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11/1/19

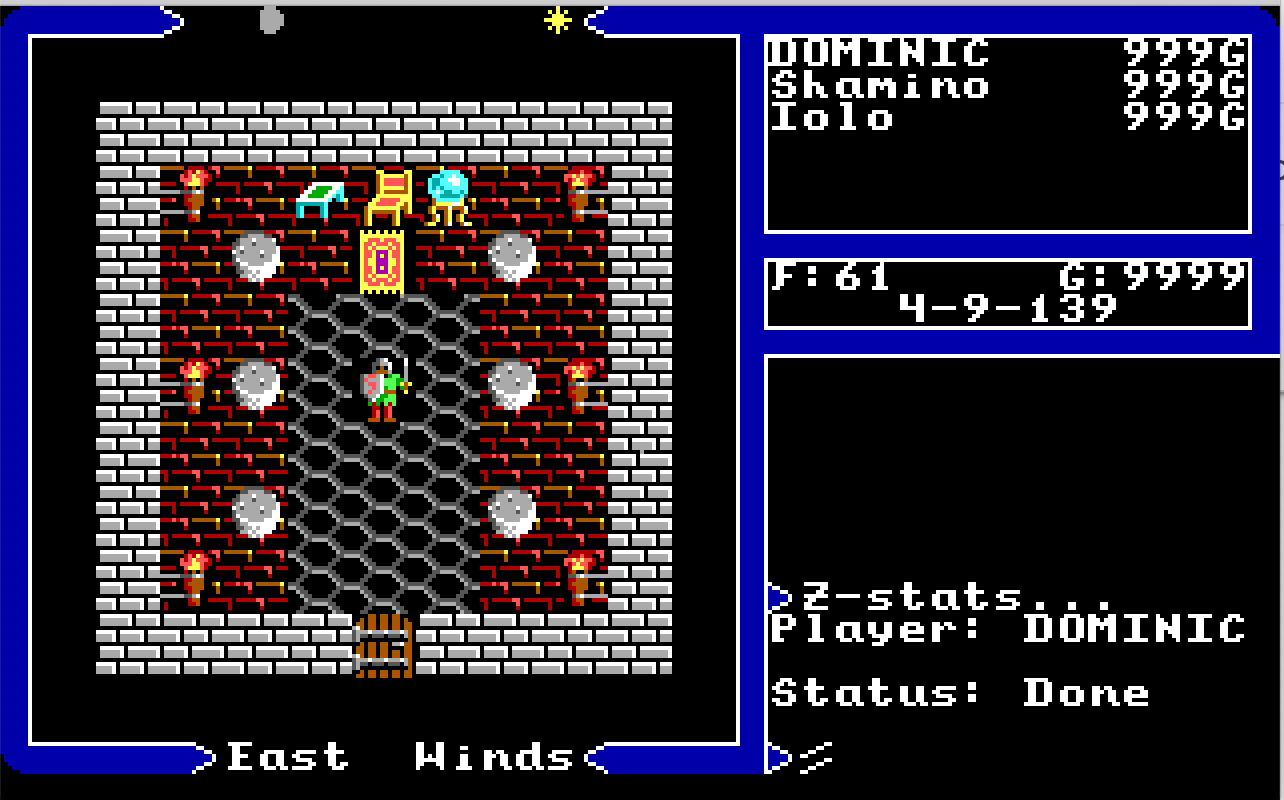
When doing this lab, I determined that the file to be modified is the save file of the game which is SAVED.GAM. It first began as a guess because years ago I also tried to hack a mobile game in IOS called Injustice to obtain locked characters in the game and also increase the currency I have so I don’t have to purchase microtransactions and I can buy more characters and upgrade the characters I already have to their maximum level. The way I hacked the Injustice mobile game is by going through the save file which ended up being the same case for Ultima 5. To determine the offsets and the location of the attributes, I played around the Ultima 5 game and the saved.gam file simultaneously. At first, I took a look at my stats and jot down my strength, intelligence, etc. which were all in decimal form and then I converted them to hexadecimal. To locate the offsets and location of the attribute, I first look at the location of my name on the save file and then the values following it before the next player appears. I noticed that some of the hex values following my name are the same hex values of the attributes that I have converted earlier. To further confirm my discovery, on the save file, I played around with the hex values. For instance, I changed the value of my strength in hex on the save file and then when I opened Ultima 5, the value of my strength changed to the new hex value I put on the save file. To find the offset, in Hex Fiend, mac hex editor, I highlighted the hex value for a particular attribute and in the bottom of the editor, it will tell me that byte 0x1stValue is selected out of 0x2ndValue bytes. 0x1st Value is the offset and that’s the offset I used on the program.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Offsets** | **New Values** |
| Strength | ﻿0x0C | 99 |
| Intelligence | ﻿0x0E | 99 |
| Dexterity | ﻿0x0D | 99 |
| HP | ﻿0x10 | 999 |
| Max HP | ﻿0x12 | 999 |
| Experience | ﻿0x14 | 9999 |
| Gold | ﻿0x204 | 9999 |
| Keys | ﻿0x206 | 100 |
| Skull Keys | ﻿0x20B | 100 |
| Gems | ﻿0x207 | 100 |
| Black Badge | ﻿0x218 | 1 |
| Magic Carpets | ﻿0x20A | 2 |
| Magic Axes | ﻿0x240 | 10 |

