

# Renegade Graphics DoomED Deluxe

Version 2.8

For help in using the Help utility, press F1 or select "Using Help" from the Help menu above.

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**DO NOT CALL id Software FOR SUPPORT ON THE EDITOR OR ON LEVELS YOU CREATE.**

## The .ini File

The rgdoomed.ini file allows you to set up many things as permanent defaults.

**Default dir for saving wads**

WadDir=d:\doom2

**To turn the vertice merge sound on or off**

ClickSound=True/False

**If you have a B&W printer try color once anyway, you might like the settings better, especially if you have a laser printer.**

Printer=Color/B&W

**Startup display zoom level**

MapZoom=50

**Forces the editor to ask you for location of your DOOM.WADs again.**

Installing=True/False

**Startup GridSize**

GridSize=64

**Startup SnapSize**

SnapSize=8

**Turn grid or point snap on automatically**

SnapOn=True/False

GridOn=True/False

**Color of gridlines (default is grey)**

**for Yellow gridlines:**

GridColor=&HFFFF&

**for Cyan gridlines:**

GridColor=&HFFFF00

**Automatically load this wad file when the editor is started**

AutoLoad=d:\doom2\whatever.wad

**(Remember that you can also double-click a WAD file in the file manager, or specify a WAD file on the editor command line)**

## Editor Overview and Keyboard Reference

When the Level Editor is first opened it will be in Object Editing mode and the map will be displayed at the 50% zoom level. The scroll bars can be used to move about the level when it is zoomed larger than the display window.

### Keyboard

The keyboard controls do not always follow a typical Windows program usage. For example the Delete key is never used for deleting. Although some of the key commands may seem odd to you at first, extensive testing of people learning to use the editor has shown it to be very efficient in a short period of time.

**T** Go to thing(object) mode and/or set to object move/inspect mode.  
**I** Go to thing mode and/or set to object insert/delete mode.  
**V** 'vertex' mode. Go to structure mode or switch to vertex tool.  
**P** Go to special/line(paint) mode.  
**L or S** Go to structure mode ready to insert sectors or switch to sector tool.  
**A** Go to AutoStruct tool  
**Shift+A** Get AutoStruct tool preferences  
**Space** Refresh map display  
**Ctrl+S** Quick save to QUIKSAVE.BSP in editor directory.  
**G** Toggle display of map grid.  
**Shift+G** Change size of grid snap.  
**Ctrl+Y** Toggle snap to grid

### THING/OBJECT MODE

**I** Set insert/delete object mode  
**T** Set move/inspect object mode  
**Ctrl+O** Toggle on-screen object labels

### SPECIAL/TEXTURE MODE

The floor/ceiling heights and brightness of the currently selected sector can be changed with keyboard controls for speed. All of these normally increment by 8, but holding Shift causes the increment to be 1, Alt causes it to be 32.

[ and ] Decrease/Increase sector brightness  
**Ins** and **Del** Raise/Lower Floor height  
**Home** and **End** Raise/Lower Ceiling height  
**PgUp** and **PgDn** Raise/Lower Floor AND Ceiling height, moving entire room up or down.

**Ctrl+1,2,3,4** Switch to the corresponding palette if they have been created and saved with the palette editors.

### STRUCTURE MODE

The same controls used to modify the current sector in special/texture mode can be used to modify the settings of the next sector to be drawn.

**D** Delete the currently selected sector.  
With a sector selected (highlighted green):  
[ and ] Decrease/Increase sector brightness  
**Ins** and **Del** Raise/Lower Floor height  
**Home** and **End** Raise/Lower Ceiling height

**PgUp** and **PgDn** Raise/Lower Floor AND Ceiling height, moving entire room up or down.  
With no sector selected:  
[ and ] Decrease/Increase brightness of *next* sector to be drawn  
**Ins** and **Del** Raise/Lower Floor height of *next* sector to be drawn  
**Home** and **End** Raise/Lower Ceiling height of *next* sector to be drawn  
**PgUp** and **PgDn** Raise/Lower Floor AND Ceiling height, moving entire room up or down for *next* sector to be drawn

### Map Navigation

**+** and **-** Zoom the map display in and out. Holding Shift or Alt causes amount of change to be larger.  
**Arrows** Pan map display 1/4 screen in selected direction.  
**C** Center map on next selected point  
**Shift+C** Center map and zoom on next selected point

You will be most efficient in editing by using the arrow keys to pan around the display and the + and - to zoom in and out. Be aware that by holding the Alt key while zooming in and out you increase the amount of change in zoom level, the Shift key also increases the amount of zoom by a lesser amount.

