

Diablo II Game Editor

for Diablo II v1.09 and the Diablo II Expansion Set: Lord of Destruction

Trevin Beattie

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1 Introduction

I started out with writing a text-based saved game (‘.d2s’) viewer/editor, which grew from simply upping the experience to editing the major stats and several aspects of items. But it got very complicated, and one of its shortcomings—due to its evolution without much planning—is that most everything is hard-coded and linear.

In doing a bunch of research (yeah, that’s it!) on Diablo II saved games, I decoded a good part of the ‘.d2s’ file format and item format on my own. I then looked around the Web and found a couple of other sites that had similar information, so I was able to confirm and fill in a few spots in the file format. But after even more research, I found that the existing pages on the web were very incomplete or out of date and in a few cases inaccurate. So I published my own findings.

Then, because I found myself with a bunch of time on my hands and a sudden urge to code, I decided to redesign my game editor and put a graphical interface on in. Because I’m a unix person, naturally the GUI had to be in X. I chose to implement the interface with Motif because 1) I had already written some minor programs in pure Xlib and Xt, and Motif was next on my list of things to learn; 2) I have O’Reilly’s excellent documentation on Motif 1.2 in hardcopy, and recently downloaded a PDF version of their updated manuals for Motif 2.0; and 3) many thanks to the Open Group, Motif is now freely available for Free platforms (e.g., Linux, *BSD), so portability should not be an issue. While there is still a learning curve in writing Motif applications, most of it is turning out to be a lot easier than I feared.

After working on the code for several months, I came up with a program that was functional enough to use for practically all aspects of character and item editing. I have made the source code publicly available on my web site. Of course there’s still a lot more to do on this project, but I seem to have so many things to do and so little time to do it. . . .

2 Installation

2.1 System Requirements

To compile and run the Diablo II Game Editor, you need:

- **Motif** version 2.2
- **X Window System** version 11
- a variant of unix
- the **Gnu C Compiler**, **make**, and other development tools
- certain data files from the **Diablo II Expansion Set**, **patch level 1.09**:

In 'D2data.mpq':

- 'data/local/lng/eng/string.tbl'

In 'D2exp.mpq':

- 'data/global/excel/experience.txt'
- 'data/global/excel/hiredesc.txt'
- 'data/global/excel/rareprefix.txt'
- 'data/global/excel/raresuffix.txt'
- 'data/local/lng/eng/expansionstring.tbl'

In 'Patch_D2.mpq':

- 'data/global/excel/armor.txt'
- 'data/global/excel/cubemain.txt'
- 'data/global/excel/gems.txt'
- 'data/global/excel/hireling.txt'
- 'data/global/excel/itemtypes.txt'
- 'data/global/excel/magicprefix.txt'
- 'data/global/excel/magicsuffix.txt'
- 'data/global/excel/misc.txt'
- 'data/global/excel/runes.txt'
- 'data/global/excel/setitems.txt'
- 'data/global/excel/skills.txt'
- 'data/global/excel/uniqueitems.txt'
- 'data/global/excel/weapons.txt'
- 'data/local/lng/eng/patchstring.tbl'

Visit the **Phrozen Keep** for tools and instructions to extract these files from your Diablo II game.

The editor has been compiled and testing in the following environments:

- ICS openMotif 2.2.0, 2.2.2
- XFree86 4.2.0, 4.3.0 (X11R6)

- RedHat Linux 7.1, 9
- GCC 2.96, 3.2.2
- Diablo II v1.09b

Other minor/later versions and compatible libraries should also work (e.g., open-Motif 2.1, FreeBSD 4.x, gcc 3.0), but have not been tested.

2.2 Downloading

Follow the download link from http://www.xmission.com/~trevin/DiabloIIv1.09_Editor.html to get the source code for the editor, and any optional components (e.g. background images).

2.3 Building

Look over the files 'Makefile', 'd2s/paths.h', 'd2s/Makefile', 'motif/d2sEdit.ad', and 'motif/Makefile', and change any of the paths / flags if necessary for your system. (Sorry, there is no 'configure' script at this time.) Then, run 'make' in the top level directory. If all goes well, run 'make install'. (Make sure you have permission to install programs in the target directory.)

You can also try out the program in-place without installing it first. To do this, run the program with the following options:

```
motif/d2sEdit -images motif/images -tables tables -uidfiles motif
```

2.4 Installing

This character editor works by reading the same data tables used by the game itself. Some of the data tables distributed with this program were created by myself either using my own data or data from the game; the rest were extracted from the game's '.mpq' files using mod tools found at <http://d2mods.xfernet.com/>. It may therefore be possible to keep the editor up to date with changes in the game (or even mods made by gamers) by re-extracting the tables from any new version. (No guarantees, of course.)

The following files are required from the Diablo game itself (v1.09):

In 'D2data.mpq':

- 'data/local/lng/eng/string.tbl'

In 'D2exp.mpq':

- 'data/global/excel/experience.txt'
- 'data/global/excel/hiredesc.txt'
- 'data/global/excel/rareprefix.txt'
- 'data/global/excel/raresuffix.txt'
- 'data/local/lng/eng/expansionstring.tbl'

In 'Patch_D2.mpq':

- 'data/global/excel/armor.txt'
- 'data/global/excel/cubemain.txt'
- 'data/global/excel/gems.txt'
- 'data/global/excel/hireling.txt'
- 'data/global/excel/itemtypes.txt'
- 'data/global/excel/magicprefix.txt'
- 'data/global/excel/magicsuffix.txt'
- 'data/global/excel/misc.txt'
- 'data/global/excel/runes.txt'
- 'data/global/excel/setitems.txt'
- 'data/global/excel/skills.txt'
- 'data/global/excel/uniqueitems.txt'
- 'data/global/excel/weapons.txt'
- 'data/local/lng/eng/patchstring.tbl'

These should be placed in the 'tables' directory, along with the tables created just for this program. (Note: the last three '.tbl' files can be replaced with string files for alternate languages. Not supported.)

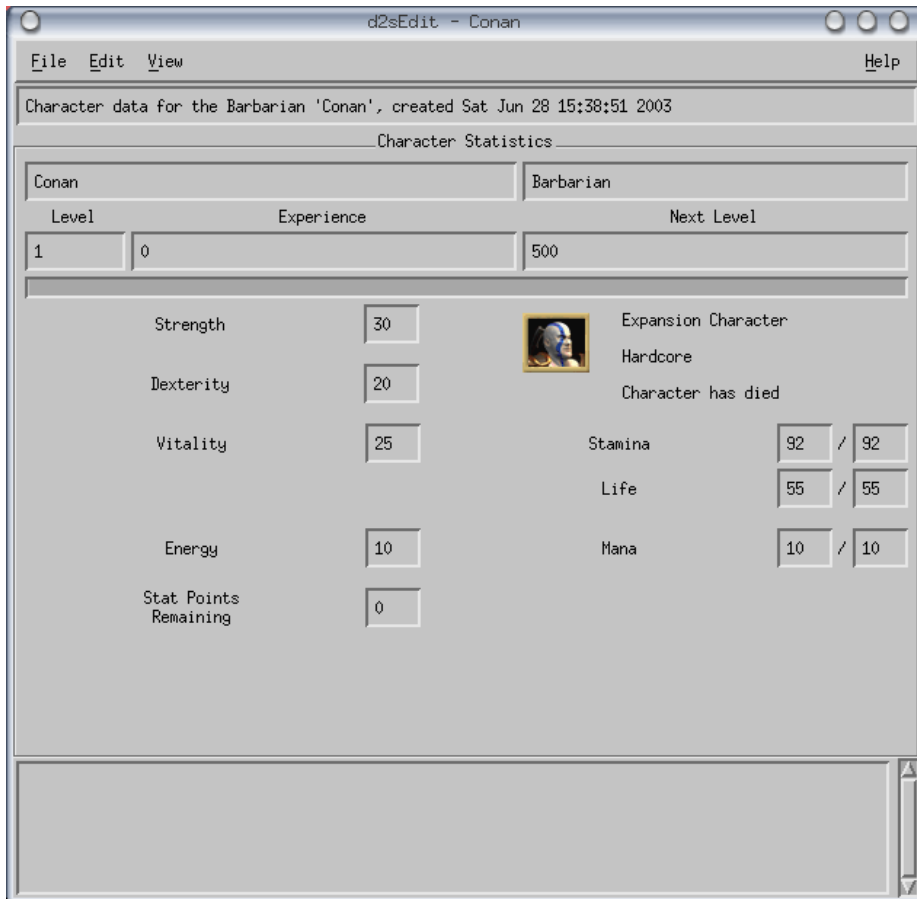
The editor also uses a large number of images files, which are also extracted from the game. In this case, however, it can't use the game's images directly (which are in DC6 format); they must be converted to XPM format first. Unfortunately, although I have a conversion program, it is not yet integrated into the make process. The editor will work just fine without any images, though (and may work just a bit faster).

3 Opening a character file

Invoke the editor by entering 'd2sEdit'. You will be presented with the Character Statistics page with blank entries. If you have an existing character file, click on 'File', then 'Open...', and find the '.d2s' file for your character. Then click on 'Open'.

You may also open your character file by giving its path on the command line—for example, 'd2sEdit Conan.d2s'.