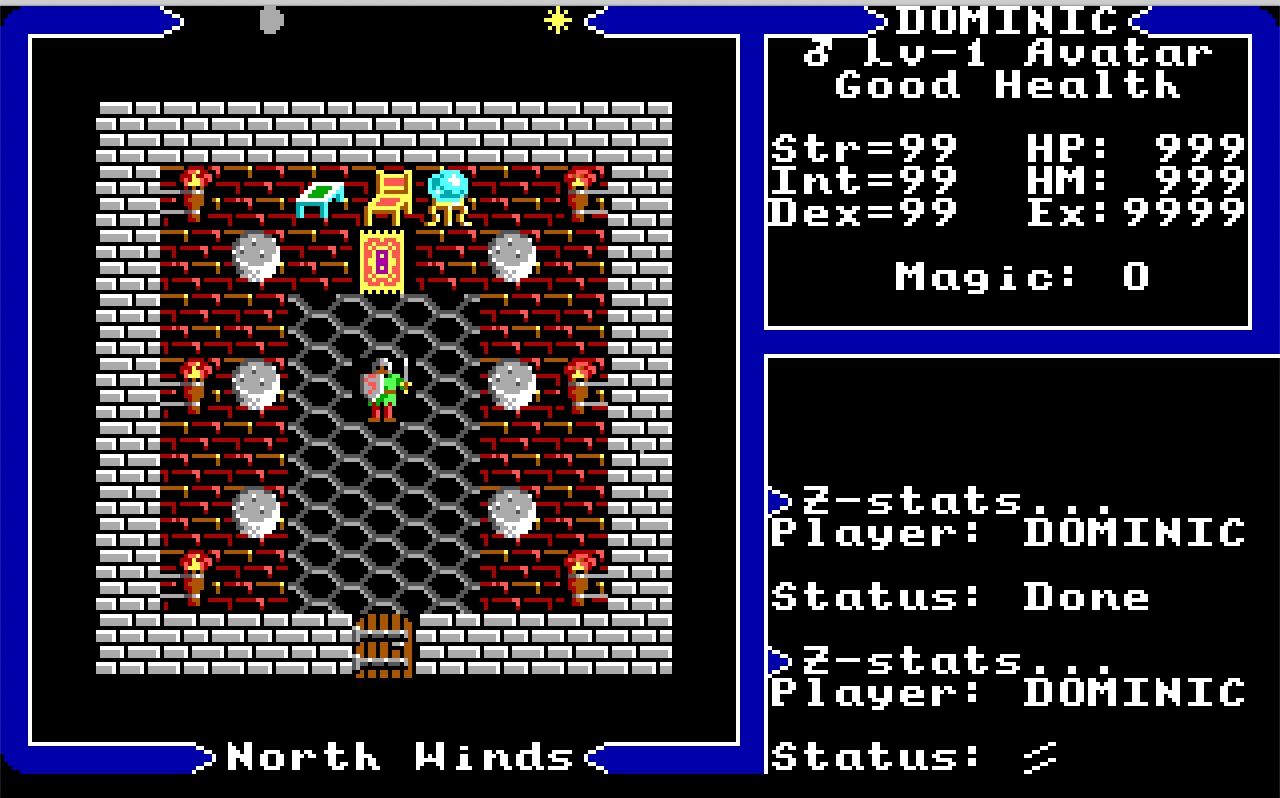
**Note**: In my Hex Fiend editor, the SAVED.GAM file has two null spaces before my name appears, so I have to adjust the offsets by shifting to left 2 spaces hence the values listed above. I cannot delete the two null spaces at the beginning because it causes my game to play the death and resurrection cutscene infinitely. I had to adjust the offsets 2 spaces to left on my program because when I use the original offsets, the wrong attributes on the game gets changed.

