

INSIDE THE ULTIMA ONLINE GOLD DEMO

- Making DYNAMICo.MUL readable

GOAL

It's our goal to get a deep understanding of how the Ultima Online Gold Demo works. This demo is a representation of the rule set from the Ultima Online Second Age Era.

There is proof that some people have already reversed this demo partially or as a whole, however so far no tools or knowledge has been published. This project is to overcome those shortcomings.

URL's with some proof for this:

<http://www.runuo.com/forums/general-discussion/94767-help-m-files.html>

<http://azaroth.org/2008/12/31/your-topic/> (posting by Faust)

If we understand the demo there is a big chance we can alter the demo and even create our own demo. By default mounting horses is not possible in the demo, but what if we can alter the demo and unlock horses; can we then see how horses behaved during T2A?

This demo is 10 years old and I do not understand no one published his/her work. Maybe that DMCA thing is in the way?

UTILITIES USED

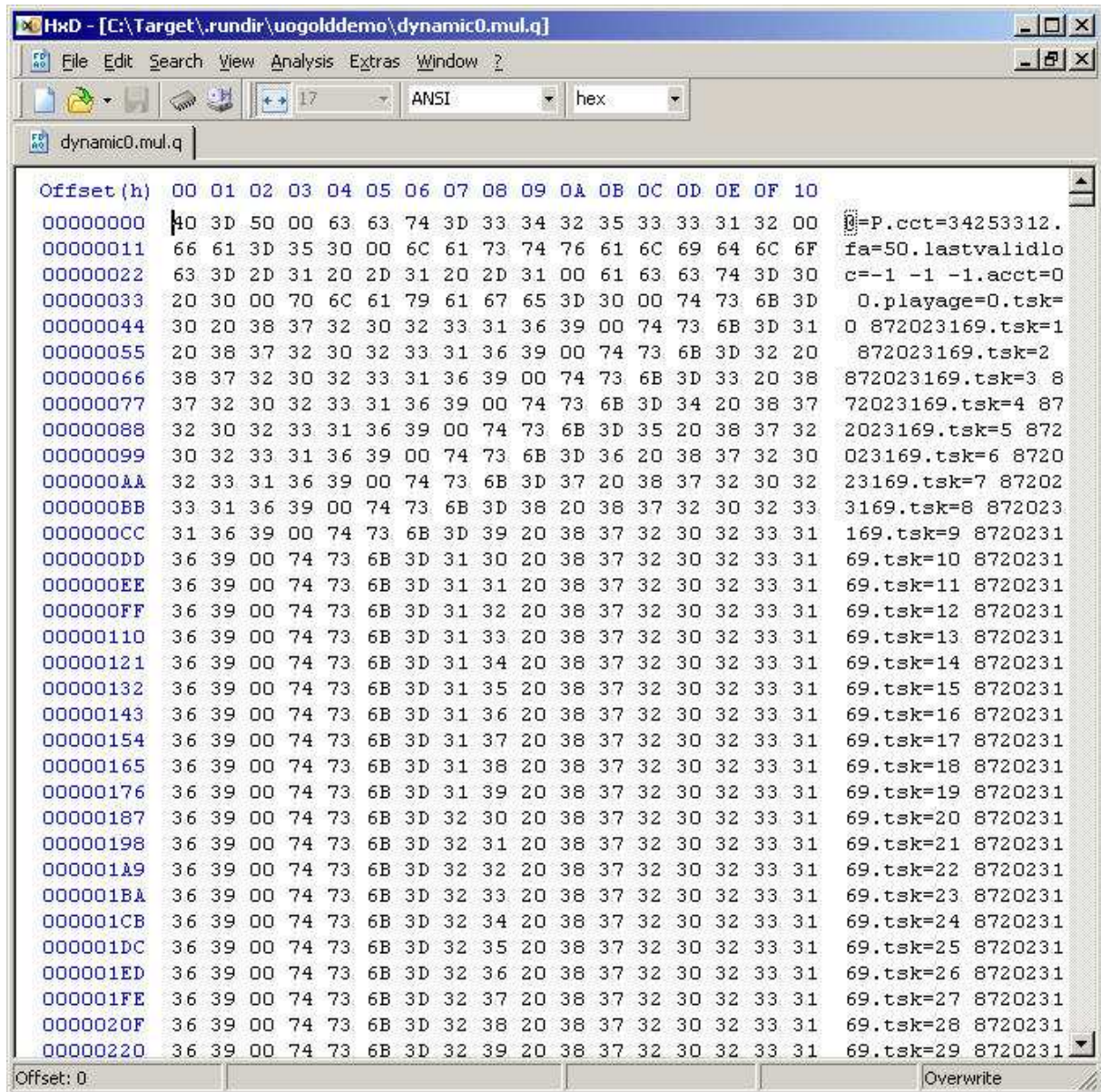
[HxD](#), a very neat hex editor and above all, it's free