The Character Statistics page will look something like this:



The fields on this page show your character's name, class, level, amount of experience, the experience required to reach the next level, and of course his/her statistics. In the middle there is also a picture of your character. Next to this picture are three lines that indicate whether you are playing an Expansion character, in Hardcore mode, and whether your character has ever died. These lines will have a checkmark next to them if true.

At the bottom of the window is a message box which shows any informational or warning messages about your character editing session.

3.1 Creating a new character

You can also create a brand-new character with the editor, if you want to have a custom-made character ready before you start playing Diablo II. Just click on the ‘File’ menu, then ‘New’. You will be presented with the following dialog:



In this dialog, you choose which character class you want to create, give the character a name, select whether to make it a normal game or an Expansion game, and choose whether to play in Hardcore mode. Then just click on ‘Create’.

When selecting your character’s name, the editor normally restricts your input to valid names allowed by the Diablo II game—the length must be 2–15 characters, upper or lower case letters, and may contain 1 dash as long as it is not the first or last character. (It is possible to override this restriction; see [Chapter 7 \[Options\]](#), page 28.)

3.2 Saving your character

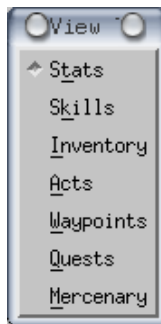
When you are finished editing your character, you can save it by choosing ‘File’, ‘Save’ from the menu (if editing an existing file). Or, you can select ‘File’, ‘Save As...’ to save your character in a different directory or with a different name. Please note that character files you intend to use in the game must be saved with the character’s name and the extension ‘.d2s’.

If you are saving an existing character, your original copy will be renamed before the modified version is written. This allows you to recover the unmodified character in case something goes wrong. Backup copies are named with the extension ‘.~1~’, ‘.~2~’, and so on.

4 Editing your character

4.1 Overview — the Views

The character editor consists of several “pages” that show various aspects of your character and his/her game progression. You can switch between the different pages by using the ‘View’ menu. The different views are:




The View menu includes a tear-off strip that you can click to make the menu permanently visible as a mini-dialog.

4.2 Character Statistics

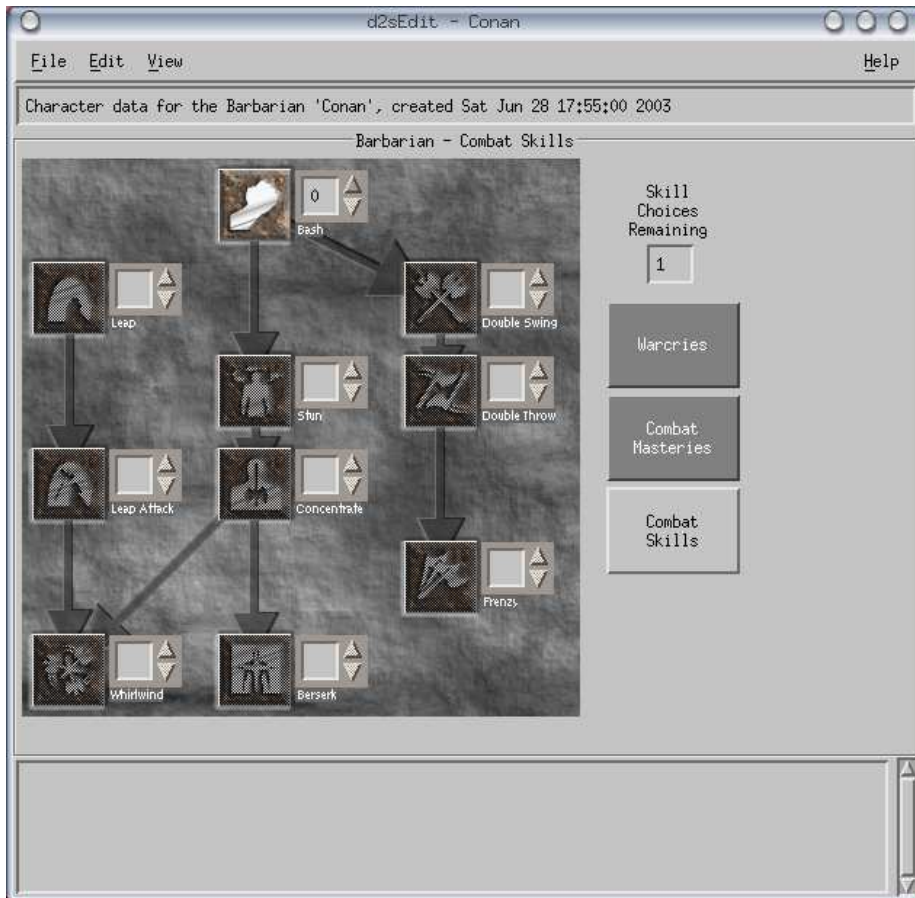
Your character starts out at level 1. As he or she gains experience, the level increases up to a maximum of 99. A progress bar just below the level and experience numbers shows how far along your character is towards gaining the next level.

You can increase your character’s level and/or experience by directly entering the new value, or by moving the progress bar with your mouse. If you change the amount experience beyond that which is required for the next level, your level will change automatically to the correct amount. When you change your level instead, the experience points will be adjusted so that you remain at the same relative distance between the start and end points of each level.

When your level increases, your stamina, life, and mana automatically increase according to your character type, and you also gain additional stat points that you can distribute among strength, dexterity, vitality, and energy. You can either enter the new values directly, or click on the  button that appears next to each statistic to increment it. As you increase these statistics, your stamina, life, and mana will again increase accordingly.

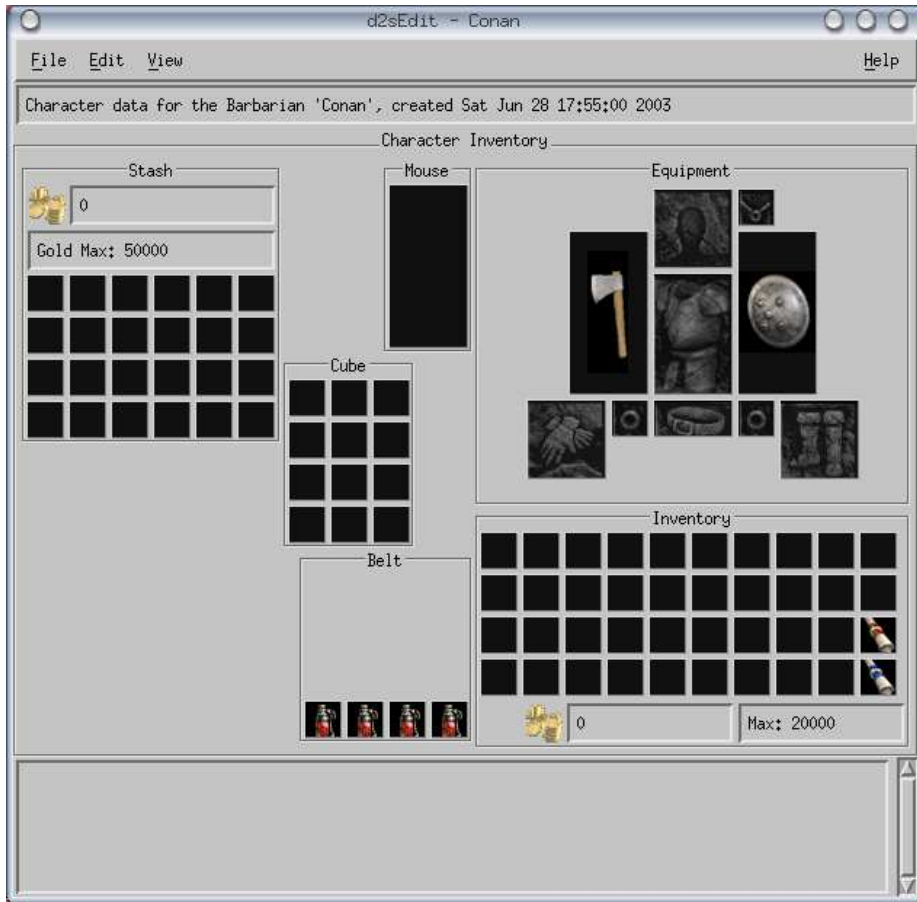
4.3 Character Skills

The Character skills page looks like this:



The skills shown on the skills page depend on your character class. You also have three skill groups for each class to choose from, which are selectable using the large buttons on the right side of the page. When your level increases, you are given a number of additional skill choices. To increase your skills, you can either enter the new skill level directly in the box next to the skill icon, click on the up arrow next to the box, or click on the skill icon itself. Note that clicking on a skill icon will increase that skill to the maximum allowed by your remaining skill choices and level requirement. You can only add skills for which you meet the required level and prerequisite skills. If you have sufficient skill choices remaining, you can click on a higher-level skill and the editor will add a point to all of its prerequisites automatically. If you do not have enough skill choices or meet the requirements, the skill icon will be disabled.

4.4 Inventory



On this page you can see all of the items in your character's possession. By using the middle mouse button, you can also move items from place to place. The right half of the page is laid out in much the same way as your inventory in the game. If you are editing an Expansion Set character, it will show both your equipped and alternate ready weapons at the same time (the alternate weapons are on the outside).

