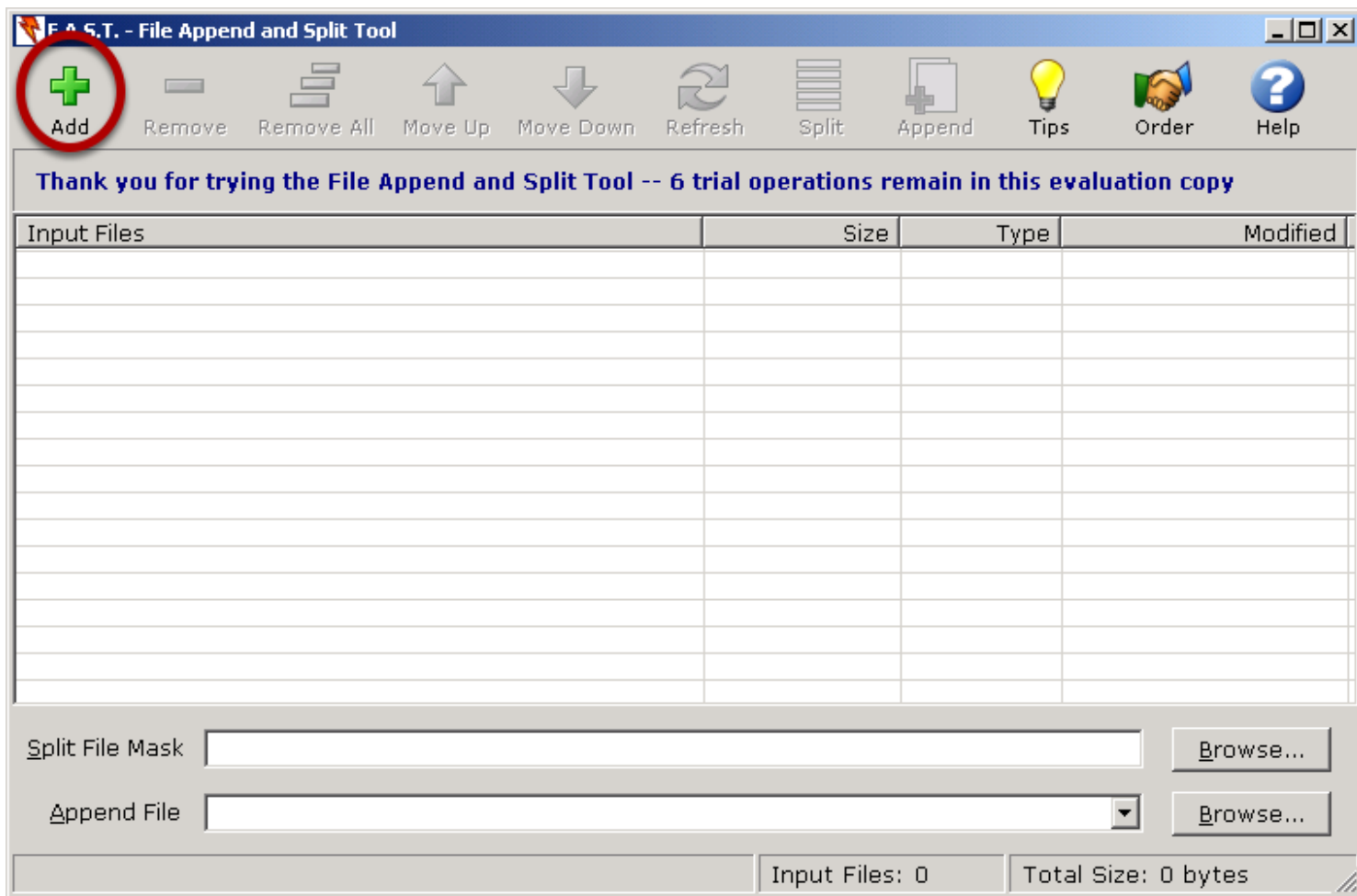
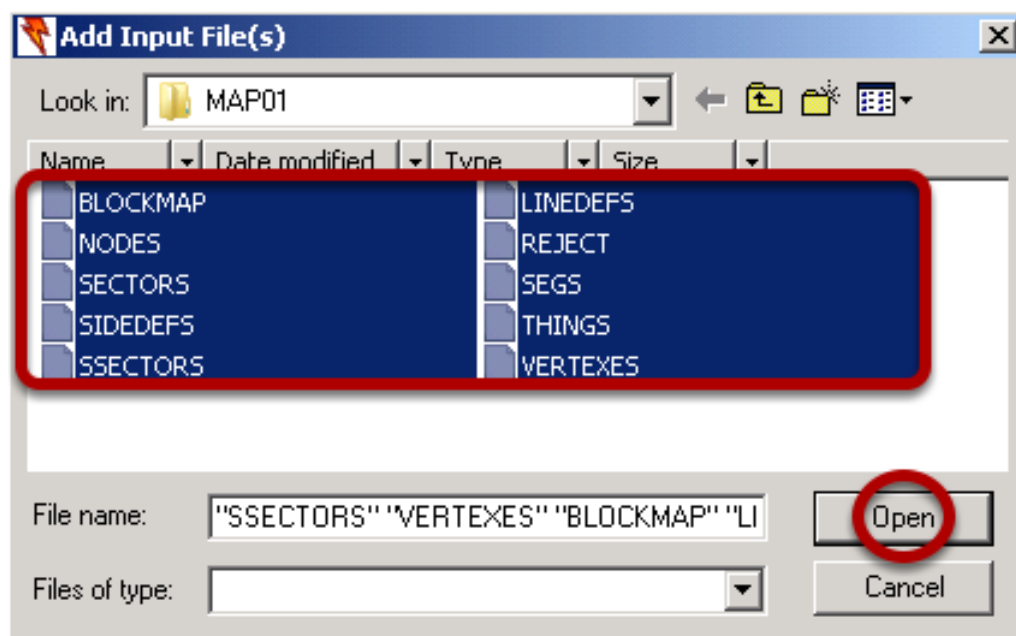