### Navigating Maps

To be proficient with the editor you must master map navigation. It is quite simple really, there are three control keys you must remember.

Control+C will cause the next point on the map that is selected to become the center of the map display. This is very handy for moving around the map in a natural fashion.

Control+F will freshen (redraw) the map display in case it has become messed up by a dialog box or movement of an object or line was not handled smoothly.

Control+X will call up the mini map tool. This is very handy for moving around the map by large increments, much handier in fact than the scroll bars. You should try to make a practice of using this. Note that you don't need to close it when you are finished using it, just select the map display again and leave the map tool handy for the next time you need it.

When in the Level Editor you have a choice of three editing modes: Object, Wall Texture & Sector Attributes, and Structure. (The Structure mode is not 100% complete in this release).

The three modes allow you to:

Add, delete, move and change monsters, weapons and other objects.

Change the height of the ceiling and floor, appearances, switches and special things like crushing ceilings.

Modify the walls of existing levels and create new levels.

Each of the three map modes has it's own tools that are only used for that one type of level editing.

The Tool Bar

Object Mode

Special/Texture Mode

Structure Mode

## The Toolbar and File Management

The toolbar is displayed at all times with the text menu.

The Tools are:

Exit	Exit the editor completely
Open Map	Load a level from a PWAD file
Open Folder	Load a different level
Red Disk	Save current level to a PWAD file
Printer	Print the current level to the WAD file (objects only!)
Percent	Shows current level of map zoom (10-200%)
Scroll Bar	Allows simple selection of new zoom level
MiniMap	Calls up Map Display Tool (zoom/pan)
Pink Grid	Turns on and off snap to grid for <b>objects</b>
Grid	Turns on and off grid lines
First Map	Object Edit Mode
Second Map	Special/Texture Mode
Third Map	Structure Edit Mode
Brush	Toggle Quick Paint Mode
Potion	Load BitMap Fiddler
?	Get Help

The size of the grid lines and grid snap can be changed by clicking on the appropriate button with the second mouse button.

## File Management

The editor always saves files with a .BSP extension. This is to indicate that the file needs to be processed with a BSP program before it can be used in Doom. The editor will load files with the .BSP or .WAD extension.

If you save a file to a .BSP and a file by the same name with a .WAD extension exists, the editor will automatically copy the .WAD file to a backup file with the extension .X1. If a file by the same name with the .X1 extension also already exists it will be renamed to .X2 and so on up to .X9. If you save a file and try to use it with Doom and discover it does not work you can go back to your .X1 or .X2 etc. file until you find a place to re-edit from.

If you load a .X? file to edit the editor will remember this and not create backups when you save it again, this prevents the backup files from shifting each time you edit a backup, which could potentially lead to ending up with only bad copies of the level.

Object Mode

Special/Texture Mode

Structure Mode

## The Object Editor

In Item editing mode the entire display can be used to view the map. The tools needed to alter or insert objects are activated with the second mouse button. Multiple objects can be selected by either drawing a box around a group, or by clicking on them while holding the shift key. Attributes and object types can be changed this way, and a group of objects can be deleted.

There are two operational modes when editing objects. These are **View**, **Insert/Delete**. They are activated by pressing **T** or **I**. When the editor is first run it will be in View mode. If you change to another *map* mode (Special/Texture or structural) and switch back to Object editing mode using the toolbar, the editor will be in the View mode.

To switch between inserting/deleting objects and inspecting/modifying objects use the T and I keys. You can press these keys from any editing mode.

### View Mode:

To **change** an object or see its graphic select it with the **second** mouse button. Press the **Pick** button. A menu of object categories will appear, choose the one you want. Next select the new item type from the list. The object will change instantly and the new object time will be reflected by the map key.