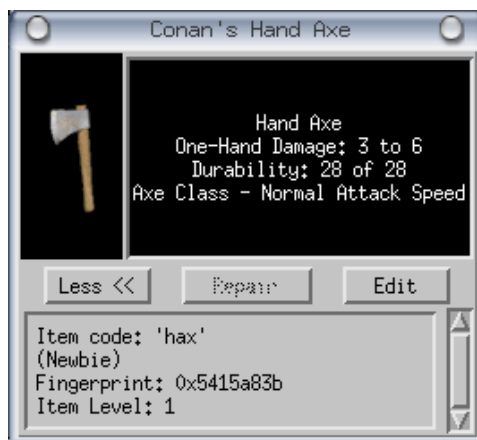
On the left side of the page is your stash, and in the middle is displayed the contents of your belt pouches and the Horadric Cube. The number of boxes shown in the Belt area will change depending on what kind of belt your character is wearing. At the top center is one more item box labelled "Mouse". Normally this box will be empty. However, if you happen to be editing an auto-saved character file that just happened to be saved while you had picked up an item with your mouse and had not yet placed it anywhere, that item will show up here. In that case, you should move the item to your inventory or stash before playing the character again.

You can move items from place to place by dragging them with the middle mouse button. You can also select an item using the mouse or keyboard and choose the ‘Cut’ and ‘Paste’ options from the ‘Edit’ menu to move it. As you can guess, you can also use these editing commands to delete or copy items. You can also duplicate an item by dragging it with the middle mouse button while holding down the `Ctrl` key.

If you simply click on an item with your primary mouse button, a pop-up will appear with that item’s description.



The description shows the same information about the item that you see in the game. Just below the description are two or three buttons. The first, “More >>”, gives you some of the hidden details about an item.

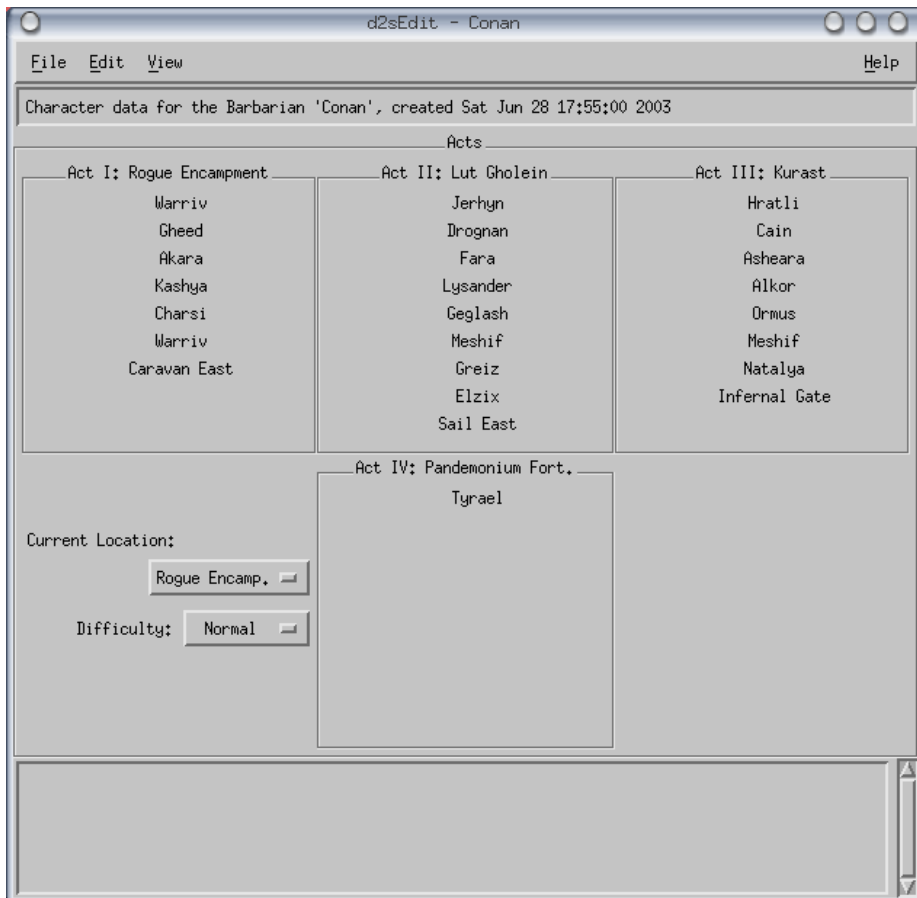


The middle button is only present on some items. For weapons and armor, it will say “Repair”. You can click this to bring the item’s durability back up to its maximum. For stackable items this button will say “Replenish”, and clicking it will give you the maximum quantity of that item you can have in the stack. The last button, “Edit”, will open up that item in the Item Editor (see [Chapter 6 \[Editing your items\]](#), page 19).

If your character has just died, there will be a corpse laying around somewhere in the game. The Equipment box on the inventory page will include a button that

lets you switch the equipment view from what you are currently carrying to what was left by your corpse. You can then view/edit the items on your corpse, or move them to your inventory or stash.

4.5 Acts

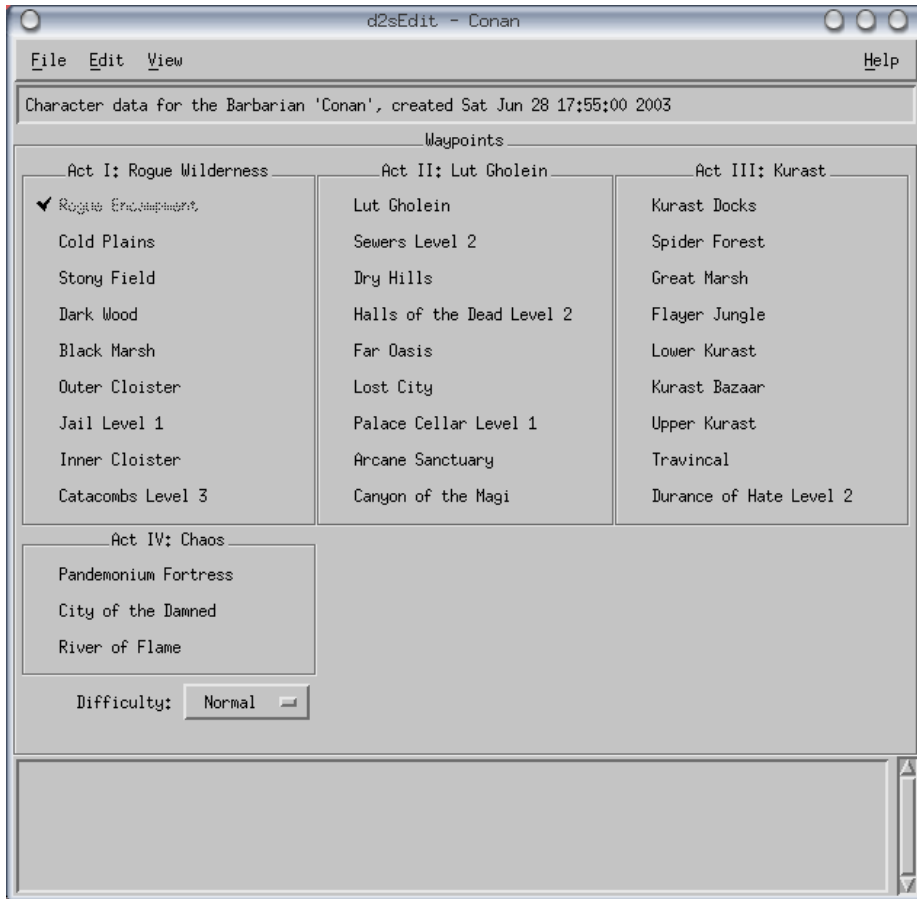


The Acts page shows you which NPC characters you’ve spoken with in each act, as well as the difficulty level you are playing and in which town your character is located. By clicking on a character’s name, you say that you have already spoken to that person, and he or she will not introduce him/herself to you the next time you meet.

The last entry in each act is the gateway that opens up the next act. For example, if “Caravan East” is checked under Act I, you are then able to travel to Lut Gholein.