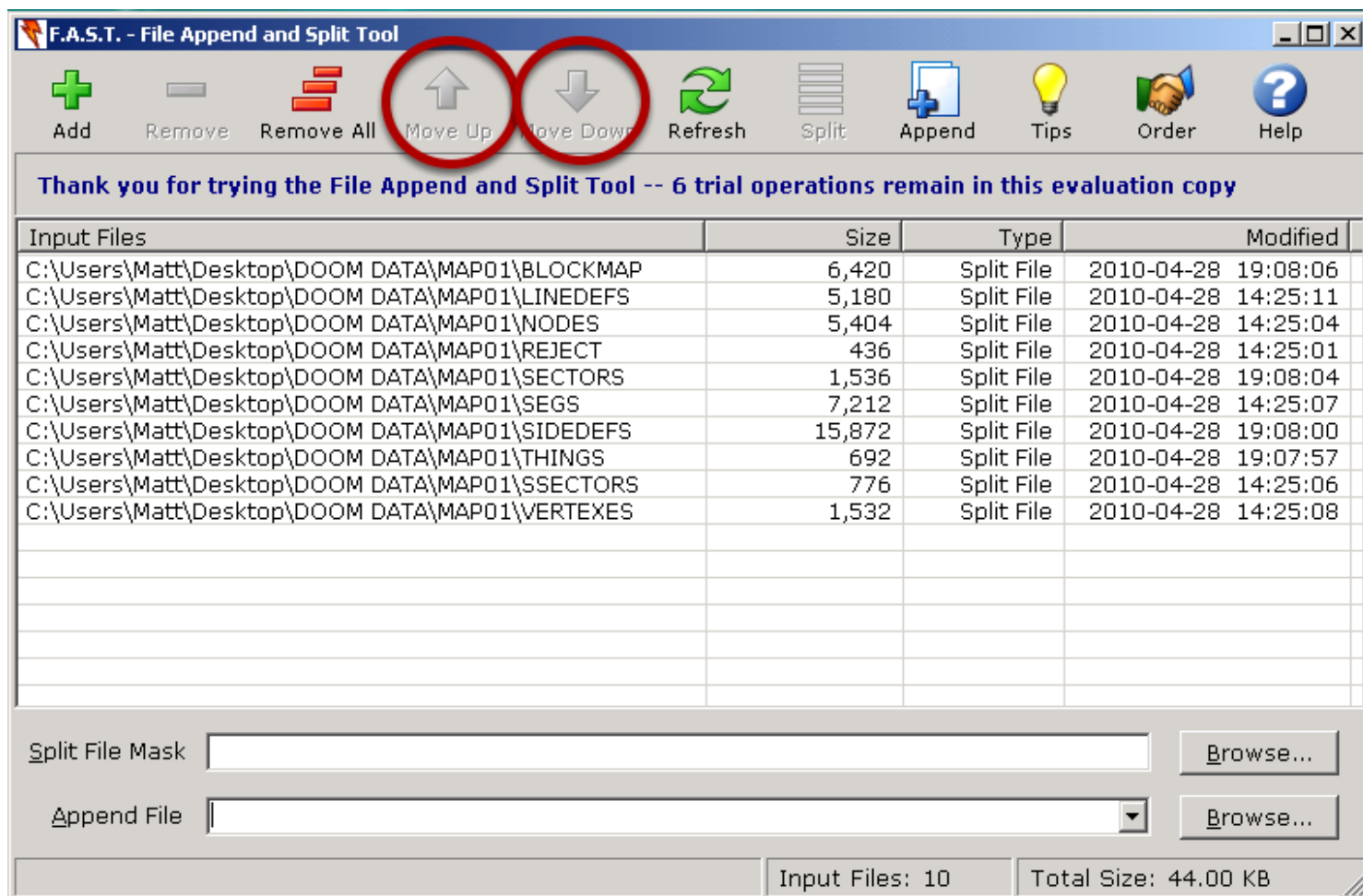
The big hack continued



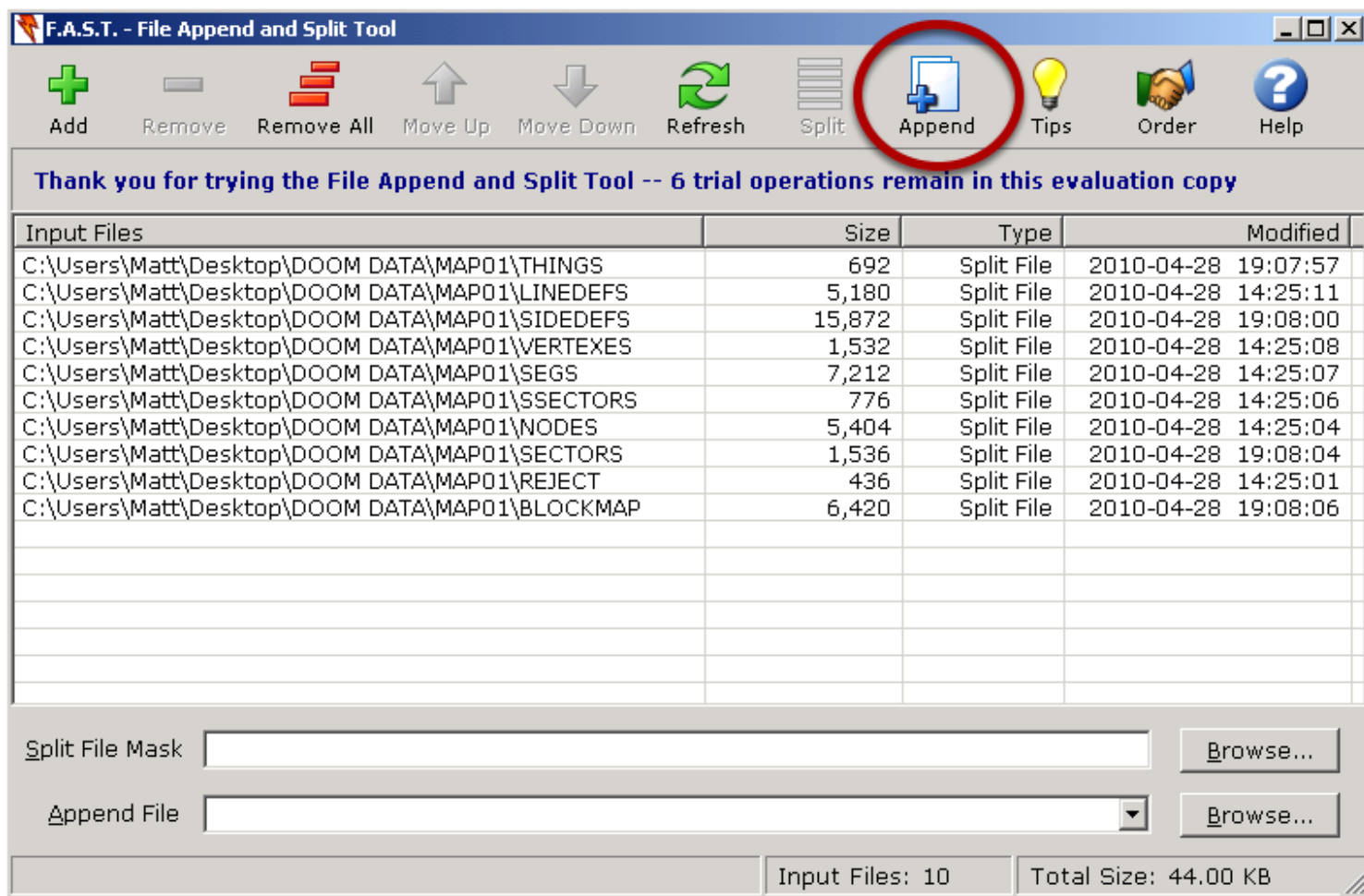
Start up **F.A.S.T (File Append and Split Tool)**, and click on the add icon.



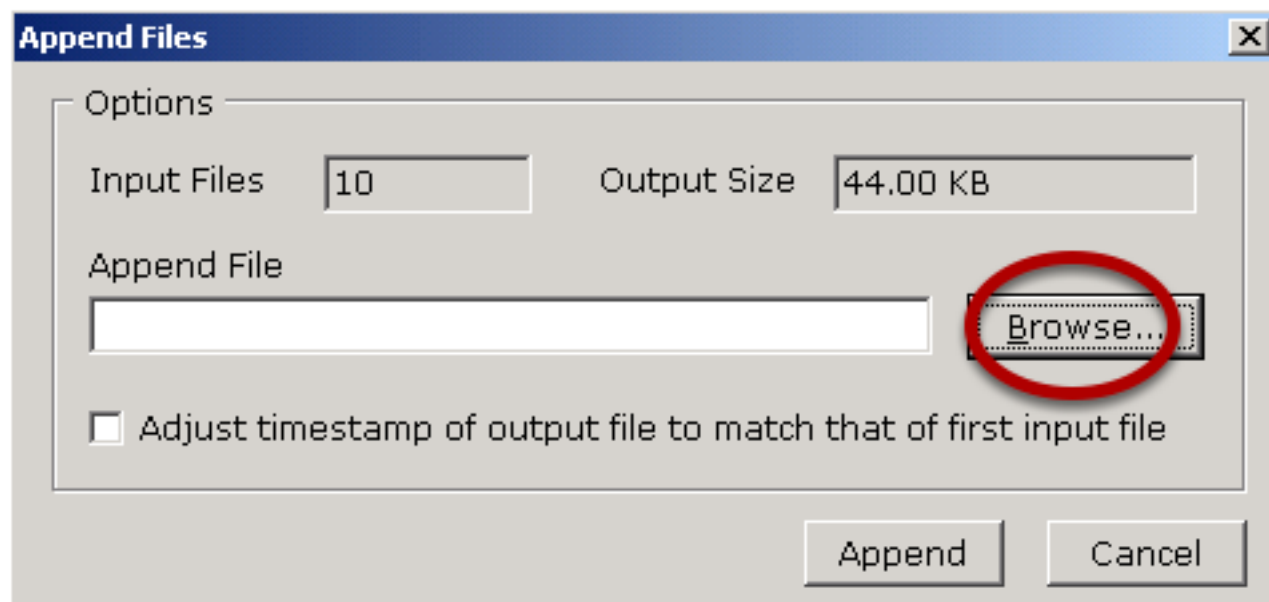
Locate the **DOOM DATA** folder, then open the **MAP01** folder. Select all **10** files inside, click Open



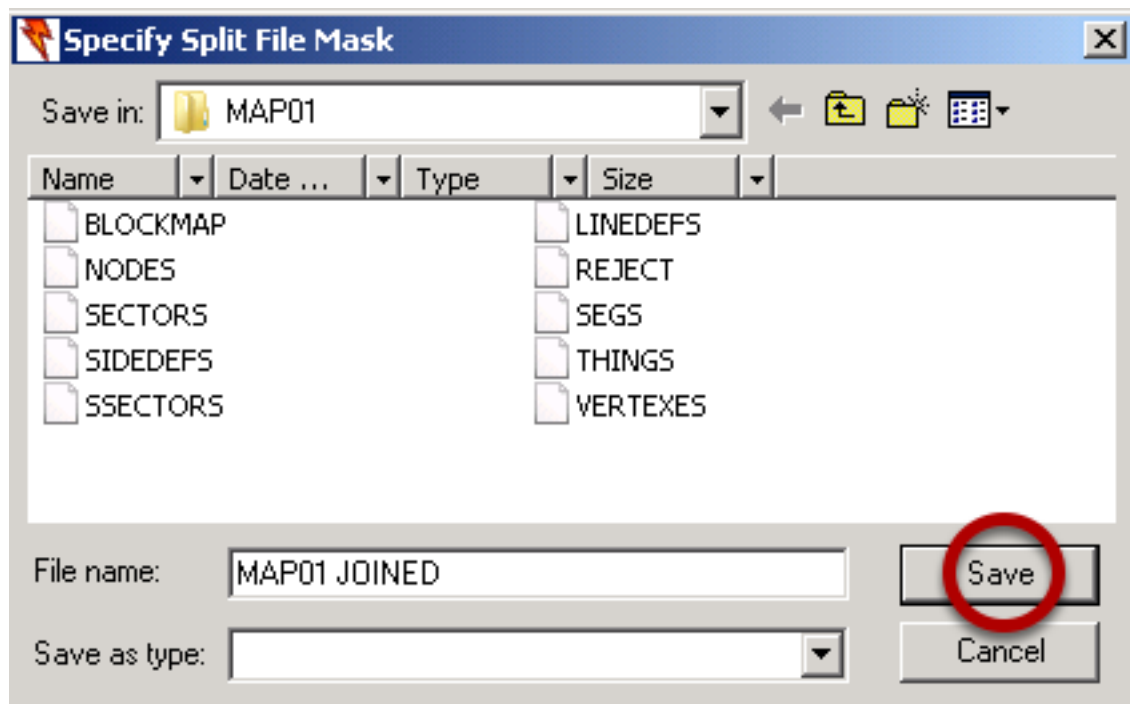
You should see something like this. Now we need to re-arrange the files so they are in the correct order. The order is very important, it should be from top to bottom. **THINGS, LINEDEFS, SIDEDEFS, VERTEXES, SEGS, SSECTORS, NODES, SECTORS, REJECT** and finally **BLOCKMAP**. To change the order of files, just select them and use the **Move Up** or **Move down** arrows to change its position.



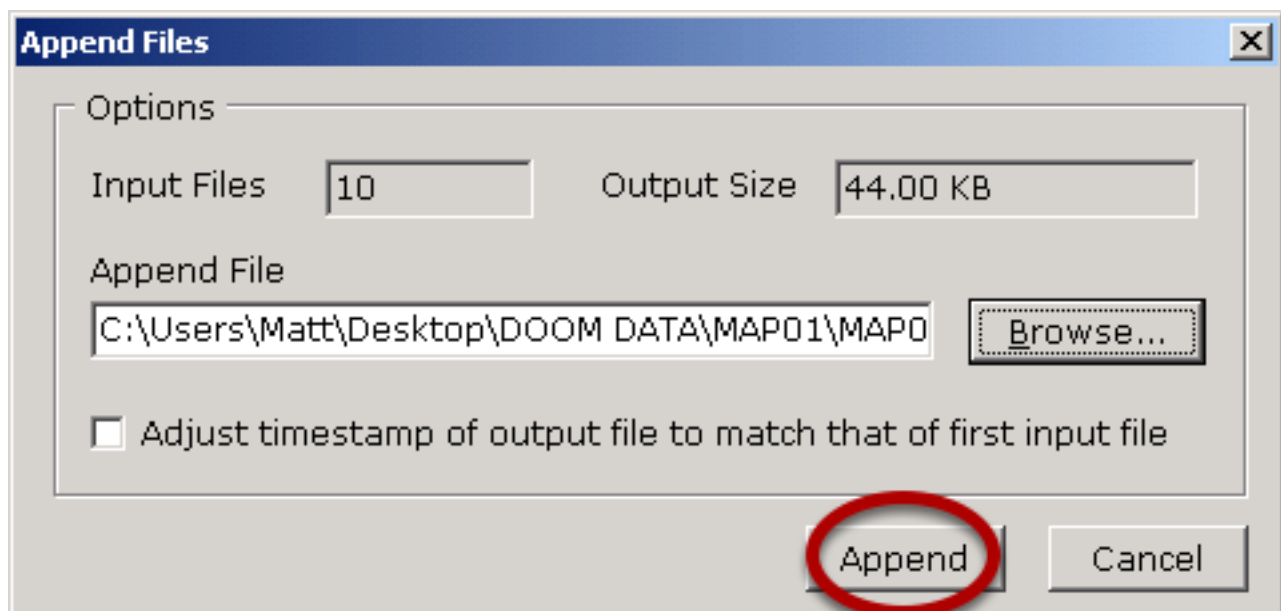
All files have now been moved into their correct position. Now click on the **Append** icon.