ABOUT ME

I'm just a guy who loves the Ultima universe and knows a bit assembler. Why not combine the two? ☺

WHAT IS A DYNAMIC0.MUL

DYNAMIC0.MUL is a file in the uogolddemo subdirectory which you get after extracting all the files from UODEMO.DAT. If you open the file with a hex editor you get readable text but the files doesn't open well with normal text editors. This is because all the lines are terminated with a 0-byte and the file does not contain newline identifiers.

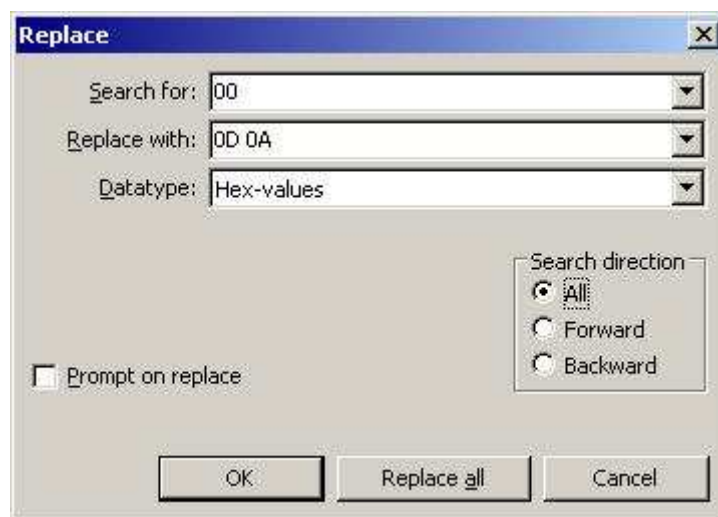
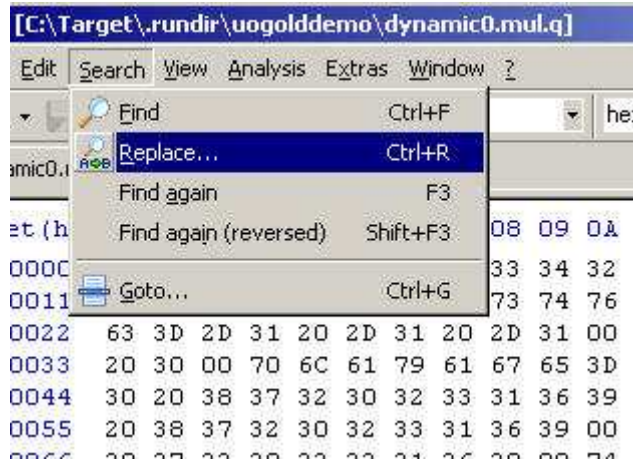


```
Offset(h) 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10
00000000 40 3D 50 00 63 63 74 3D 33 34 32 35 33 33 31 32 00 P.ctt=34253312.
00000011 66 61 3D 35 30 00 6C 61 73 74 76 61 6C 69 64 6C 6F fa=50.lastvalidlo
00000022 63 3D 2D 31 20 2D 31 20 2D 31 00 61 63 63 74 3D 30 c=-1 -1 -1.acct=0
00000033 20 30 00 70 6C 61 79 61 67 65 3D 30 00 74 73 6B 3D 0.playage=0.tsk=
00000044 30 20 38 37 32 30 32 33 31 36 39 00 74 73 6B 3D 31 0 872023169.tsk=1
00000055 20 38 37 32 30 32 33 31 36 39 00 74 73 6B 3D 32 20 872023169.tsk=2
00000066 38 37 32 30 32 33 31 36 39 00 74 73 6B 3D 33 20 38 872023169.tsk=3 8
00000077 37 32 30 32 33 31 36 39 00 74 73 6B 3D 34 20 38 37 72023169.tsk=4 87
00000088 32 30 32 33 31 36 39 00 74 73 6B 3D 35 20 38 37 32 2023169.tsk=5 872
00000099 30 32 33 31 36 39 00 74 73 6B 3D 36 20 38 37 32 30 023169.tsk=6 8720
000000AA 32 33 31 36 39 00 74 73 6B 3D 37 20 38 37 32 30 32 23169.tsk=7 87202
000000BB 33 31 36 39 00 74 73 6B 3D 38 20 38 37 32 30 32 33 3169.tsk=8 872023
000000CC 31 36 39 00 74 73 6B 3D 39 20 38 37 32 30 32 33 31 169.tsk=9 8720231
000000DD 36 39 00 74 73 6B 3D 31 30 20 38 37 32 30 32 33 31 69.tsk=10 8720231