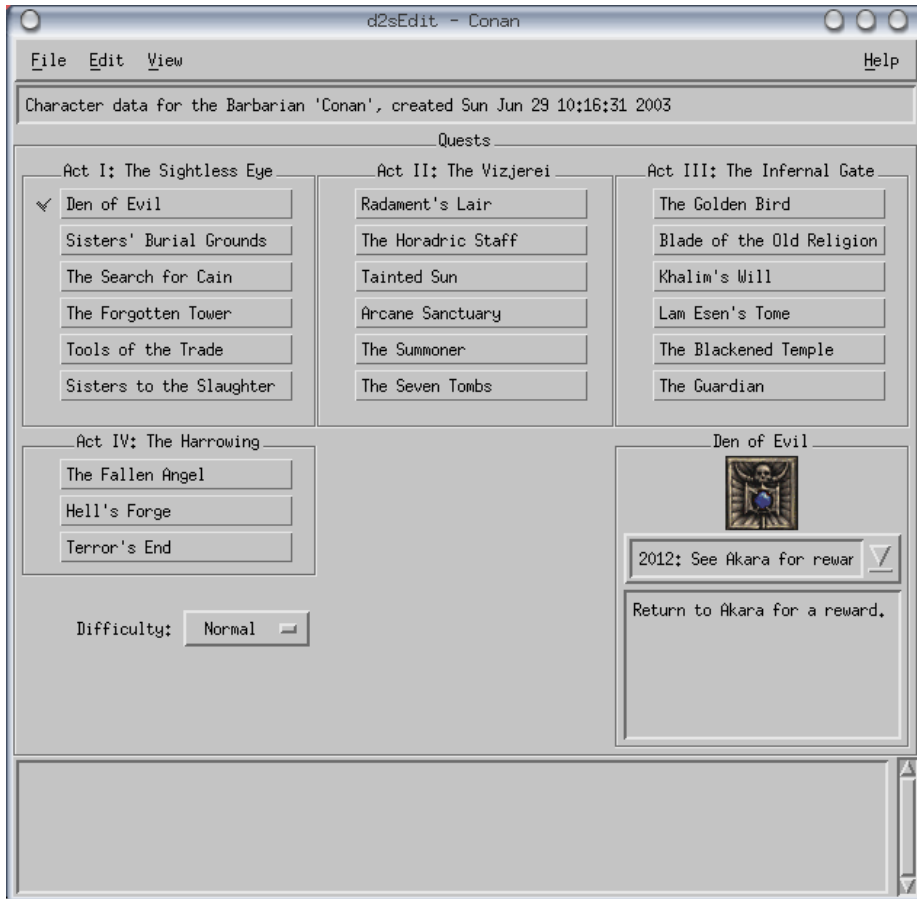
If you click on a character in an act that you have not yet entered, the editor will automatically open up the gateway from the previous act(s). You can change this behavior in the Options dialog (see [Chapter 7 \[Options\]](#), page 28).

4.6 Waypoints



On the Waypoints page you can activate waypoints in all locations without having to actually go there. This is useful for some of those hard-to-find waypoints, such as the Great Marsh. The town waypoint in each act is automatically activated when you enter the act. As with the Acts page, if you activate a waypoint for an act you have not yet entered, the editor will automatically enter all previous acts for you and activate the town waypoint in each.

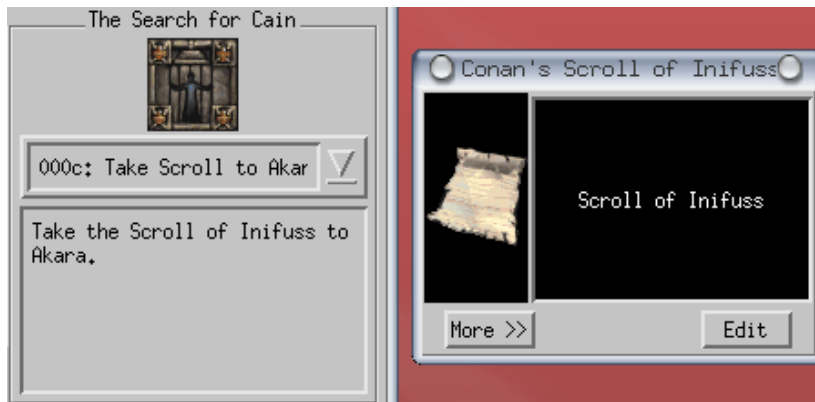
4.7 Quests



The Quests page shows you all of the quests in each act and whether you have started or completed them. Quests which you have started but not yet completed are marked by a gray check, while completed quests have a black check.

When you click on a quest, details of that quest show up in the lower right corner of the page. It shows you the quest icon, a drop-down list of possible statse for that quest, and a small window showing the quest text displayed in the game.

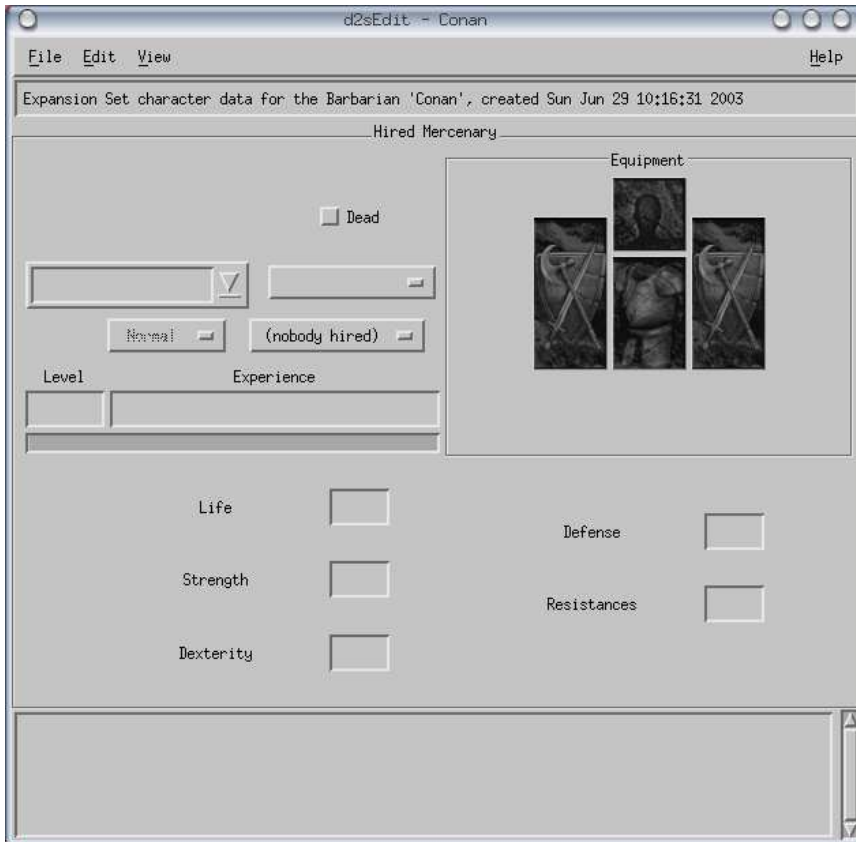
Using the drop-down list, you can start or complete any of the quests. You can make a quest partially completed too. Some quest states require that you have (or do not have) certain items. If you select one of these states, the required items will be automatically added to (or removed from) your inventory.



Each state in the drop-down list has a hexadecimal code next to it. Some quest states have the same code depending on what quest items you are carrying. For example, in The Search For Cain, state '000c' is "Take the Scroll of Inifuss to Akara" if you are carrying the Scroll of Inifuss. If instead you are carrying the Key to the Cairn Stones, the same state will say "Go to the Cairn Stones in the Stony Field..."

Certain quests cannot be completed or even started before other quests have been finished. The editor knows about most of these dependencies and can automatically complete some quests if you decide to start others that depend on them. However, due to the complexities involved, this feature is turned off by default. See [Chapter 7 \[Options\]](#), page 28 for enabling this feature.

4.8 Mercenary



In an Expansion Set game, you have the ability to hire and retain a mercenary through all acts in the game. You can also equip your mercenary with a limited selection of items. On the Mercenary page, you can change view and change your mercenary's experience/level, type, and equipment.

If you have hired a mercenary, that mercenary's icon is displayed and the mercenary's name and description are just below that. There is also a check box next to the icon which indicates whether your mercenary is dead.

As with your character, you can change your mercenary's level or experience and the other value will automatically be adjusted to match. The mercenary's statistics, shown on the bottom half of the page, are automatically computed. These values are determined by the game itself and not stored with the character data, so you cannot change them.

The Equipment box on the right side of the page works just like your character's inventory.

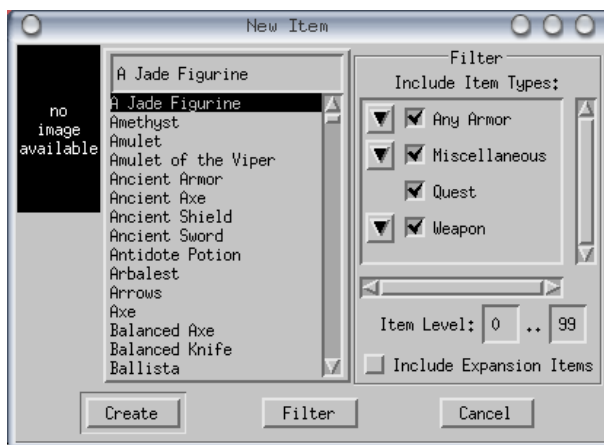
5 Opening an item

There are two ways you can open an item. As mentioned in [Section 4.4 \[Inventory\]](#), [page 9](#), when you click on an item in your character's inventory, press the 'Edit' button to edit that particular item.

The program can also open items from individually saved item files. The file should be in raw binary format as saved by this Item Editor or by many other available item editors, provided it is from Diablo II version 1.09, and have the extension '.d2i'. To open one of these files, click on 'File', then 'Open...' from any Item Editor window. You may also open the item file by giving its path on the command line—for example, 'd2sEdit Axe.d2i'.