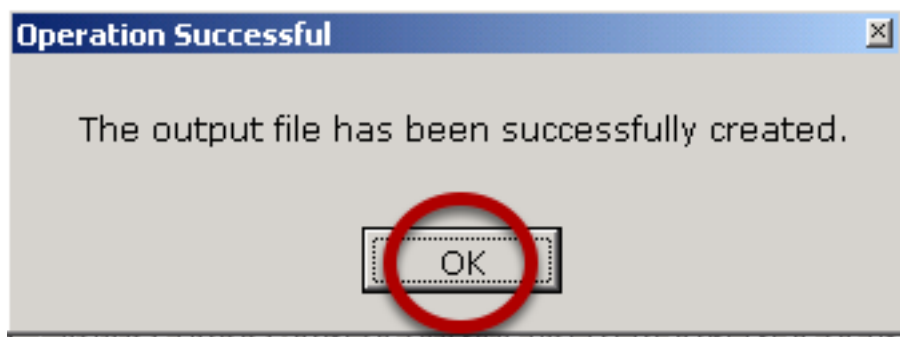
Click on **Browse...**



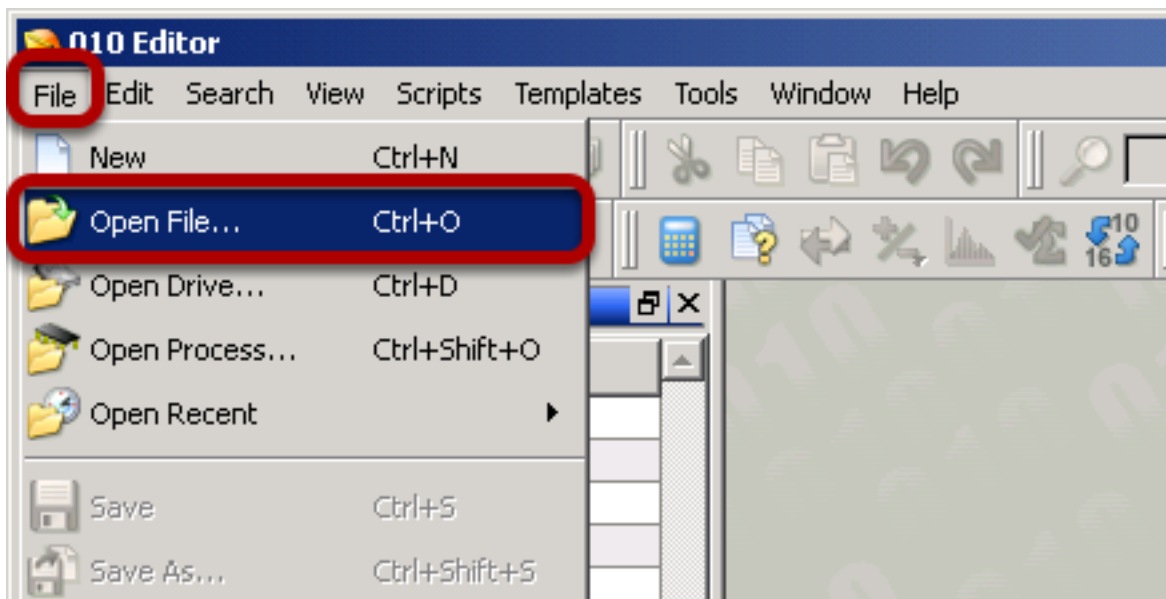
Make sure we are back in the **MAP01** folder, we are going to call our joined up files **MAP01 JOINED**, now click on **Save**.



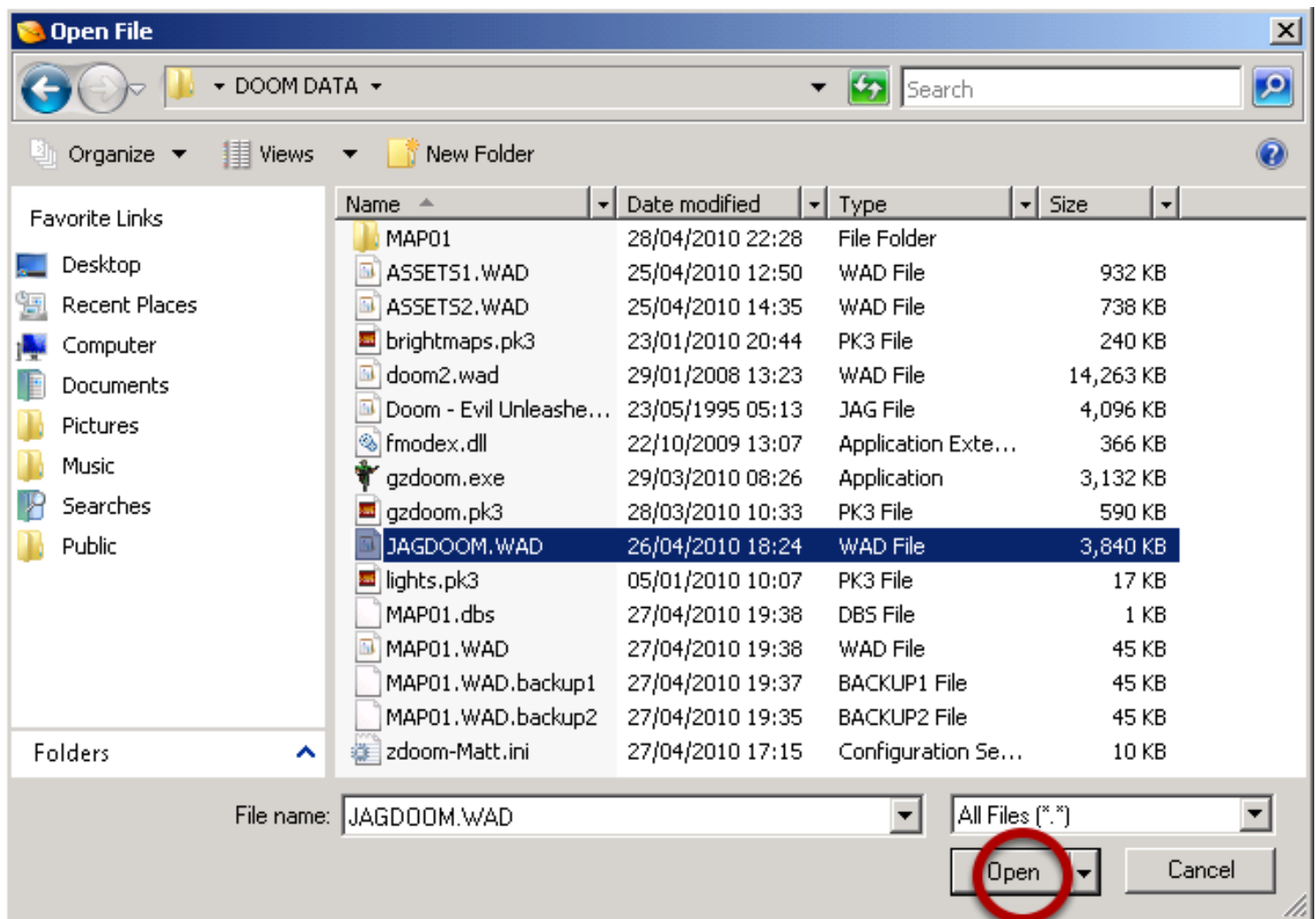
You will see this screen, just click on **Append**.



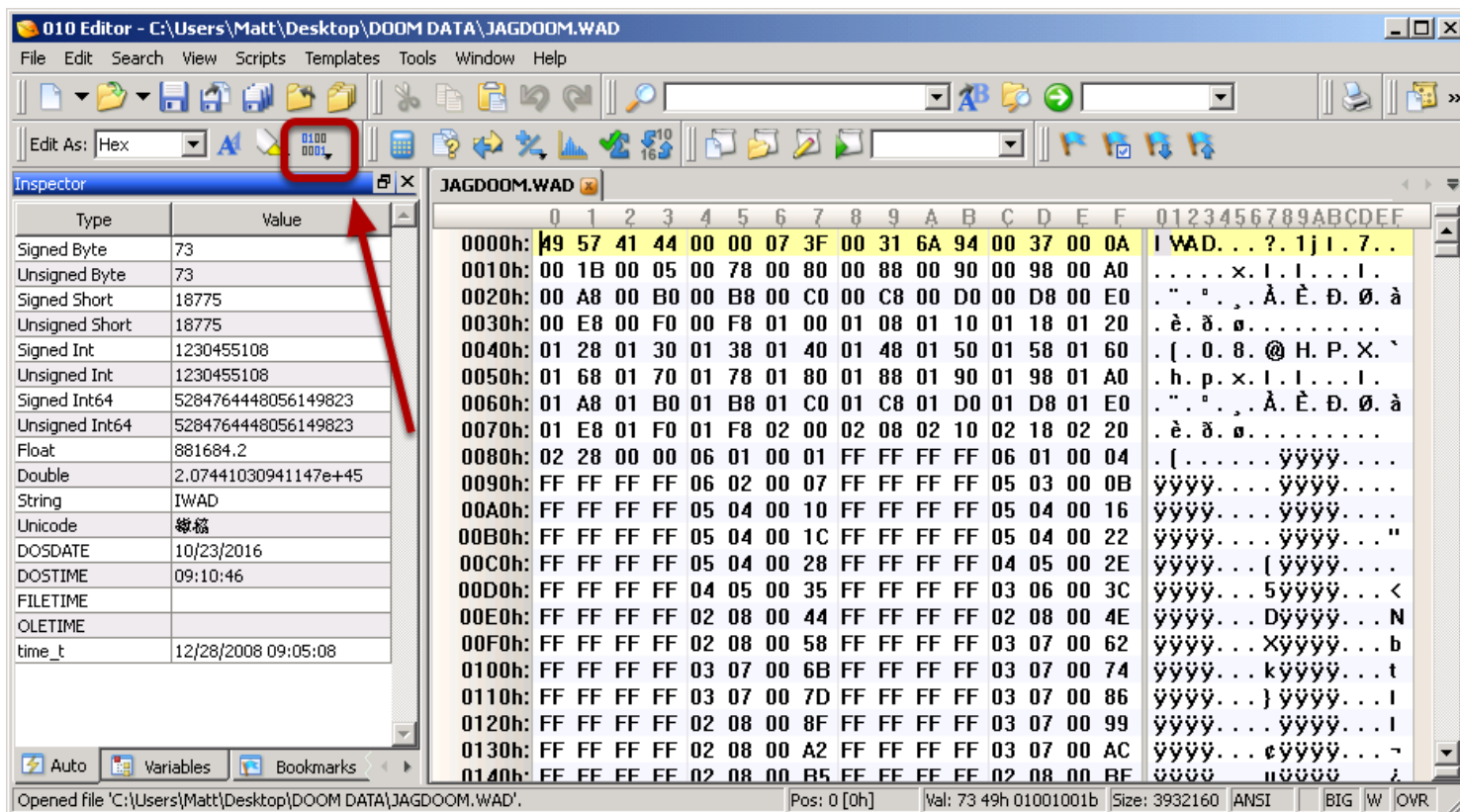
The output file has been successfully created. Excellent, click **OK**, and then quit program. What we have just done is joined all our files back together after they have been padded, so we now have a file that can easily be injected into the Atari Jaguar wad file. I used to do it all with the hex editor, but after finding this program it saves me about 20 minutes for each map.