To **change** the **facing** of an object select it with the second mouse button and then click on the arrow. The arrow will face toward your mouse click (click toward the edges of the arrow, clicking on the center will have no effect since it cannot determine the direction you want from that). Only the facing of player and monster objects is important, other objects are not affected by facing. There are 8 possible facings.

To **move** an object, press and hold the **first** mouse button while over the object. Now drag the button to the new desired location and release the button.

### Insert/Delete Mode:

To **insert** an object press **I**. Set the attributes desired for the new object and then select the desired object type from the list. Then click on the map where you want to place it. As many objects as you like can be inserted at one time simply by clicking. You can change the type of object you are inserting just by changing the settings in the graphic box and the type from the list.

**IMPORTANT:** The attributes of the objects to be inserted are set by not only the type in the list, but also the check boxes and the direction arrow. If you insert objects with no level attributes checked they will not appear in the game! Also objects with the **DM** attribute (Death Match/Network Play) will not appear in single-player games.

To delete an object click on it with the second mouse button in insert/delete mode. If you insert and object and change your mind, just click on it with the second mouse button. If you are in another mode and need to delete an object, press **I** and then click on it with the second mouse button.

## OPTIONS

The option box has five different check boxes, any or all may be selected.

The first three determine what difficulty levels the object is present on. Note that the same monsters and objects are present on levels 1 and 2, just the amount of damage done is different in the game. **Levels 4** and 5 (Nightmare) are also the same, just the monster behavior is different. (Not to mention the random teleporting!).

The next checkbox is '**Deaf**'. This sets the **DEAF** attribute for monsters. If a monster has this attribute

set, it will not react to your presence and will not come running when it hears you shoot. It will only wake up and chase you if it sees you or sees your bullets impact on a wall in its field of view. Of course if you shoot at it..

The last checkbox is **'Net'**. This sets the **DeathMatch** attribute. If this is set the object will appear in DeathMatch and Network games only. This is very useful for scattering extra weapons and first aid around the level.

Important Note: Make sure you have at least FOUR DeathMatch start objects on the level. More is even better.

## Object Info

The majority of monsters are the same height, 56 units. The exceptions are the Hell Baron (64), Cyberdemon (110) and the Spider Demon (100).

The clearance between the floor and ceiling of a sector must be at least equal to the height of the monster or player to be able to pass through. The interface between sectors must also be adequately high for passage between them.

In order for a character to pass through a hallway or opening, it must be *wider* than the object. In the case of the player the minimum width is 33, only one greater than the width of the player. The player has to enter the opening carefully to get in, but can pass through.

The following chart details the minimum width of hallway and stair run for a monster to pass. The stair run assumes a rise of 24.

Type	Hall Width	Step Run
Former Humans	44	34
Imp	44	34
Demon/Spectre	64	51
Cacodemon	64	n/a
Lost Soul	64	n/a
Hell Baron	64	41

These are the minimum passage widths, for easy passage a larger opening is better. Of course if the monster is hot on your heels they will go through their minimum hall width easily.

## Damage

Creature	Pistol	Shotgun	Rocket	Plasma	BFG
Trooper	2	1	1	1	1
Sargeant	3	1	1	2	1
SS Trooper	5	1	1	3	1
Imp	6	1	1	3	1
CG Dude	7	1	1	4	1
Lost Soul	10	2	1	5	1
Player	10	2	2	5	1
Demon	14	2	1	7	1
Spectre	14	2	1	7	1
Revenant	30	5	2	15	1
Cacodemon	36	6	2	18	1
Pain Elemental	40	6	2	20	1
Arachnotron	50	8	3	25	1
Hell Knight	50	8	3	25	1
Mancubus	60	9	3	30	1
Archvile	70	10	4	35	1
Hell Baron	100	15	5	50	1
Spiderdemon	300	43	15	150	2
Cyberdemon	400	58	20	200	3



## Quick Tutorial

*Version 2.8 and up of the editor has a built-in tutorial feature. Choose TUTOR from the HELP menu (you should have a blank map) and pick the topic you would like to see. The tutor will build a small structure while explaining what it is doing.*

This level will be very basic and certainly nothing you would send home to Mom. It will contain the most essential elements of a level and let you actually walk around something you created quickly.

