” and apply



WinHex – GPT HEADER

- The LBA of the header

000	45	46	49	20	50	41	52	54	00	00	01	00	5c	00	00	00	EFI PART...
010	74	b4	28	96	00	00	00	00	01	00	00	00	00	00	00	00	t' (...
020	ef	37	76	00	00	00	00	00	00	22	00	00	00	00	00	00	y7v...
030	de	37	76	00	00	00	00	00	00	85	71	29	4a	10	3c	80	4e
040	a8	24	c3	1d	ea	93	72	08	02	00	00	00	00	00	00	00	00
050	80	00	00	00	80	00	00	00	00	69	50	d8	98	00	00	00	00
060	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
070	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
080	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
090	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0a0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0b0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0c0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0d0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0e0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0f0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
100	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
110	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
120	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
130	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

- The value of the First usable LBA

- Value of the Last Usable LBA

Name	Size	Type	Date Modified
000	45 46 49 20 50 41 52 54-00	00 01 00 5c 00 00 00	EFI PART ----\...
010	74 b4 28 96 00 00 00 00-01	00 00 00 00 00 00 00	t' (.....
020	ff 37 76 00 00 00 00 00-22	00 00 00 00 00 00 00	y7v.....
030	de 37 76 00 00 00 00 00-85	71 29 4a 10 3c 80 4e	b7v.....-q)J<-N
040	a8 24 c3 1d ea 93 72 08-02	00 00 00 00 00 00 00	~cA~e~r.....
050	80 00 00 00 80 00 00 00-69	50 d8 98 00 00 00 00	.....1P0.....
060	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
070	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
080	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
090	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
0a0	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
0b0	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
0c0	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
0d0	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
0e0	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
0f0	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
100	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
110	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
120	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....
130	00 00 00 00 00 00 00 00-00	00 00 00 00 00 00 00	.....

- The GUID of the disk

Type	Size	Value
signed integer	1-8	
unsigned integer	1-8	
FILETIME (UTC)	8	
FILETIME (local)	8	
DOS date	2	
DOS time	2	
time_t (UTC)	4	
time_t (local)	4	

000	45 46 49 20 50 41 52 54-00 00 01 00 5c 00 00 00	EFI PART----
010	74 b4 28 96 00 00 00 00-01 00 00 00 00 00 00	t' (-----
020	ff 37 76 00 00 00 00 00-22 00 00 00 00 00 00	y7v-----"
030	de 37 76 00 00 00 00 00-85 71 29 4a 10 3c 80 4e	P7v-----q)J<-N
040	a8 24 c3 1d ea 93 72 08-02 00 00 00 00 00 00	šĀ-ē-r-----
050	80 00 00 00 80 00 00 00-69 50 d8 98 00 00 00 00	-----iP0-----
060	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
070	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
080	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
090	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0a0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0b0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0c0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0d0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0e0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0f0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----

- Partition Entry LBA

000	45 46 49 20 50 41 52 54-00 00 01 00 5c 00 00 00	EFI PART----
010	74 b4 28 96 00 00 00 00-01 00 00 00 00 00 00	t' (-----
020	ff 37 76 00 00 00 00 00-22 00 00 00 00 00 00	y7v-----"
030	de 37 76 00 00 00 00 00-85 71 29 4a 10 3c 80 4e	P7v-----q)J<-N
040	a8 24 c3 1d ea 93 72 08-02 00 00 00 00 00 00	šĀ-ē-r-----
050	80 00 00 00 80 00 00 00-69 50 d8 98 00 00 00 00	-----iP0-----
060	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
070	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
080	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
090	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0a0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0b0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0c0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0d0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0e0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0f0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
100	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
110	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
120	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
130	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----

- Number of Partitions

000	45 46 49 20 50 41 52 54-00 00 01 00 5c 00 00 00	EFI PART----
010	74 b4 28 96 00 00 00 00-01 00 00 00 00 00 00	t' (-----
020	ff 37 76 00 00 00 00 00-22 00 00 00 00 00 00	y7v-----"
030	de 37 76 00 00 00 00 00-85 71 29 4a 10 3c 80 4e	P7v-----q)J<-N
040	a8 24 c3 1d ea 93 72 08-02 00 00 00 00 00 00	šĀ-ē-r-----
050	80 00 00 00 80 00 00 00-69 50 d8 98 00 00 00 00	-----iP0-----
060	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
070	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
080	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
090	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0a0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0b0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0c0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0d0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0e0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
0f0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
100	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
110	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
120	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----
130	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00	-----

File System Analysis

Creating an empty disk image, initialize it with a filesystem, mount it, execute a series of commands that create and remove files (and thus change the filesystem and disk image), unmount the disk image, and then examine the disk image to see what data remains.

Create a new disk 10 MB image

```
10+0 records in
10+0 records out
10485760 bytes (10 MB, 10 MiB) copied, 0.0162677 s, 645 MB/s
```

This will create a 10M disk image, whereas ZFS requires at least 64M.

Initialize it with a file system

```
mkfs.fat 4.1 (2017-01-24)
```