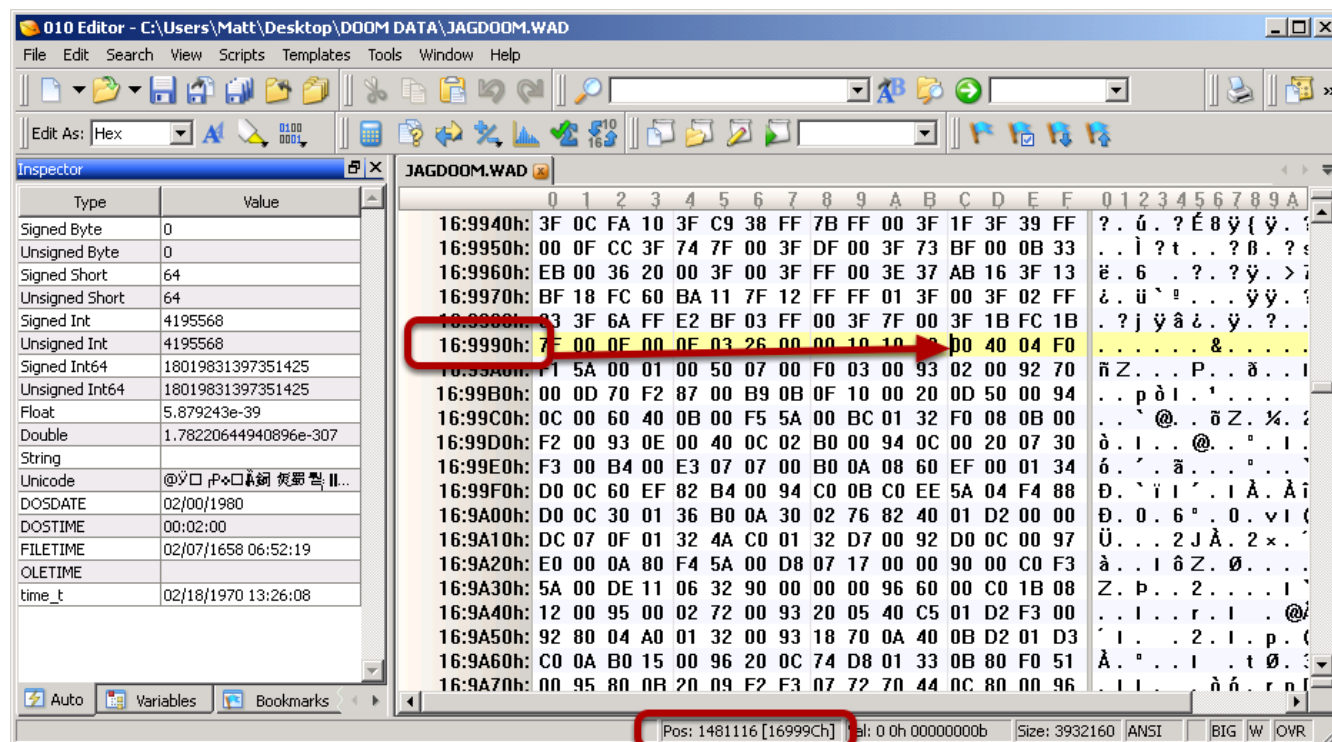
OK start up **010 Editor**, click on **File** menu, and then **Open File...**



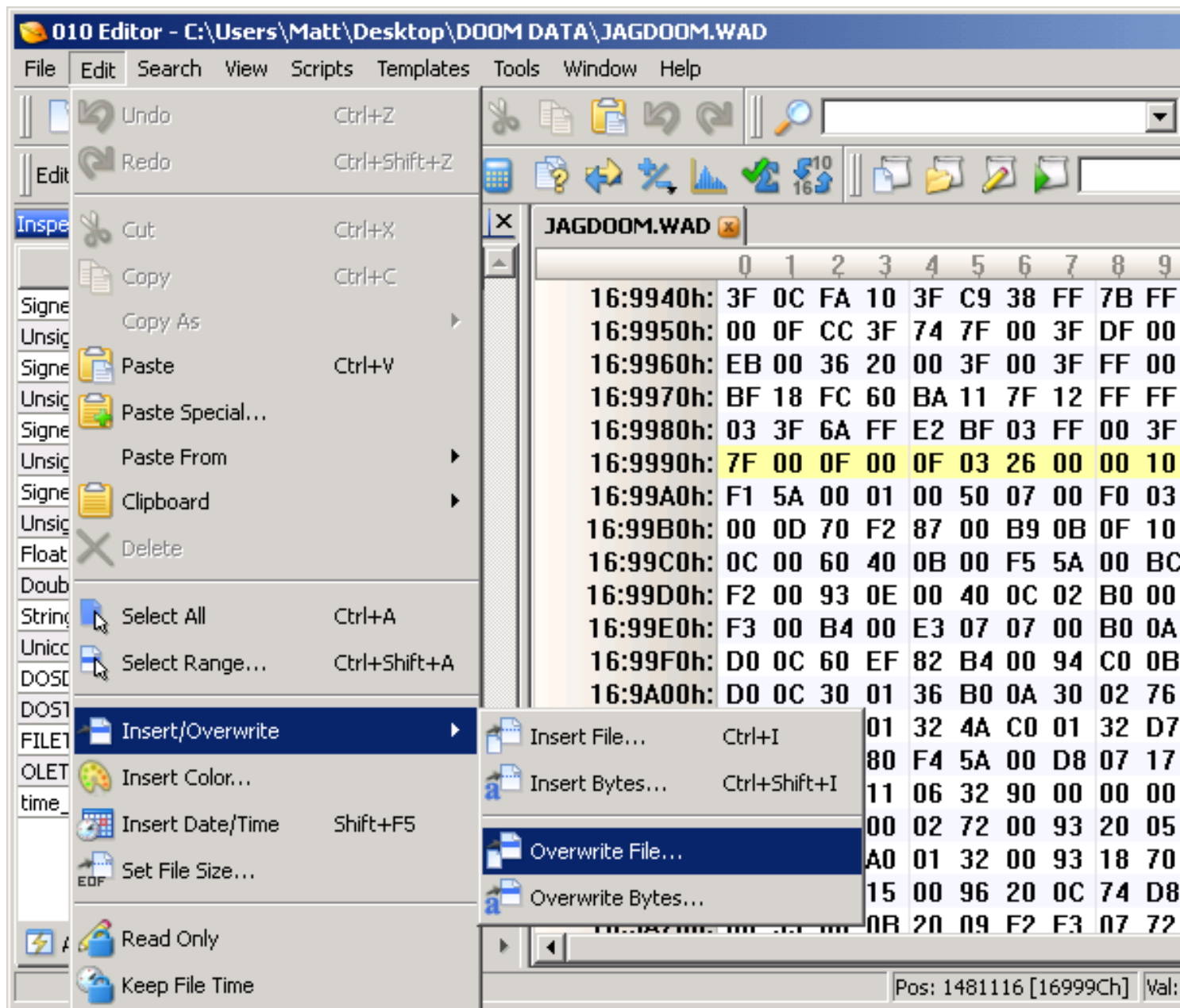
Locate the **JAGDOOM.WAD** file in the **DOOM DATA** folder, click on **Open**.



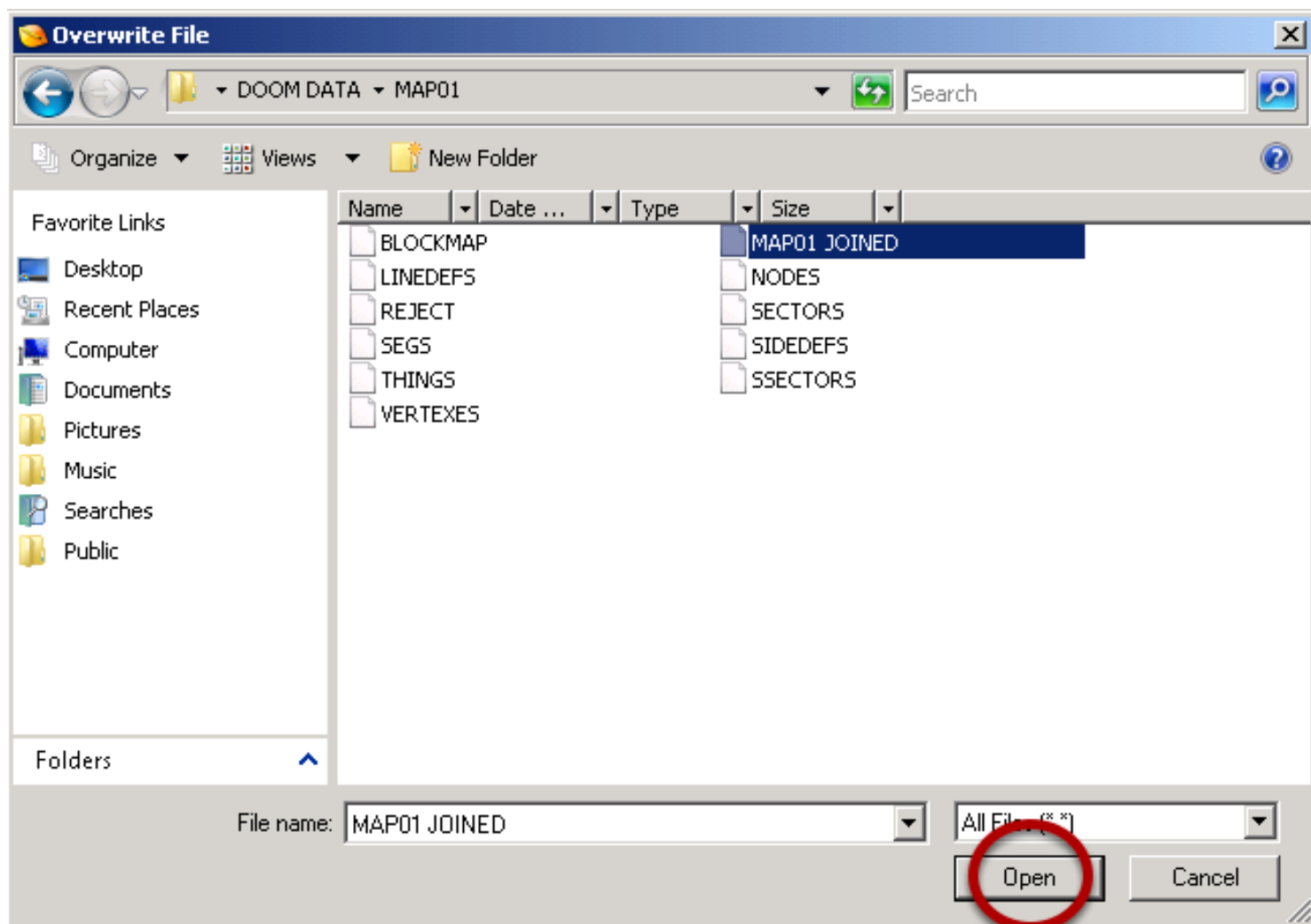
Excellent, now the hacking can begin. First of all, make sure we are operating in big endian mode. Click the icon, and make sure Big Endian is ticked. Next we need to find the start of where our map data file should go. So scroll down until you come to **16:9990h**, then go across to the start of column **C**.