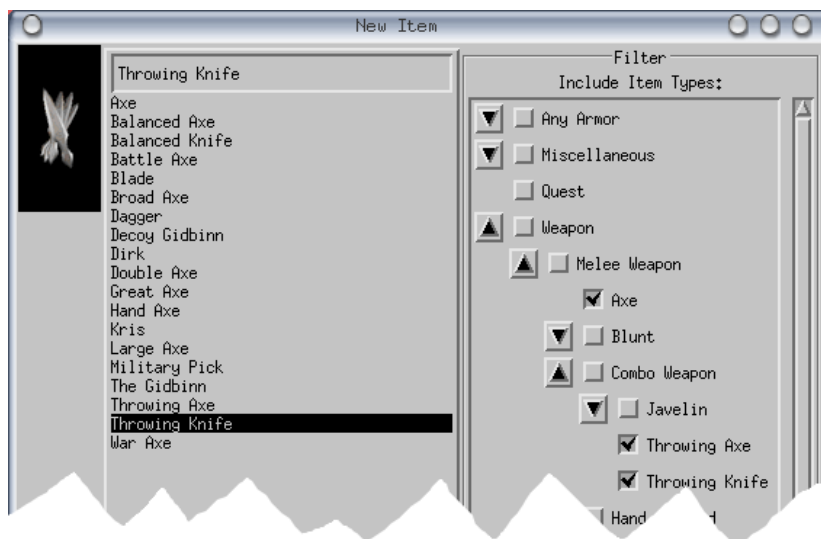
5.1 Creating New Items

You can create new items for your characters by selecting 'File', then 'New Item...' from any character editor window; or by selecting 'File', 'New...' from an item editor window. You are then presented a dialog showing a list of items to choose from.



The list is sorted alphabetically. In order to help you find an item by type, a filter is provided on the right side of the dialog. By default all standard game items are selected.

In the "Include Item Types" box, there are four major categories shown: armor, miscellaneous, quest, and weapon. To exclude all items in a category, simply uncheck the check box. (Note: there are several quest items which are actually in the "Weapon" category, such as the Staff of Kings, The Gidbinn, and Wirt's Leg.) Most categories also have an arrow button next to them, which indicates they are divided into sub-categories. By clicking on this arrow, you can further refine your search for a particular item type.



Items will be included or excluded from the list depending on whether their most specific type is checked. For example, if you have un-checked “Weapon”, and checked “Axe” and “Throwing Axe”, then axes and throwing axes will be shown in the list but all other weapons will not.

The next filter is the item level. As explained in [Chapter 6 \[Editing your items\]](#), [page 19](#), a level is randomly assigned to the item when it is created. However, many items are only available after a certain minimum level (i.e. exceptional and elite items). By changing the item level fields, you can restrict the list to those items which meet a certain minimum level. Thus you can avoid cluttering the list with items which your character may not be able to handle yet, or items which you may find too weak. A good rule of thumb is to choose items which are within about 5 points below to 10 points above your character’s current level.

Lastly, there is a checkbox which will allow you to include or exclude all Expansion Set specific items from the list.

After making your selection in the filter, click on the “Filter” button to refresh the item list. When you have found and selected the item you are looking for, click on “Create” to create the item. The item will be generated with a randomly chosen item level and fingerprint. Most items are created with a “Normal” quality; however, some items which cannot be normal (e.g. rings) will instead be created with a “Magic” quality and assigned random affixes. Certain unique quest items (such as the Staff of Kings) will be created with a fixed set of magic properties as determined by the game.

5.2 Saving your items

When you have finished creating or editing an item, you can save it for later use by choosing ‘File’, ‘Save As...’ from the menu. You can name the file anything you like, but by convention it should have the extension ‘.d2i’.

If you are saving an item that already has an item file, your original copy will be renamed before the modified version is written. This allows you to recover the previous revision in case something goes wrong. Backup copies are named with the extension `'~1~'`, `'~2~'`, and so on.

6 Editing your items

When you click on the Edit button on an item pop-up, it opens that item in the Item Editor. The Item Editor lets you view detailed information about the item and change most aspects about it.

For simple items, the Item Editor doesn't display much. You see the item's picture, its description and internal 3-letter code, its classification(s), the required level to use the item (if any), whether it is a quest item, and whether it is an Expansion Set item. Most items will also include a display area in the top right corner of the window that provides a full description of the item similar to what you see in the game. At the bottom of the Item editor window is a message box which shows any informational or warning messages about editing the item.



Other types of items will have additional boxes of information depending on the item type. For example, stacked items show the quantity of items in the stack. You can directly edit the number of items in the text box.

Most complex items have a fingerprint and an item level. The fingerprint is a randomly generated 32-bit number (shown in hexadecimal) used by the game to prevent duplicate items from being used. That is why when you duplicate an item using the Game Editor, it gives the copy a new fingerprint.

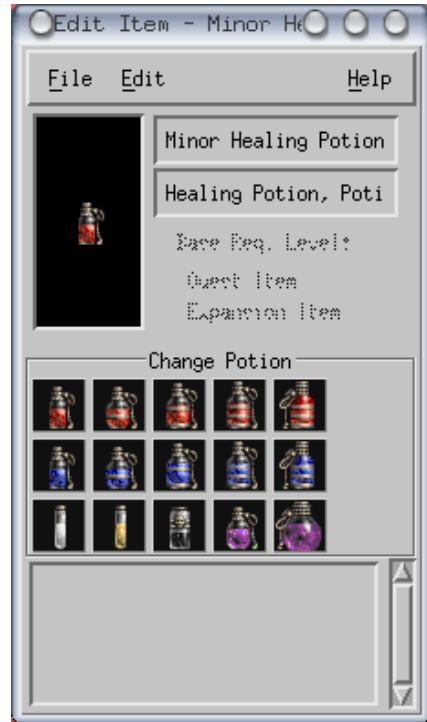
The item level is a value from 1–99 chosen by the game according to where you found the item. Generally it is within a few points of your character's level. This value in turn affects what other attributes are available to the item, such as magical properties or number of sockets.



6.1 Potions and Gems

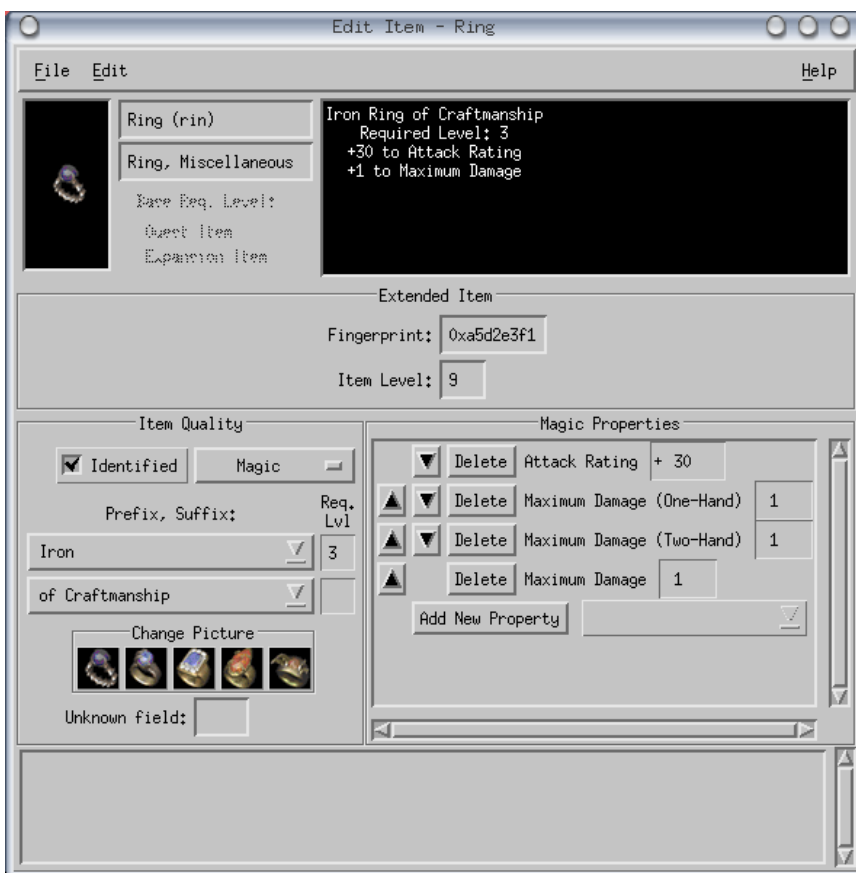
When you edit a potion, you get a nice little feature: a Change Potion box that lets you convert one potion into any of the other available potions. This is a convenient way to change Minor potions into Super potions, or even into Full Rejuvenation Potions, for example.

You get a similar feature for gems and runes. The Change Gem box allows you to change one gem or skull into any other type of gem or skull. The Change Rune box lets you change one rune into another. For both gems and runes, the description box tells you what magic properties it will add to any weapon or armor type, if it has not yet been placed in an item. If the gem or rune is socketed, the list shows only the effect that the gem actually has where it is.



6.2 Magical Properties

If an item can have magical properties associated with it, such as rings, weapons, and armor, the Item Editor displays at least two additional boxes: the Item Quality and Magic Properties.



Under Item Quality, a checkbox indicates whether the item has been identified. Handy if you haven't found Cain yet (see [Section 4.7 \[Quests\], page 13](#)). Regardless of whether it's been identified, however, you will still be able to see the complete item description and attributes in the Item Editor.