Im going to begin working at the default Zoom level, Snap-to size (8) and Grid size (32). The Zoom level is calculated relative to actual pixels on your screen. When the map is at 100% Zoom on pixel on your screen corresponds exactly to one pixel in the game. Because of this the same level of Zoom on a 640x480 screen will show approximately 1/4 as much of the map as at 1024x768. The same amount of detail is visible though and that is what is important. Calculating the Zoom in this fashion keeps the feel of the editor the same at any screen resolution.

I like to work with the visible grid at 32 and the snap grid at 8 or 16. I usually keep the grid on when I am designing the structure and turn it off at other times. I find the visible grid size of 32 convenient because it fits the size of typical structures well; a small door is 64 wide and a large door is 128 wide. When I am aligning things to align with the flat textures I set the grid to 64, as at that size one grid square is exactly aligned with the flats.

Dont worry if you dont create the shapes and sizes of the structures precisely as they are shown in the book. The process itself is the most important thing. Just be sure you connect the sectors properly.

Start the editor and choose the version of Doom you are going to create a level for. If you only have one version of Doom the editor will default to that one. You should be in Structure Mode. If you arent, change to it by pressing **V**.

Im going to design this level as I go, starting with the place the player will start out.

Since the editor has just been started, the center of the display is at coordinate 0,0 and the Zoom is 100%. Turn on the visible grid by clicking on the toolbar or pressing G. Locate the coordinate 0,0 by moving your mouse around and watching the coordinates on the helpbar at the bottom of the display.

Pick the Sector tool, it is simply a square on an icon. If you have difficulty locating it keep your eye on the helpbar at the bottom of the screen, it will say Insert New Sector or Void when you move over the right icon.

Drag out a new sector 128 wide and high centered on 0,0. Move the pointer to the upper left of 0,0 until you are at -64,64. Hold down the mouse button and drag the dashed square out until the display says the width and height are both 128.

When you release the mouse button a new sector is inserted.

Most of the original Doom levels start you out in a place where it looks like you actually came in through a door or a window. The typical start door uses the 64 wide texture DOOR3. The door should be inset into the wall so its height is independent of the height of the sector it faces. This isnt a real door at all, just a picture of one. There is nothing on the other side.

Draw a sector 64 wide and 16 high.

The door texture will be painted on the bottom line of the new sector. The height of the sector can be set to be exactly the height of the door texture so it looks good.

Next create a larger room to the east. Make it about six times larger than the first room.

I want to put a hallway and a door between these two rooms. We can let the editor do the hard part. The icon to the right of the new sector icon is the AutoStruct tool. This can be used to automate creation of more complex structures like doors and pools.

Click on the AutoStruct icon, and again with the second mouse button. This will display the AutoStruct Preferences. This is where you set up what type of door or pool to insert, and its orientation.

We need a door that goes east and west and is normal, no key. The door will be placed in the center of whatever size rectangle I draw out. If I wanted the door in the middle of the hall between the two rooms I would drag it out between them, but in this case I want the door to be closer to the large room.

Presto! An instant Door. I made it 64 wide from top to bottom. The AutoStruct tool will allow you to draw a door any width you like but if you intend to use a DOOR texture you should make it either 64 or 128 wide as those are the widths the DOOR textures come in.

Lets take a quick look at what has been done so far. A player one object has to be inserted before you can load the level into Doom. Switch to Insert/Delete Thing mode by pressing I. Now click in the middle of the small room. A player one start will be inserted by default.

Choose the disk icon from the toolbar or File/Save from the menu. A dialog box gives you a choice of what level to save this WAD as. The file will be saved as a .BSP file. You should then run the BSP from DOS and turn the level into a .WAD file.

You can also set the Run BSP checkbox when you save. In order for that to work properly you must have already copied the RUNBSP.BAT and BSP.EXE files into the directory where you will be saving.

From DOS the command is:  
**RUNBSP NEW.BSP NEW.WAD**

The new level is pretty boring so far. Everything is very bright and bland. You can see the indent into the wall where the false entrance will go but there is little to distinguish it from the rest of the room. Lets make a few minor improvements before we add any more structure to the level.

Load the WAD you just created into the editor. Switch to Special/Texture Mode by pressing P or using the toolbar.