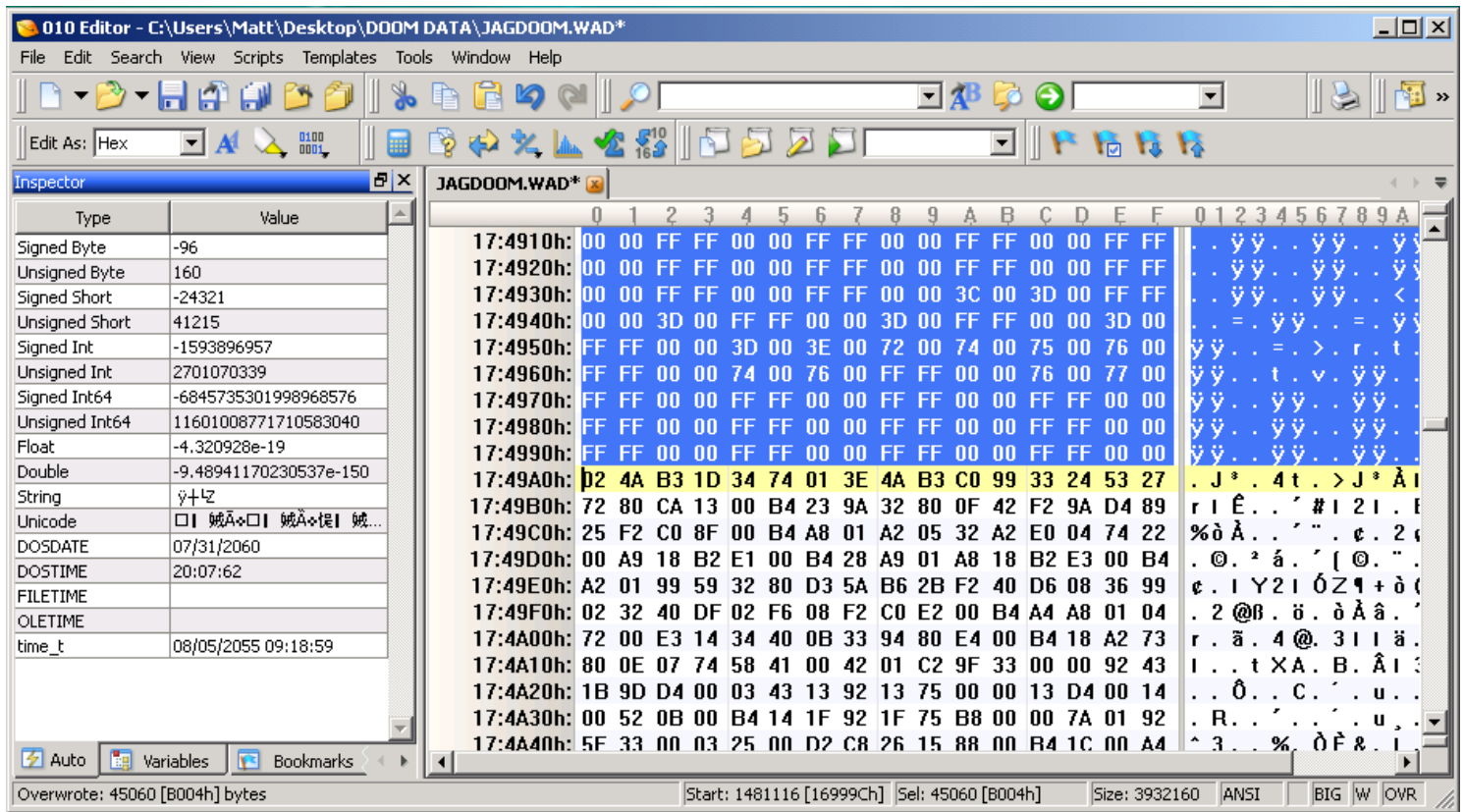
Great we are finally here, make sure the flashing marker is at this address. It should read **1481116** in the Pos: at the bottom.



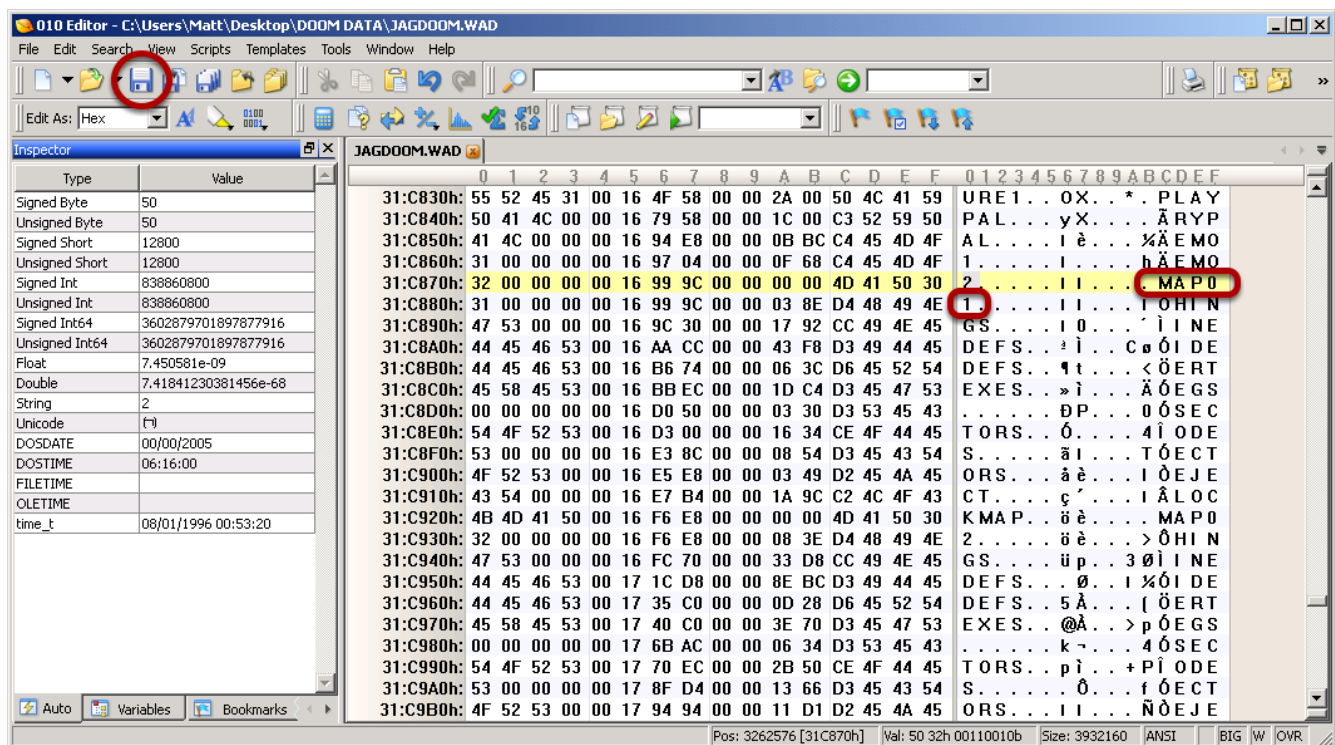
Now is the time to inject our new map data, Go to **Edit**, down to **Insert/Overwrite** and then click on **Overwrite File...**



Locate the **DOOM DATA** folder, open the **MAP01** folder and select the **MAP01 JOINED** file, click **Open**.



We have just injected the new data into the wad file, now what we need to do is edit the wad files table of contents to point to the new data. Scroll down to address **31:C870h**.

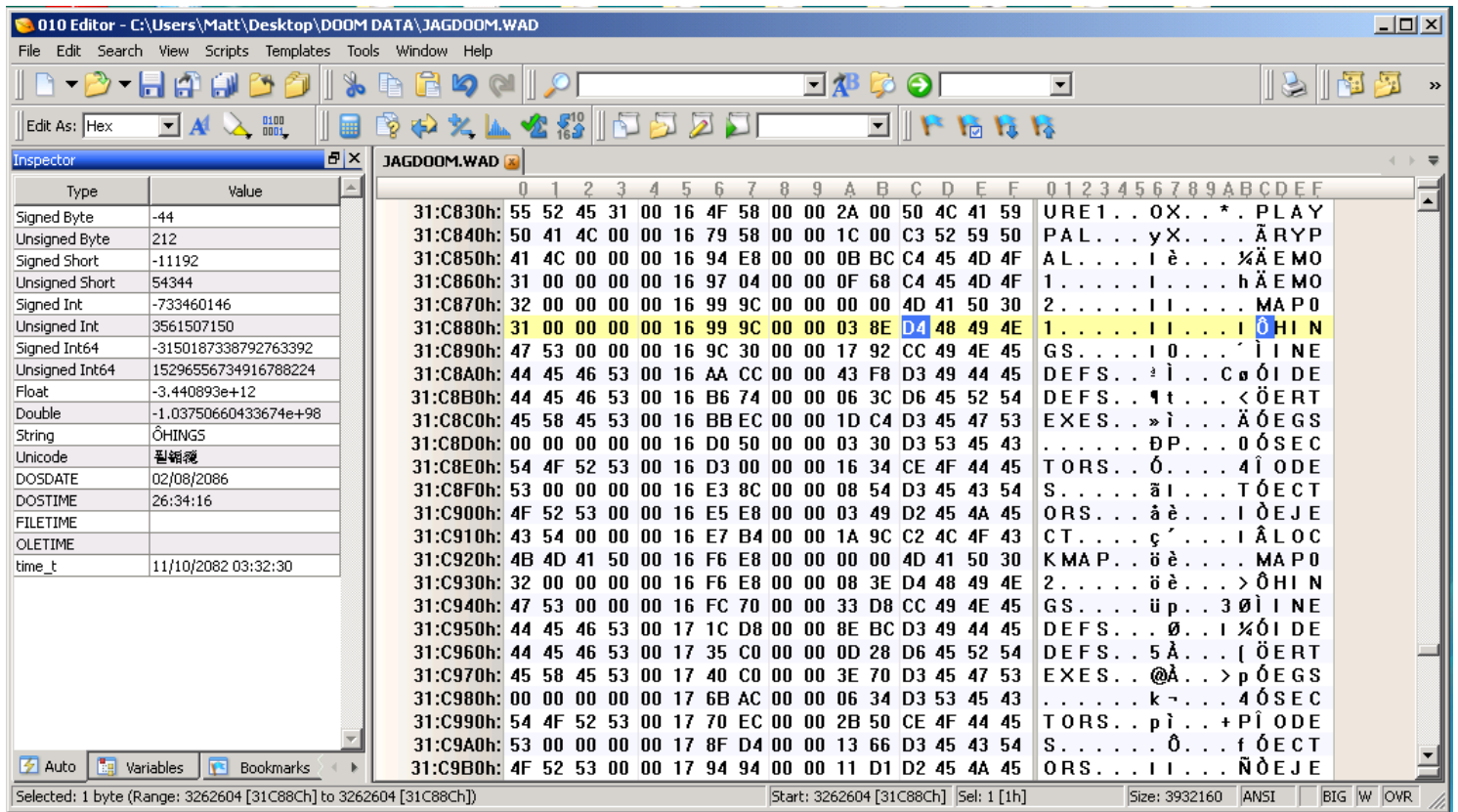


Here we are, although the writing is overlapping the line you should be able to see where it says **MAP01**. Before we do anything else, let's save the file, so click on the disk icon. This helps as any changes made will be highlighted in orange so we know what we have done. Let's take a closer look at

the table of contents for the map data.

2 I I M A P 0
1 I I Ô H I N
G S I 0 Ì I N E
D E F S Ì C Ó I D E
D E F S t < Ö E R T
E X E S » Ì Ä Ó E G S
. Ð P 0 Ó S E C
T O R S Ó 4 Î O D E
S ã I T Ó E C T
O R S â è I Ò E J E
C T ç ' I Â L O C
K M A P ö è M A P 0
2 ö è > Ô H I N
G S ü p 3 Ø Ì I N E

We can clearly make out the **MAP01** entry, but what about the others. Yes they are all there too, but they look wrong, the first letter of the map entries is different. The way it works is like this, some files in the Jaguar wad file are compressed to save space, the only way that the game engine knows that a file is compressed is by looking at the first character of the entry name in the table of contents. If a file is compressed it will have **80h** added to the hex value of the first character. So **THINGS** becomes **ÔHINGS** because it is compressed, **LINEDEFS** becomes **ÌINEDEFS** and so on. What we are going to do is cheat. We will be using uncompressed files, because its the easiest thing to do. If you want to use compressed files then I can show you in a later tutorial. But for now we are cheating by using uncompressed files. They will take up more space but to be honest, I bet you didn't think you'd be doing this.