000000EE 36 39 00 74 73 6B 3D 31 31 20 38 37 32 30 32 33 31 69.tsk=11 8720231
000000FF 36 39 00 74 73 6B 3D 31 32 20 38 37 32 30 32 33 31 69.tsk=12 8720231
00000110 36 39 00 74 73 6B 3D 31 33 20 38 37 32 30 32 33 31 69.tsk=13 8720231
00000121 36 39 00 74 73 6B 3D 31 34 20 38 37 32 30 32 33 31 69.tsk=14 8720231
00000132 36 39 00 74 73 6B 3D 31 35 20 38 37 32 30 32 33 31 69.tsk=15 8720231
00000143 36 39 00 74 73 6B 3D 31 36 20 38 37 32 30 32 33 31 69.tsk=16 8720231
00000154 36 39 00 74 73 6B 3D 31 37 20 38 37 32 30 32 33 31 69.tsk=17 8720231
00000165 36 39 00 74 73 6B 3D 31 38 20 38 37 32 30 32 33 31 69.tsk=18 8720231
00000176 36 39 00 74 73 6B 3D 31 39 20 38 37 32 30 32 33 31 69.tsk=19 8720231
00000187 36 39 00 74 73 6B 3D 32 30 20 38 37 32 30 32 33 31 69.tsk=20 8720231
00000198 36 39 00 74 73 6B 3D 32 31 20 38 37 32 30 32 33 31 69.tsk=21 8720231
000001A9 36 39 00 74 73 6B 3D 32 32 20 38 37 32 30 32 33 31 69.tsk=22 8720231
000001BA 36 39 00 74 73 6B 3D 32 33 20 38 37 32 30 32 33 31 69.tsk=23 8720231
000001CB 36 39 00 74 73 6B 3D 32 34 20 38 37 32 30 32 33 31 69.tsk=24 8720231
000001DC 36 39 00 74 73 6B 3D 32 35 20 38 37 32 30 32 33 31 69.tsk=25 8720231
000001ED 36 39 00 74 73 6B 3D 32 36 20 38 37 32 30 32 33 31 69.tsk=26 8720231
000001FE 36 39 00 74 73 6B 3D 32 37 20 38 37 32 30 32 33 31 69.tsk=27 8720231
0000020F 36 39 00 74 73 6B 3D 32 38 20 38 37 32 30 32 33 31 69.tsk=28 8720231
00000220 36 39 00 74 73 6B 3D 32 39 20 38 37 32 30 32 33 31 69.tsk=29 8720231
```

MAKING DYNAMIC0.MUL READABLE

The following screenshots will show you how to make this file readable using the HxD hex editor. The steps are straightforward; we replace all the 00-bytes with a 0D 0A sequence and then we save the file as a text file.