Next to this checkbox is a selection box that lets you choose whether the item is normal, low quality, high quality, magic, or rare. For some specific items, you might also be able to create an item that is part of a set or a unique item. But selecting a set or unique item not only depends on the item type, but the item level.

A few items, such as rings and amulets, also have multiple pictures that can be displayed. These will have a Change Picture box containing all available pictures for the item.

At the bottom of the Item Quality area is an “Unknown field”. Leave this value alone for now. (Needs to be researched.)

The middle section of the Item Quality box changes depending on the quality selected. For normal items, there will be no additional controls. For low quality and high quality items, you get a simple numeric field containing the item’s grade (i.e., cracked, damaged, superior, etc.). For magical items, you have control over the exact type of magic applied.

6.2.1 Magic Prefix and Suffix

In your basic magical items, you have either a prefix (such as “Iron”), a suffix (such as “of Craftmanship”), or both. Each possible prefix and suffix corresponds to a certain magical property with which the item is enhanced. For example, “Iron” gives the character a higher attack rating, and “of Craftmanship” adds to the maximum damage a character can do. The prefix and suffix are each a drop-down list, so you can choose the particular properties which are given to your items.

In addition to selecting the magic, the prefix and suffix also control the minimum level required to use an item. The required level is the maximum of the level requirement of the prefix and suffix (if any).

Many weapons and armor items can have their normal color altered by the magic prefix or suffix. In this case, the “Prefix, Suffix” list will also show the color associated with the prefix and/or suffix. If both prefix and suffix have a color associated with them, the suffix’ color takes precedence.

For rare items, the list gets even better. This time you have six possible prefixes and suffixes. All of these affixes are ‘hidden’, meaning they don’t show up in the item description, but their effects are the same as for basic magical items. It’s just that there are more of them. You can have anywhere from 1–3 prefixes and 1–3 suffixes. As for coloration, the first suffix in the list with a color takes precedence, or the first prefix if no suffixes have a color.

Rare items also have a Name field. There are two parts to a rare name, each one having its own drop-down list. You can match up the parts of the name any way you like, but both must be specified. The names that are available depend on the type of item they are being applied to.

6.2.2 Set and Unique Items

If an item can be part of a set, you can choose “Part of a Set” from the item quality drop-down list. You then get a drop-down list containing the names of the sets containing an item of that type and level. Below the set name is a line containing the name of the particular item belonging to that set, its required level, and the number of ‘property lists’ for the item.

A property list is a group of magical properties that can be active on the item depending on how many other items in the set have been equipped. The first property list is the properties you get with the item no matter what. The second list is given if you have a partial set, and the third list is given if you have a complete set.

As with set items, when selecting a unique item you have a drop-down list of all possible uniques of that item type and level. When selecting one of these unique items, you are shown its required level.

6.2.3 Crafted Items

Crafted items are new in the Expansion Set; you cannot make a crafted item for a standard character. With respect to the item editor, a crafted item looks much like a rare item. The only difference between them is that the game adds a certain set of additional magic properties to the item besides those given by the hidden prefixes and suffixes.

Unfortunately, the Item Editor does not add these extra properties, so if you modify the affixes of a crafted item you will lose any extra magic that it has.

6.2.4 Magic Properties List

Another box in the Item Editor details the exact types and amounts of magic which an item has. Each affix for magic or rare items has one or more magic properties associated with it, and each set or unique item has a fixed group of magic properties.

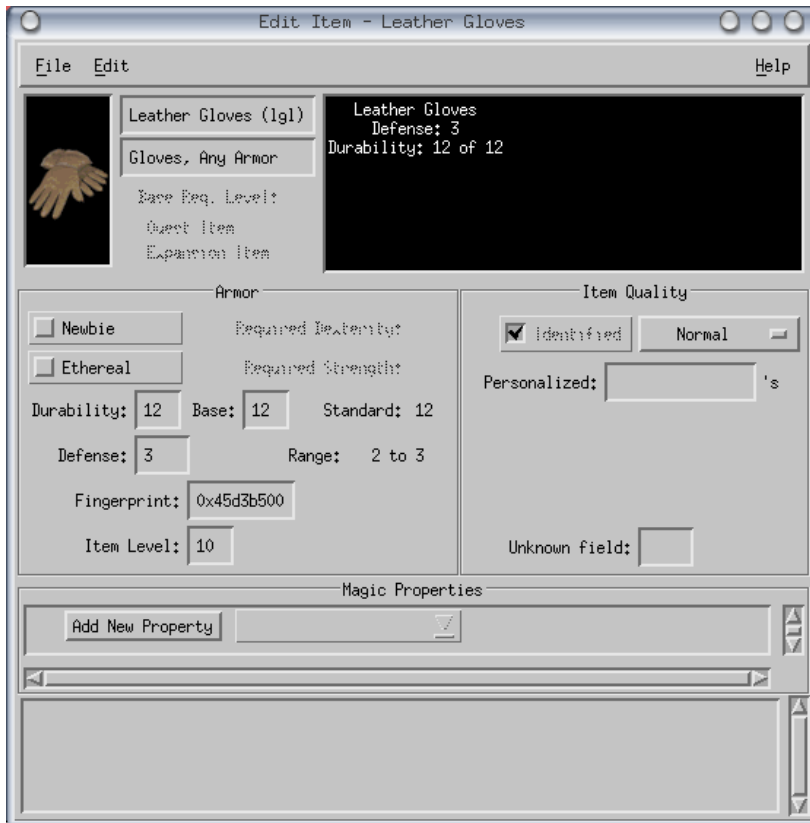
The values given to each magic property have a certain valid range in the game according to the affix that produced them. For example, the prefix “Iron” given at Attack Rating bonus from 21–40, while “Steele” can have values of 41–60. The Item Editor will randomly choose a value within this range for all magic properties when you choose a new affix.

Of course, you can go into the magic properties list and manually enter a different value of your choice for each property. You also have the ability to delete existing magical properties and add new ones.

A word of warning: The Item Editor does not fully test the values you enter to make sure they are game-legal. I have found during testing that in some cases, certain customized property values can result in crashing the game. Edit these values at your own risk. Make sure you keep backups of your unmodified characters and items.

6.3 Weapons and Armor

Weapons and armor have an additional element in the Item Quality box and one or two more boxes of information besides.



First of all, there is a field under Item Quality called “Personalized:”. This is for items belonging to an Expansion Set character, and contains the name of the item’s owner, as inscribed by Anya in Harrogoth after completing the Betrayal of Harrogoth quest. By editing this field you can engrave any name you like on the item.

The new box is labeled either “Armor” or “Weapon”, depending on the item type. Some of the contents vary depending on the item, but other contents are the same.

There are two check boxes: “Newbie” and “Ethereal”. The Newbie attribute is given only to weapons and armor that come along with a newly created character. When checked, the item has a repair cost of 1 gold piece and a sell value of 1. Ethereal items are only available in the Expansion Set. When checked, the item cannot be repaired.

Next to these check boxes is written the required dexterity and strength to use the item, if any. Note that these are the base values for the item type, before any magical properties are applied (i.e. “Requirements -xx%”).

At the bottom of the Weapon or Armor box is the item’s fingerprint and level. These were described earlier in this chapter.

The next item which is common to all weapons and armor is its durability. Three values are shown: the current durability, the base (before any magical enhancements), and the standard durability for that type of item. Normally the base durability will be equal to the standard durability, but it can be lower for low-quality items, or higher for high-quality and ethereal items.

6.3.1 Additional fields for weapons

Weapons can have several additional lines of information depending on the weapon type. Most of this information is not editable however; it is shown only for information.

All weapons show the base amount of damage they inflict. There may be either one or two of the following types of damage: one-handed damage, two-handed damage, or throw damage. Throw damage applies to thrown weapons and bomb potions. Two-handed damage is shown for bows. If a weapon can be wielded with either one or two hands, it shows both one-handed and two-handed damage.

Weapons will also show their base attack speed, which the game stores as an integer. Note that the relative qualifiers “Slow”, “Fast”, etc. are only rough estimates. The actual weapon speed depends not only on this value and any magical enhancements, but also on the type of character using the weapon and his or her proficiency.



Stacked weapons will also have a quantity line, which shows the current number of weapons in the stack and the maximum number of weapons.

6.3.2 Additional fields for armor

All Armor boxes include a field for “Defense” below its durability. The defense value is editable. Next to the text box is shown the valid range of defense for that type of item.

Belts include a line which shows the number of slots (or pouches) in the belt. This value is set by the game, and is displayed only for informational purposes.

Shields include two lines: the base chance to block, and the “smite damage” if the shield is wielded by a Paladin.

6.4 Socketed Items



Most weapons, shields, helms, and body armor can potentially be socketed. The maximum possible number of sockets depends on the item type, and in some cases also on the item level. For example, a level 23 Great Axe has a maximum of 4 sockets, but the same Great Axe at level 33 has up to 5 sockets, and at level 43 it can have 6 sockets. (For all items, an item level of 41 or higher allows it the maximum number of sockets.)

In the Sockets area, the Item Editor shows a black box for each possible socket. If the item is in fact socketed, there will be a content line for each socket the item

actually has. You can add sockets to the item (up to its maximum limit) by clicking on the “Add Socket” button, and remove sockets by clicking on “Remove Socket”.