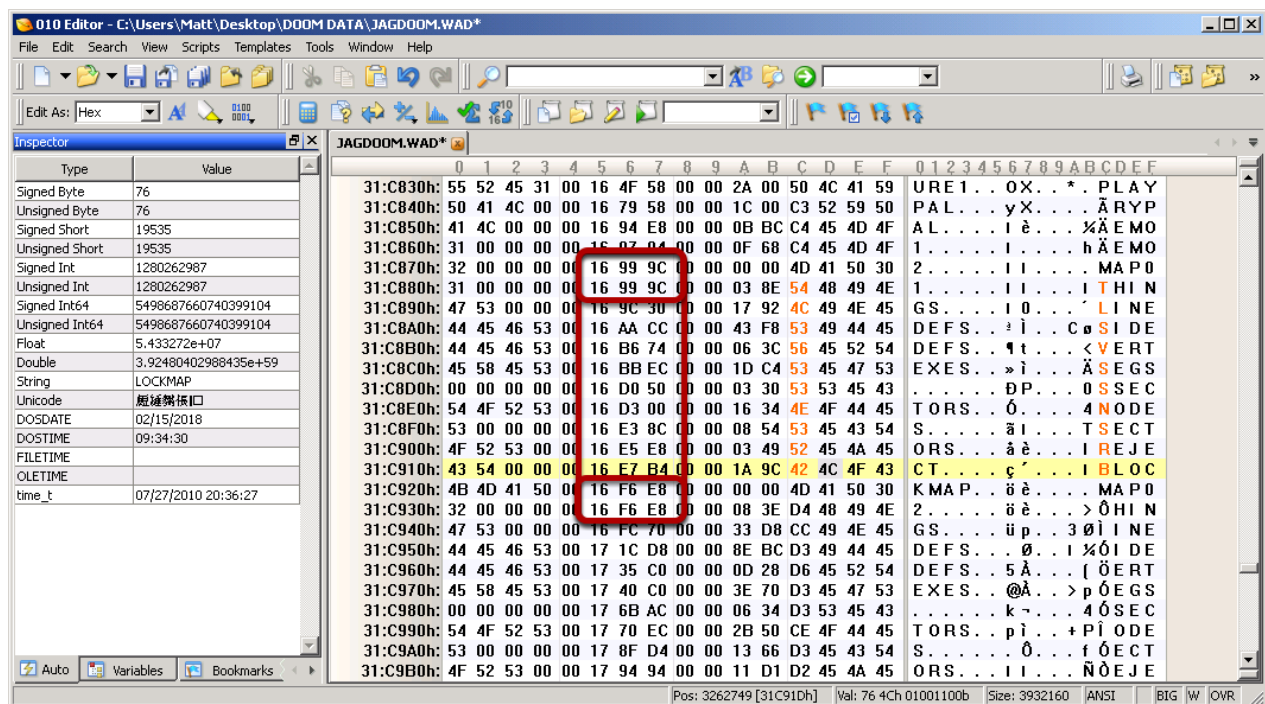
So lets start changing the entry names back, so they loose the special first character. Highlight the first character under the **M** in **MAP**. Make sure caps lock is on, now press **T**.

9	A	B	C	D	E	F	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
00	2A	00	50	4C	41	59	U	R	E	1	.	.	O	X	.	.	*	.	P	L	A	Y	
00	1C	00	C3	52	59	50	P	A	L	.	.	.	y	X	.	.	.	.	Ä	R	Y	P	
00	0B	BC	C4	45	4D	4F	A	L	.	.	.	.	I	è	.	.	.	¼	Ä	E	M	O	
00	0F	68	C4	45	4D	4F	1	.	.	.	.	.	I	.	.	.	.	h	Ä	E	M	O	
00	00	00	4D	41	50	30	2	.	.	.	.	.	I	I	.	.	.	.	M	A	P	0	
00	03	8E	54	48	49	4E	1	.	.	.	.	.	I	I	.	.	.	I	T	H	I	N	
00	17	92	CC	49	4E	45	G	S	.	.	.	.	I	0	.	.	.	'	Ì	I	N	E	
00	43	F8	D3	49	44	45	D	E	F	S	.	.	.	¿	Ì	.	.	C	Ó	I	D	E	
00	06	3C	D6	45	52	54	D	E	F	S	.	.	.	¶	t	.	.	.	<	Ö	E	R	T
00	1D	C4	D3	45	47	53	E	X	E	S	.	.	.	»	ì	.	.	.	Ä	Ó	E	G	S
00	03	30	D3	53	45	43	.	.	.	.	.	.	.	Ð	P	.	.	.	0	Ó	S	E	C
00	16	34	CE	4F	44	45	T	O	R	S	.	.	.	Ó	.	.	.	.	4	Î	O	D	E
00	08	54	D3	45	43	54	S	.	.	.	.	.	.	ã	I	.	.	.	T	Ó	E	C	T
00	03	49	D2	45	4A	45	O	R	S	.	.	.	.	â	è	.	.	.	I	Ò	E	J	E
00	1A	9C	C2	4C	4F	43	C	T	.	.	.	.	.	ç	'	.	.	.	I	Â	L	O	C
00	00	00	4D	41	50	30	K	M	A	P	.	.	.	ö	è	.	.	.	.	M	A	P	0
00	08	3E	D4	48	49	4E	2	.	.	.	.	.	.	ö	è	.	.	.	>	Ô	H	I	N
00	22	D8	CC	48	4E	4E	C	S	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

We have changed it back so it says **THINGS**, and the change we have made is highlighted. Now do the same, change the first character of the rest of **MAP01** entries, so they say **LINEDEFS**, **SIDEDEFS**, **VERTEXES**, **SEGS**, **SSECTORS**, **NODES**, **SECTORS**, **REJECT** and **BLOCKMAP**.

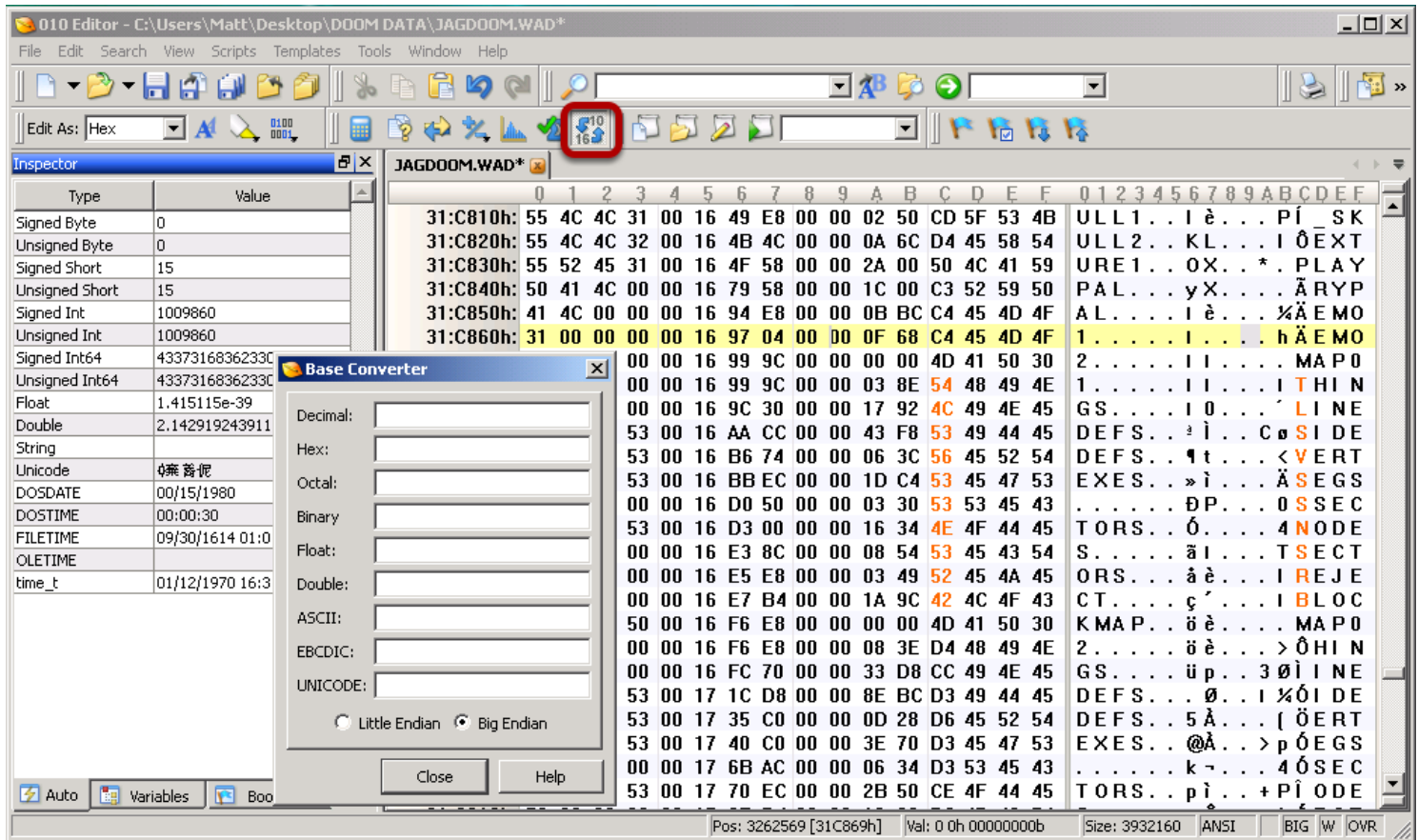
00 00	4D 41 50 30	2	I I	MAP0
03 8E	54 48 49 4E	1	I I	THIN
17 92	4C 49 4E 45	GS	I O	LINE
43 F8	53 49 44 45	DEFS	I	COSIDE
06 3C	56 45 52 54	DEFS	I t	VERT
1D C4	53 45 47 53	EXES	I	ÄSEGS
03 30	53 53 45 43	. . . . .	DP	OSSEC
16 34	4E 4F 44 45	TORS	Ó	4NODE
08 54	53 45 43 54	S	ä I	TSECT
03 49	52 45 4A 45	ORS	ä è	IREJE
1A 9C	42 4C 4F 43	CT	ç '	IBLOC
00 00	4D 41 50 30	KMAP	ö è	MAP0
08 3E	D4 48 49 4E	2	ö è	> ÔHIN

There we go, all done. Time for a well earned cup of tea! Next we are going to change the file start addresses.