Step 1: Replace 00 with 0D 0A



NOTE: use the "Replace all" option

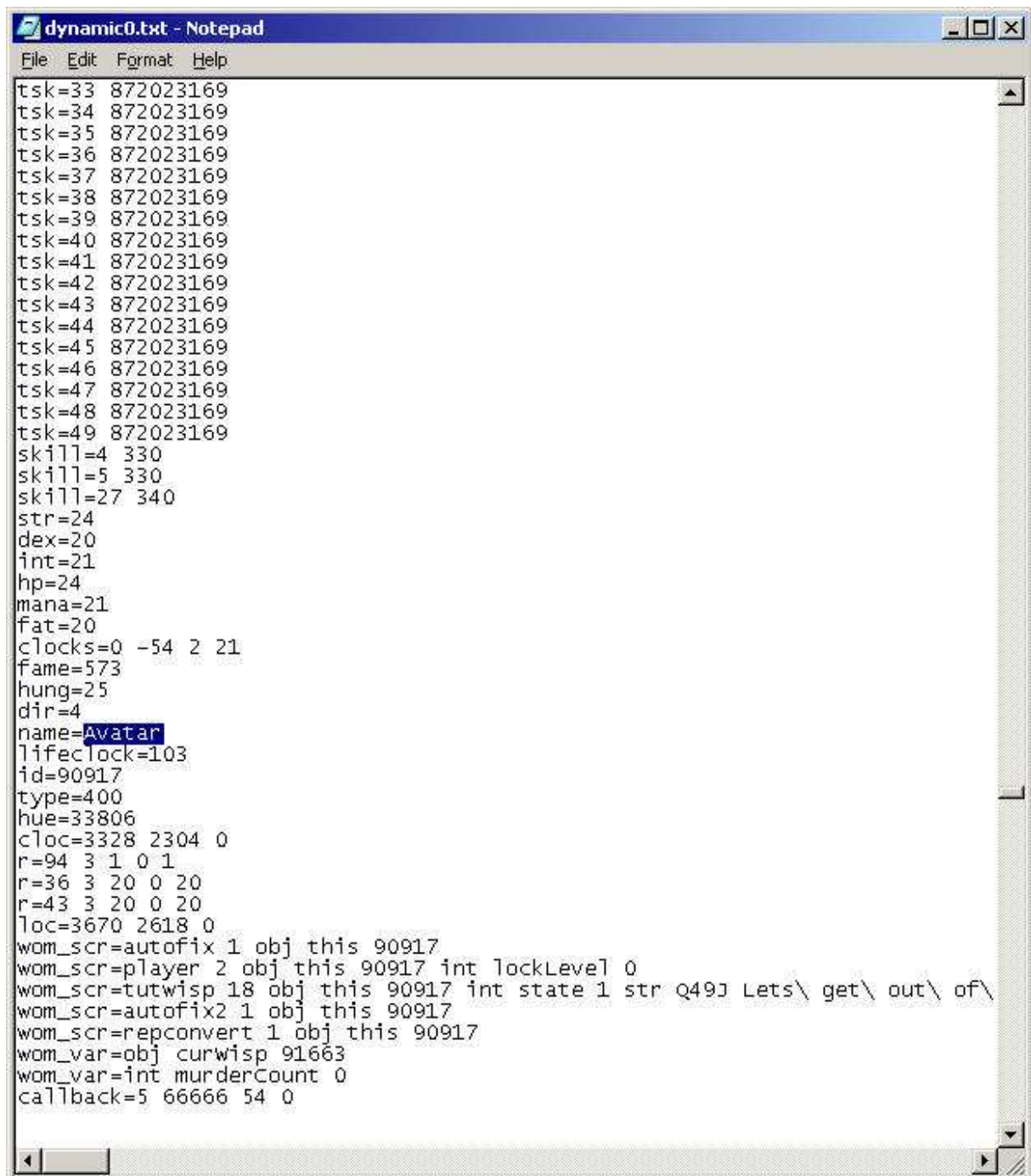
Step 2: After the replace save as a text file

The screenshot shows the HxD hex editor interface. The main window displays a hex dump of the file 'dynamic0.mul.q'. The hex dump consists of columns for offsets (00-10) and corresponding hex values. An information dialog box is overlaid on the hex dump, displaying the message: 'Replaced 81109 occurrences of "00".' with an 'OK' button.