**END RESULT**: The original values were changed into the new values. Evidence in the screenshots below.

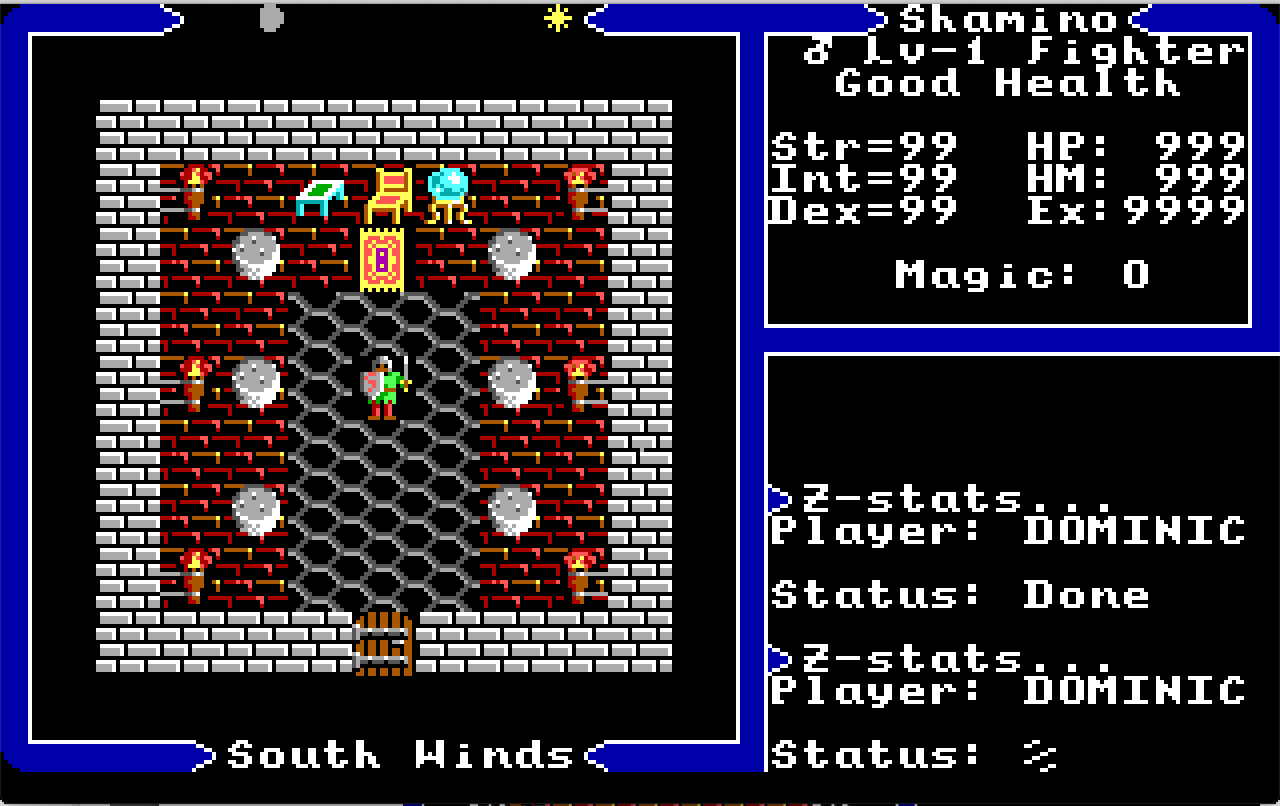