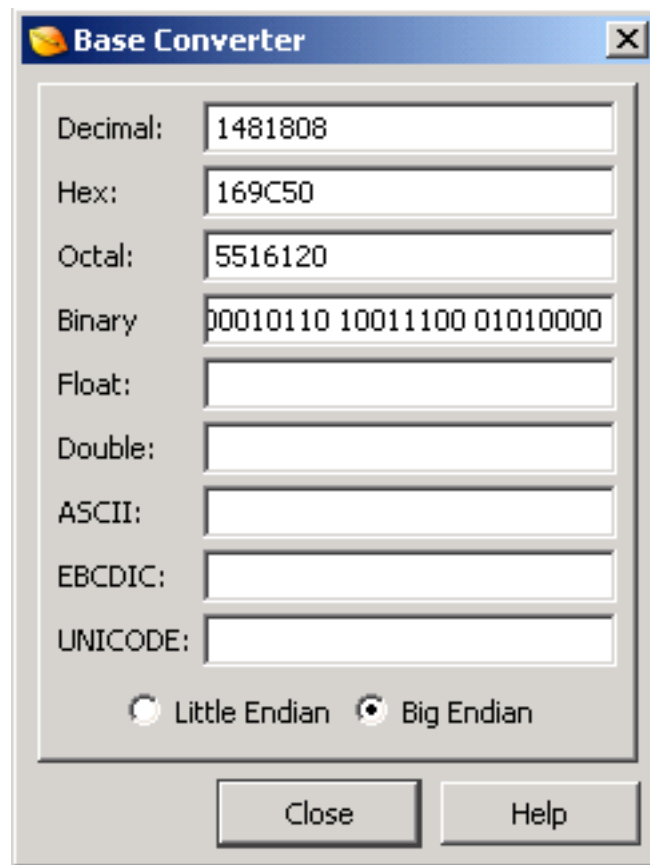


These are the file start addresses for **MAP01**, as you can see some of them are the same, **16999C** at the top has 2 entries, 1 is for the **MAP01**, which is a zero bytes placement holder, and **THINGS**, which is the actual start of the data. The one at the bottom **16F6E8**, is the start address for the placement

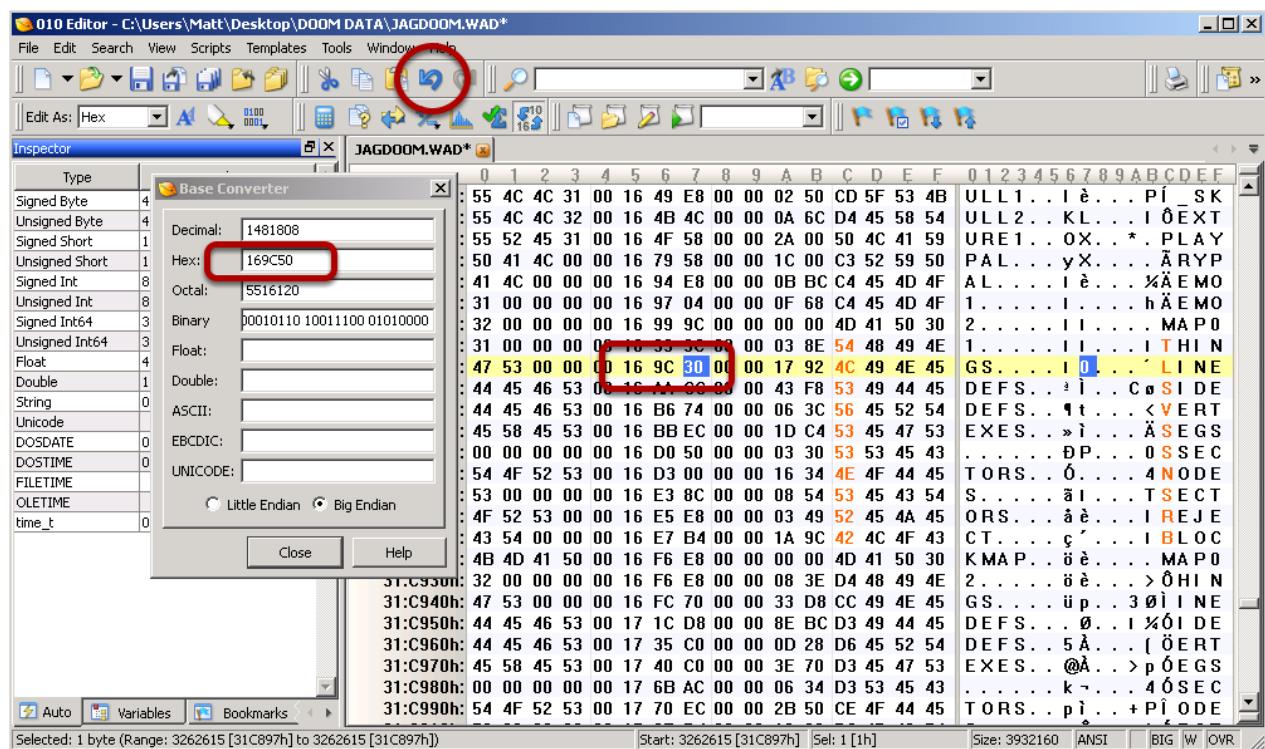
holder for MAP02 and the THINGS data file for MAP02, but we will be overwriting them, when we use the numbers we already have in our grid that we filled out earlier on. So lets change some numbers.



Click this icon to bring up the base converter, which we will use to convert numbers from decimal to hex. So lets start inputting those numbers from the grid, seeing as don't have to change the entry for **THINGS** we will start with **LINE**.

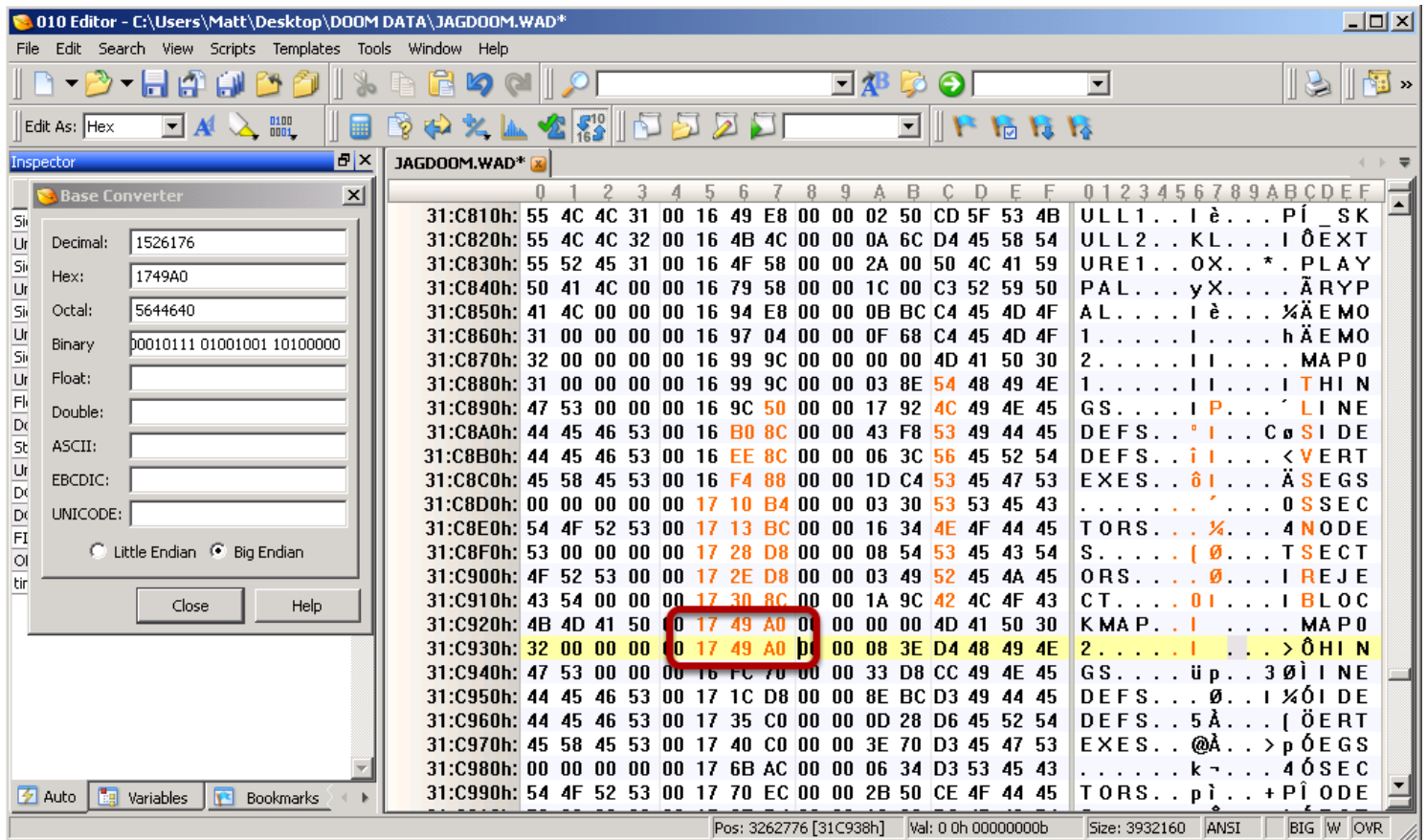


OK so **1481808** (the start address for the **LINEDEFS**) = **169C50** in hex, lets put that in



Thats interesting, only the 2 digits need changing, so highlight the digits like this (blue), and type in **50**, so we change the value from **169C30** to **169C50**. Its best when changing values to do them one value at a time, **do not** select the whole number, i.e. **169C30** and try to change it, if something goes wrong

then click on the undo arrow at the top to undo the last change. I will continue to change the values over.



There we go, all the start addresses have been changed. If you remember from the grid, we had a start address box on its own at the bottom, the value in that goes into these 2 places. Which are the start addresses for the **MAP02** files. So if you wanted to do another map this number would be the start address for **THINGS** in **MAP02's** grid, and you would carry on from there. OK now lets change all the file sizes to the correct size so they match the grid we made.

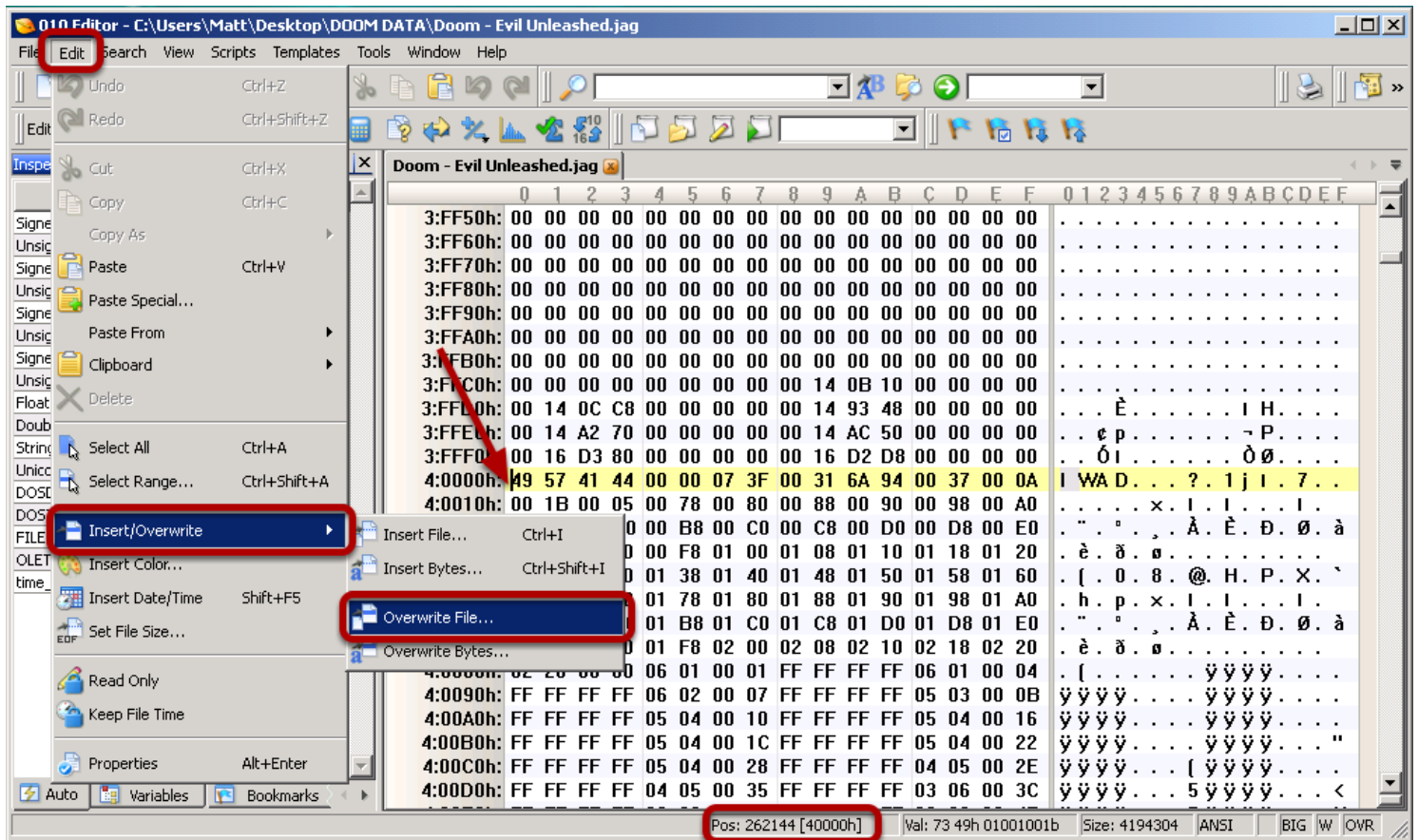
Base Converter

Decimal: 690
Hex: 2B2
Octal: 1262
Binary: 00000010 10110010
Float:
Double:
ASCII:
EBCDIC:
UNICODE:
☐ Little Endian ☒ Big Endian