Offset (h)	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	
001019C5	3D	33	38	33	36	20	33	30	35	32	20	2D	35	0D	0A	72	3D	=3836 3052 -5..r=
001019D6	31	35	20	33	20	36	34	20	36	34	20	36	34	0D	0A	72	3D	15 3 64 64 64..r=
001019E7	35	37	20	33	20	36	34	20	36	34	20	36	34	0D	0A	6C	6F	57 3 64 64 64..lo
001019F8	63	3D	33	38	33	36	20	33	30	35	32	20	2D	35	0D	0A	0D	c=3836 3052 -5...
00101A09	0A	65	6E	64	0D	0A	40	3D	45	0D	0A	69	64	3D	31	30	37	.end..θ=E..id=107
00101A1A	33	38	33	31	39	35	35	0D	0A	73	74	61	74	3D	31	36	0D	3831955..stat=16.
00101A2B	0A	63	6C	6F	63	3D	33	38	33	36	20	33	30	36	30	20	2D	.cloc=3836 3060 -
00101A3C	35	0D	0A	72	3D	31	35	20	33	20	36	34	20	36	34	20	36	5..r=15 3 64 64 6
00101A4D	34	0D	0A	72	3D	35	37	20	33	20	36	34	20	36	34	20	36	4..r=57 3 64 64 6
00101A5E	34	0D	0A	6C	6F	63	3D	33	38	33	36	20	33	30	36	30	20	4..loc=3836 3060
00101A6F	2D	35	0D	0A	0D	0A	65	6E	64	0D	0A	40	3D	45	0D	0A	69	-5....end..θ=E..i
00101A80	64	3D	31	30	37	33	38	33	31	39	35	36	0D	0A	73	74	61	d=1073831956..sta
00101A91	74	3D	31	36	0D	0A	63	6C	6F	63	3D	33	38	33	36	20	33	t=16..cloc=3836 3
00101AA2	30	36	38	20	2D	35	0D	0A	72	3D	31	35	20	33	20	36	34	068 -5..r=15 3 64
00101AB3	20	36	34	20	36	34	0D	0A	72	3D	35	37	20	33	20	36	34	64 64..r=57 3 64
00101AC4	20	36	34	20	36	34	0D	0A	6C	6F	63	3D	33	38	33	36	20	64 64..loc=3836
00101AD5	33	30	36	38	20	2D	35	0D	0A	0D	0A	65	6E	64	0D	0A		3068 -5....end..

The screenshot shows a 'Save As' dialog box. The 'Save in:' field is set to 'uogolddemo'. The file list shows several files, including 'dynamic.rtf', 'dynamic0.mul.q', 'dynidx0.mul.q', 'map0.mul.q', 'regions.mul.q', 'regions.txt.q', 'resbank.mul.q', 'resregions.txt.q', 'server.txt.q', 'staidx0.mul.q', and 'statics0.mul.q'. The 'File name:' field is set to 'dynamic0.txt' and the 'Save as type:' is set to 'All files (*.*)'. The 'Save' and 'Cancel' buttons are visible at the bottom right.

Step 3: Open the text file with Notepad or WordPad or OpenOffice or whatever



```
dynamic0.txt - Notepad
File Edit Format Help
tsk=33 872023169
tsk=34 872023169
tsk=35 872023169
tsk=36 872023169
tsk=37 872023169
tsk=38 872023169
tsk=39 872023169
tsk=40 872023169
tsk=41 872023169
tsk=42 872023169
tsk=43 872023169
tsk=44 872023169
tsk=45 872023169
tsk=46 872023169
tsk=47 872023169
tsk=48 872023169
tsk=49 872023169
skill=4 330
skill=5 330
skill=27 340
str=24
dex=20
int=21
hp=24
mana=21
fat=20
clocks=0 -54 2 21
fame=573
hung=25
dir=4
name=Avatar
lifeclock=103
id=90917
type=400
hue=33806
cloc=3328 2304 0
r=94 3 1 0 1
r=36 3 20 0 20
r=43 3 20 0 20
loc=3670 2618 0
wom_scr=autofix 1 obj this 90917
wom_scr=player 2 obj this 90917 int lockLevel 0
wom_scr=tutwisp 18 obj this 90917 int state 1 str Q49J Lets\ get\ out\ of\
wom_scr=autofix2 1 obj this 90917
wom_scr=repconvert 1 obj this 90917
wom_var=obj curwisp 91663
wom_var=int murderCount 0
callback=5 66666 54 0
```

NOTE: wom_scr seems to be script related!

CAN WE EDIT DYNAMIC0.MUL?

I think you can, I didn't do yet but go ahead and try it. Give your avatar a new name, increase the starting stats. Do the reverse to generate a new MUL: replace 0D 0A again with 00. But I'm not yet sure it will work because of DYNIDX0.MUL.