Sockets that have had gem placed in them show the gem and the character level required to use that gem. The item’s required level is the maximum of the level requirements of all installed gems and/or any magic affixes.

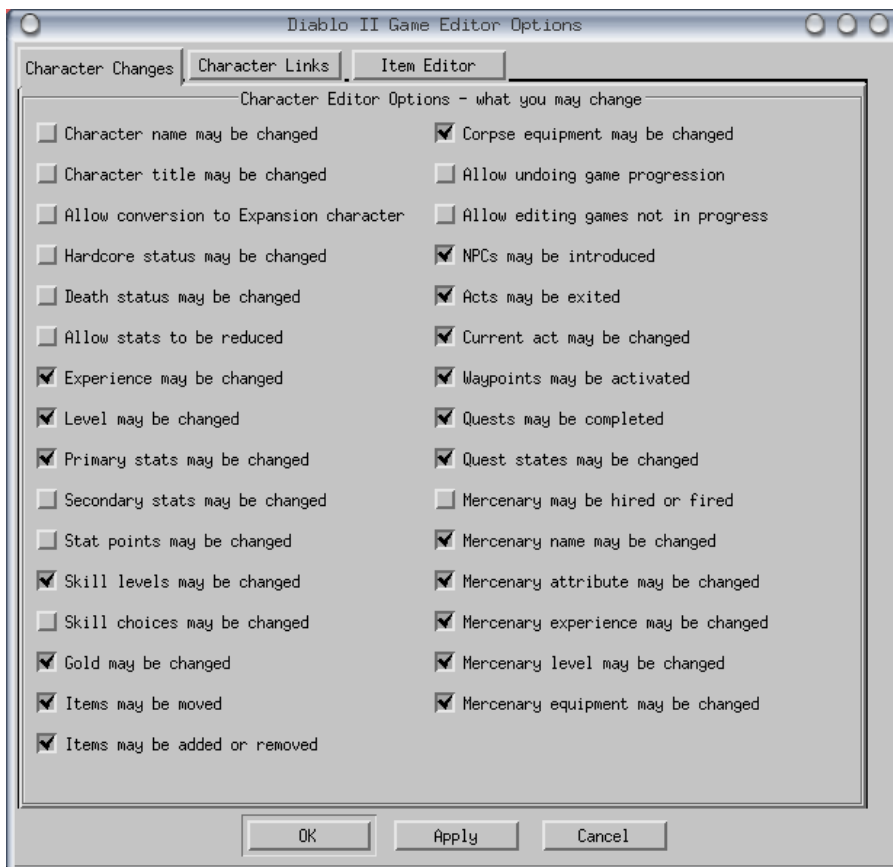
You can easily add gems to an item by simply dragging the gem onto an empty socket using the middle mouse button. One of the great things about the Item Editor is that in addition to adding gems, you can also remove gems from an item and change the gems’ relative order (in case you want to change the color that your gems give the item). To move a gem, either drag it to the desired slot position with the middle mouse button, or click on the up or down arrows under “Move Gem”.



7 Options

Like any good open-source program, just about everything in the Game Editor is configurable. This chapter provides details on how all of the available options will affect your editing experience.

When you click on ‘Options’ under the ‘Edit’ menu, you will be shown an option dialog with three pages: Character Changes, Character Links, and Item Editor.



Many of these options are self-explanatory. Also, if you have Motif tooltips enabled, hovering the mouse over most options will pop up a brief description of that option. (To enable tooltips, add the line ‘?.toolTipEnable: True’ to your ‘.Xresources’ file.)

7.1 Character Changes

These options affect what you can or cannot change in a saved character.

Character name may be changed

Allows you to change the name of your character, as stored in the saved ‘.d2s’ file. Remember that to be useable, your file name must match the character name. The character name can be changed on the top of the Character Statistics (‘Stats’) page.

Character title may be changed

Lets you change your title, e.g. from Sir to Lord. (Not implemented)

Allow conversion to Expansion character

Lets you change a standard game character to an Expansion Set character (or vice-versa). To convert your character, click on “Expansion Character” next to your character’s icon on the Character Statistics page. Note that the ability to change an Expansion Set character to a standard character is subject to other restrictions (for example, (s)he cannot be carrying any Expansion Set-specific items).

Hardcore status may be changed

Lets you switch your game to Hardcore mode or back to standard. In a Hardcore game, once you die, you cannot be resurrected. Thus when changing to Hardcore mode you must also ensure that the “Character has died” indicator is not checked. To switch your game mode, click on “Hardcore” next to your character’s icon on the Character Statistics page.

Death status may be changed

Lets you clear (or set) the flag that records whether your character has died. This also affects the ability to set whether your mercenary (if any) is dead or alive. To clear your “Character has died” flag, click on “Character has died” next to your character’s icon on the Character Statistics page.

Allow stats to be reduced

Normally, the Game Editor allows only forward progression in the game, meaning your experience, stats, and skill levels can only go up. By turning this option on, you can reduce your experience, stats, and skill levels.

Experience may be changed

This lets you change your character’s experience. Normally this option is on. Note that if you disable this but leave the next option on, your experience will still be changed to match your character’s level, but you cannot adjust it directly.

Level may be changed

This lets you change your character’s level. Normally this option is on. If disabled (and changing experience is on), you will only be able to set your experience within the minimum and maximum values available for your current level.

Primary stats may be changed

Lets you change your strength, dexterity, vitality, and energy, provided you have enough stat points remaining to distribute among them. It also lets you change your current stamina, life, and mana.

Secondary stats may be changed

Lets you change your base stamina, life, and mana. These statistics are also adjusted automatically when to your vitality and energy change. When changing your base stamina, life, and mana, their current values also change proportionately.

Stat points may be changed

Lets you change the amount of stat points remaining for distribution. Normally you only get 5 stat points per level increase.

Skill levels may be changed

Lets you change your character's skill levels. Normally this option is enabled.

Skill choices may be changed

Lets you change the number of skill choices remaining for distribution. Normally you only get 1 skill level per level increase.

Gold may be changed

Make yourself richer or poorer

Items may be moved

Normally enabled, this option allows you to move items from one place to another on the same character. If disabled, your character's items stay put. Also, if this option is disabled, you will not be able to add or remove items from your character, corpse, or mercenary.

Items may be added or removed

Normally enabled, this option allows you to change your inventory. Enabling this option implies that items may be moved as well.

Corpse equipment may be changed

Normally enabled, this option allows you to move items to and from your corpse if you have just died. Enabling this option implies that items may be moved as well.

Allow undoing game progression

As mentioned above, normally the Game Editor allows only forward progression in the game. Turning this option on lets you 'un-exit' an act (see [Section 4.5 \[Acts\]](#), page 11), make NPC's forget you were introduced, de-activate waypoints (see [Section 4.6 \[Waypoints\]](#), page 12), and clear quests (see [Section 4.7 \[Quests\]](#), page 13).

Allow editing games not in progress

Normally the Acts, Waypoints, and Quests pages will only show the state of your character's current game. Turning this option on enables a pop-up menu on each of these pages from which you can select different games to view. **Turning this option on is not recommended.**

NPCs may be introduced

Normally on, this lets you skip introductions by telling the game that you have already spoken to certain characters.

Acts may be exited

Normally on, this lets you open up new acts in the game that you haven't actually been to yet. When off, you can only edit NPC introductions, waypoints, and quests up to the last act you played.

Current act may be changed

This option lets you change the act where your character is located (i.e. which town you will start in the next time you play).

Waypoints may be activated

Normally on, this lets you activate waypoints that you have not yet visited.

Quests may be completed

Lets you mark a quest complete, or reset a quest to clear (i.e. not started). This is normally enabled. If turned off, the "Quest states may be changed" option will also be disabled.

Quest states may be changed

Normally on, this lets you change a quest to any intermediate stage, e.g. started or partially completed. Implies "Quests may be completed".

Mercenary may be hired or fired

Lets you add a mercenary, change the mercenary you have, or remove a mercenary. (Not implemented)

Mercenary name may be changed

While this option is on, you can edit your mercenary's name (if you have one) in a drop-down list on the Mercenary page. Note that there is a fixed list of names, set by the game, depending on your mercenary's class.

Mercenary attribute may be changed

Lets you change a mercenary's attribute. For example, Rogue Scouts possess either Cold Arrows or Fire Arrows. Desert Mercenaries have the passive skill Combat, Defensive Auras, or Offensive Auras.

Mercenary experience may be changed

Like the character counterpart, this lets you change your mercenary's experience. Normally this option is on. If you disable this option, you cannot change your mercenary's level either.

Mercenary level may be changed

This lets you change your mercenary's level. Normally this option is on. If disabled (and changing experience is on), you will only be able to set your mercenary's experience within the minimum and maximum values available for his or her current level. Enabling this option implies mercenary experience may be changed.

Mercenary equipment may be changed

Normally enabled, this option allows you to add items to, remove items from, or change items that belong to your mercenary. Enabling this option implies items may be moved on your character.

7.2 Character Links

These options affect how changes you make to your character or saved game affect other aspects.

Link level with experience

Changing your experience points or level will change the other to match. **It is highly recommended that you leave this option on.** If disabled, you can set your character's level to a value that does not correspond to his/her experience.