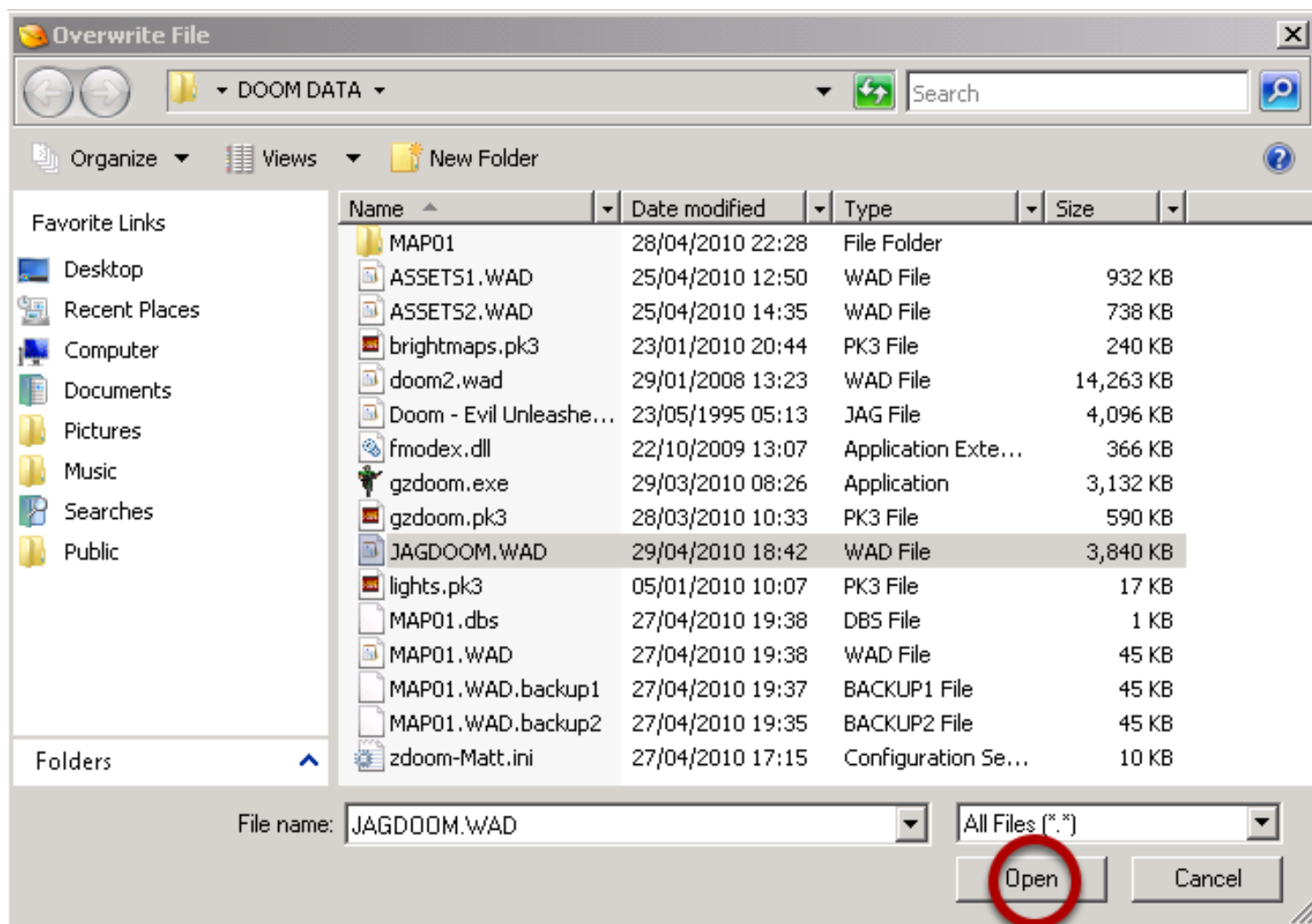
Close Help

31:C930h: 32 00 00 00 00 17 49 A0 00 00 08 3E D4 48 49 4E
31:C940h: 47 53 00 00 00 16 FC 70 00 00 33 D8 CC 49 4E 45
31:C950h: 44 45 46 53 00 17 1C D8 00 00 8E BC D3 49 44 45
31:C960h: 44 45 46 53 00 17 35 C0 00 00 0D 28 D6 45 52 54
31:C970h: 45 58 45 53 00 17 40 C0 00 00 3E 70 D3 45 47 53
31:C980h: 00 00 00 00 00 17 6B AC 00 00 06 34 D3 53 45 43
31:C990h: 54 4F 52 53 00 17 70 EC 00 00 2B 50 CE 4F 44 45

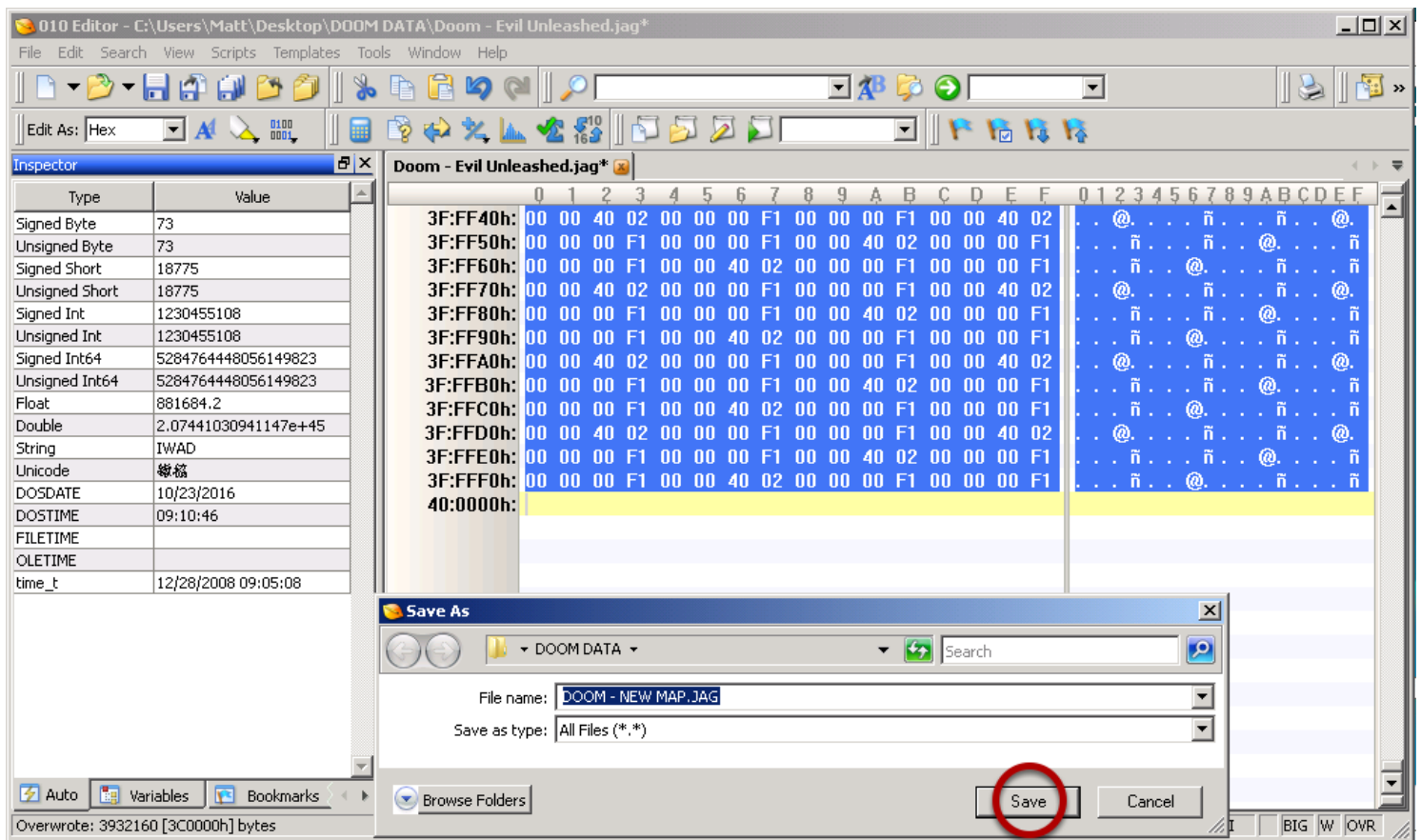
These are the values that will need changing for the sizes of the files. The first one **038E**, needs to be changed to **2B2**, or to put it correctly **02B2**, as that is the size of the new **THINGS** file that is written in our grid. So go ahead and change them over to the new values.



Locate the original **Doom - Evil Unleashed.jag** rom file in the **DOOM DATA** folder and load it in. Scroll down to **4:0000h**. Make sure Pos: is reading [40000h]. Go to **Edit**, down to **Insert/Overwrite** and then click on **Overwrite File...**



Locate the **JAGDOOM.WAD** in the **DOOM DATA** folder, select it and click on open.



It's done the job, now go to File menu and click on **Save As...** Give it a new name, I'm using **DOOM - NEW MAP.JAG** click on Save and quit the program, our hacking job is done. Load up the new rom into Project Tempest and give it a go. But first a word of warning, because we cheated by using uncompressed files they would have overwritten data for other maps too, if you finish the first map it will try to load the second map, but it will not be able to find the data for it and crash the game, the game may also crash when it tries to load demos in. I managed to cram 14 new maps into the rom doing the Doom 2 stuff before I ran out of space. But there are winners and losers in everything. This is only a cheesy hack to show you it's possible and not beyond the scope of everyone to do what I'm doing. In the not too distant future there will be a utility you can use that will be able to fix all these problems, it won't be a 1 click solution, but it won't be as many clicks as this tutorial was 8-). Now... questions please.