**SCREENSHOTS**



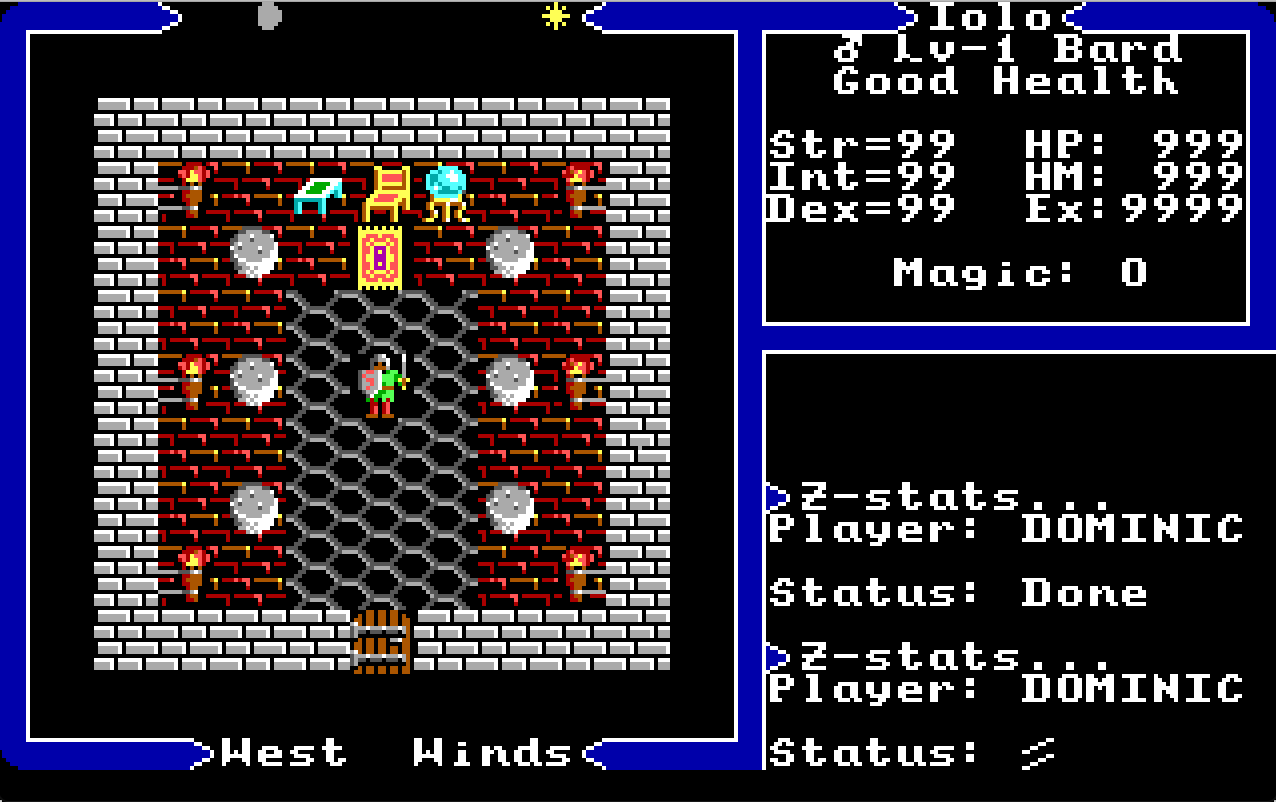
Overall stats



My stats



Shamino stats



Iolo stats



9999 gold & 100 keys & gems



2 Magic Carpet & 1 Black Badge



10 Magic Axes