Changing the level affects stats

Increasing your level will adjust your secondary stats according to the character class, and give you five more stat points and one more skill choice. If disabled, your secondary stats will not change when your level changes.

Changing stats affects stat points

Normally you can only increase your stats if you have sufficient stat points remaining, and every increase in a stat will decrease your remaining stat points. Contrariwise, if decreasing stats is enabled, decreasing your stats will give you additional stat points so that you can redistribute them elsewhere. If this option is disabled, you will not need any stat points to change your stats.

Changing primary stats affects secondary

Changing your vitality will adjust your life and stamina according to the character class. Changing your energy will adjust your mana. If this option is disabled, your life, stamina, and mana will not change when your stats do.

Changing stats' base affects current

Changing your base life, stamina, or mana will adjust the current amount proportionately. If this option is disabled, your current life, stamina, and mana will not change when the base values do. Note that the game behavior is to fully replenish your current life, stamina, and mana when your level increases.

Changing skills affects skill choices

Normally you can only increase your skills if you have sufficient skill choices remaining, and every skill added will decrease your remaining skill choices. Contrariwise, if decreasing skill levels is enabled, decreasing your skills will give you additional skill choices so that you can redistribute them elsewhere. If this option is disabled, you will not need any skill points to change your skill levels.

Check level requirements for skills

Normally, higher skills are only available once your character has reached a certain level. If this option is disabled, you can gain these skills before your character has met the level requirement.

Check prerequisites for skills

Certain skills require that you have one or more other more basic skills before you can learn them, and the editor will make sure you have these prerequisites before allowing you to add the desired skill. If you disable this option, you can obtain skills without having any of the prerequisites. Disabling this check is not

recommended however as such a character would not be valid and may have unpredictable results.

Automatically add prerequisite skills

Normally enabled, with this option the Game Editor will automatically give you a point in all of the prerequisite skills you lack if you try to add a skill that depends on them. Without this option (if checking for prerequisites is turned on), you will not be able to add a skill unless you manually put a point in all prerequisites. This option implies checking prerequisites for skills.

Check requirements when equipping items

The Game Editor will make sure your character or mercenary meets the level, strength, and dexterity requirements when equipping an item. If this is disabled, you can put on an item that exceeds your level. However, you will not be able to use the item in the game, nor will any of its magic properties take effect.

Check character class when equipping items

When this option is enabled, the Game Editor does not allow your character to equip class-specific items belonging to a different class. For example, a barbarian will not be able to wear a druid pelt. In addition, the Game Editor will check any item that you give to your mercenary to make sure that the mercenary can use that type of item. Mercenaries have a much more restrictive group of items each class can use. It is highly recommended that you leave this option enabled.

Act must be entered before changing

Prevents you from making changes to an act that you have not entered. If this is disabled, you can change NPC introductions, waypoints, and quests in acts that you have not been to yet. Also, the Game Editor will not automatically enter acts for you.

Automatically enter acts

Automatically exit all previous acts when you make a change in a new act. Implies act must be entered before changing.

Check prerequisites for acts

When enabled, the Game Editor will make sure you complete the required quests before leaving an act. There are some quests which are optional, but others must be completed before you can move on—in particular, defeating the boss demons Andariel, Duriel, Mephisto, and Diablo. *Note: this feature is not perfect, and may get some prerequisites wrong.*

Exiting an act takes you to the next

When enabled, when you exit an act, it changes the character's location to the next act. Otherwise your character's location is not changed.

Activate the town waypoint in a new act

In the game, whenever you enter a town, the town waypoint is automatically activated for you whether you step on it or not. (That way your character can always come home.) Also, if undoing a game is enabled, disabling the exit from an act will disable the town waypoint in the next act. If this option is disabled, you can manually activate or deactivate the town waypoint.

Check prerequisites for quests

Make sure you complete required quests before starting a new quest. Certain quests cannot be completed or even started before others. For example, you cannot complete the Horadric Staff until you have completed the Tainted Sun quest. If this is disabled (the default), the Game Editor does not check your status of any other quest when changing a quest state. *Note: this feature is not perfect, as there are so many valid and invalid combinations of partially-completed quests. I highly recommend that you play the game to complete your quests, or at the very least, make sure your previous quests are completed before starting a new one.*

Adjust inventory o match quest states

When you change the state of a quest, this option makes sure you have the correct quest items. Conversely, when you add or remove quest items, it changes the state of the corresponding quest. Note that some quest states depend not only on the numerical state code, but also on the items you are carrying. If this option is enabled and you select a state that has multiple possibilities depending on what you are carrying, and your inventory does not match any of them, the Game Editor will alter your inventory to match the first possibility (for example, it will give you the Scroll of Inifuss rather than the Key to the Cairn Stones, if you do not already have either one).

Automatically complete quests

If checked, and the Game Editor finds that you have not completed a quest necessary to start another quest or go to the next act, it will automatically complete the required quests for you. Implies check prerequisites for acts and check prerequisites for quests. See the caveats under those options.

Allow values beyond game limits

This option lets you set data in the character file to practically any value that will fit in the data field (i.e., 0–255 for byte values, 0–65,536 for 16-bit integers, etc.). For example, you would be able to set your character level to 100 or greater, or set a skill level greater than 20. **Enabling this option is not recommended.**

7.3 Item Editor Options

These options affect changes you make to items in the Item Editor.

Potions may be changed

Lets you change one type of potion to another.

Gems and runes may be changed

Lets you change one type of gem to another, or one rune to another. This option does not apply to gems in socketed items, unless socketed gems may be added or removed.

Items may be (un)identified

Lets you identify items. If undoing game progression is enabled, you can also un-identify items, thus hiding their properties in the game.

Items may be personalized

Lets you engrave a name on an item in an Expansion Set game.

Newbie status may be changed

Lets you change a newbie item to a normal item, and vice-versa. Newbie items are ones which your character is given when (s)he is created. Such items have a sell value of 1 and a repair cost of 1.

Ethereal status may be changed

Lets you turn an ethereal item into a normal item, and vice-versa. Ethereal items cannot be repaired in the game, but come with enhanced attributes.

Stack quantity may be changed

Lets you replenish stacks.

Durability may be changed

Lets you repair armor and weapons.

Base durability may be changed

Lets you change the maximum (unenhanced) durability of armor and weapons.

Defense rating may be changed

Lets you change the defense of armor.

Socketed gems may be added or removed

If enabled, you may add gems to a socketed item. If gems may be changed, you may also switch gem positions and remove gems.

Number of sockets may be changed

Lets you change the number of sockets in an item.

Item fingerprint may be changed

Lets you change the random identification number of an item. There is normally no need to use this option, as the Item Editor already ensures that copies of an item each have new fingerprints. However, you may wish to use it if you have a saved item file that you want to import into more than one character.

Item level may be changed

Lets you change the level of an item. See [Chapter 6 \[Editing your items\], page 19](#)

Item quality may be changed

Lets you change a low quality item to a superior one, a rare item to a set item, etc.

Item picture may be changed

Lets you change the image displayed for certain items, such as rings and amulets.

Magic item names may be changed

Lets you change the prefix and suffix of magic items, and the name of rare items.

Unique items may be changed

Lets you change one unique or set item into another unique or set item of the same type.

Magic properties may be changed

Lets you change the values of the magic properties an item has.

Magic properties may be added or removed

Lets you add new magic properties to an item besides those given by its affixes, or remove its existing magic properties. Implies magic properties may be changed.

Allow expansion mods in standard game

Lets you add expansion set modifications to items belonging to a character in a standard game. This option is normally disabled.

Repair ethereal items

Lets you change the durability of ethereal items.

Base durability affects current

When this option is enabled, changing an item's base durability will alter its current durability proportionately.

Allow quantity above maximum

Lets you change the quantity of an item such that you have more than the stack will hold. (This is not recommended.)

Allow durability above maximum

Lets you change the durability of an item to be greater than its maximum durability.

Allow more durability and defense

Lets you set the base durability and defense of an item beyond the normal value given by the game. This is actually recommended, since ethereal and superior items often have a higher durability and/or defense rating than normal.

Changing quality affects magic properties

When changing an item's quality or magic affixes and this option is enabled, the Item Editor will regenerate the entire list of magic properties to match the new set of affixes and assign random values to each property within the allowed range. If this option is disabled, you can change the item's quality or magic affixes without affecting its list of magic properties.

Check the range of magic properties

When checked, magic properties may only be altered within the limits imposed by their corresponding magic affixes. (This is currently not implemented.)

Display item pop-ups

When enabled, if you click on an item in your character's inventory a simple item pop-up will appear. If disabled, clicking on an item will open the item directly in the Item Editor.

8 Future Directions

The Diablo II Game Editor is by no means complete. But it is useable for now. See the file ‘TODO’ for a detailed list of bugs to fix, functions that need implementing, and long-term goals. Some of the things that still need to be implemented are:

- The ‘Import Item...’ and ‘Export Item...’ items in the character’s ‘File’ menu.
- Save and load the complete set of items belonging to a characer.
- Dump the raw character data to a plain text file.
- (The big one:) Item Library.
- Static libraries of all set, unique, and quest items
- Context-sensitive help
- Online help dialog
- Raw data hex editor for unidentified sections of the saved game

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