Click on the bottom line of the false entrance, just above it. The Sector will highlight green, the Line will highlight red and boxes will appear displaying information about the Sector, Line and Side you have selected. If you click just below the same line you will notice that only the Line is highlighted and only the box with information about the line appears. The controls in this mode are contextual and will only appear when appropriate to what you have selected.

We planned to paint this wall with the DOOR3 texture. The walls beside it could use some sprucing up as well. Remember that they are 16 wide. (You can see the width of a line when you click on it, a number is displayed in the Side information box).

Before we can paint the walls we need to add those textures to our palette assuming they arent already in it. There are two palette choosers, and two icons used for viewing the choosers. The icons display small wall and floor grids in red or green. The icon on the Side information box has a red wall and green floor signifying that it is for walls. The icon on the Sector information box is opposite.

Click on the icon for the Walls Palette. The Palette dialog will appear and indicate what version of Doom

you are currently editing.

We need to add the DOOR3 texture. Click on the list that displays All Textures and scroll down to the doors. Locate DOOR3 and click on it. The texture is shown along with the size, it is 64x72. If we want the door to look good we should make the wall it is on 72 high. Click on the Add to Palette button and the texture name is added to the list on the right.

We also need a texture for beside the door. A good one would be LITE5 because it is 16 wide. Find it and add it to the palette.

Pick DONE and return to the editor. Make sure you have the wall that will have the door on it selected, then locate the DOOR3 texture in the walls texture drop-down list.

Click on the USE button beside the box that displays the center texture. It will change from its previous texture (ICKWALL1 in this example) to DOOR3.

Follow the same procedure to change the sides of the false door sector to LITE5.

*NOTE: If you ever find it difficult to select a wall because it is too small, hold the shift key while clicking. This will make it possible to select very small walls, but you must be more accurate.*

Now change the height of that sector to match the DOOR3 texture. The floor and ceiling heights of the current sector are in the blue boxes in the Sector information box. The ceiling is currently set to 128, change it to 76.

The sector brightness levels are all at 255 right now which makes things look sterile and washed-out. Change them to more reasonable levels. You can quickly change the brightness level of the currently selected sector with the [ and ] keys. This will change the sector brightness by eight. Holding down the Shift key at the same time will cause the brightness to change by one, and holding the Alt key causes the brightness to be changed by 32 as you use the brackets.

Im going to set the brightness of the small room to 167, the false door to 183 and everything else to 159. It is rather tedious to set the sector brightness for even this few sectors by hand. You should learn from this that it is wise to set the brightness as you create new sectors, not after. Later you will learn how to use the Quick Paint tool to change the brightness or other attribute of many sectors quickly.

With these few cosmetic changes made its time to save the level and take another look.

So far you have created a couple rooms, added an alcove to a room and inserted a door.

Sectors can contain areas that are not part of any sector, a void. These are used to create columns and other solid wall areas. Voids are drawn in the editor by using the second mouse button with the Sector tool. Notice that the lines drawn are thick to signify that they only have one side.

Only walls with nothing behind them are truly solid for the purposes of monster line-of-sight and firing. You need to learn to make creative use of voids.

Make sure the Snap to Grid is set to 8 points by right clicking on the Snap icon with the mouse. Now deform the shape of the columns by making them into hexagons or octagons.

Choose the Vertex tool and break some of the lines, then move the vertices to get the shape you want.

Switch the AutoStruct radio button to Pool. Choose the AutoStruct tool then right-click for preferences and choose a Lava pool that does 10% damage per second. Draw it in to the left of the columns.

Choose the vertex tool, break up the sides and make the shape more interesting. Be careful not to let any

lines cross each other.

You should practice doing things like deleting sectors and moving vertices, merging vertices and lines and so on. Note that when you delete a sector any extra vertices will be left sitting there until you hit the button to clean them up. This is because determining which vertices are not in use can be very time consuming on large levels and also at times the vertices may help you to see where you are working.

Thats all folks. Have fun.

## PWAD Files

The data file used by Doom is called a WAD file. The main data file is some 10mb. Thanks to the foresight of id Software, and this editor, you can use secondary data files called PWAD files.

A PWAD file has a .WAD extension, but contains only one level. When you start Doom you must specify on the command line what file(s) you want to load. Any levels contained in the PWAD files you specify will be overlaid on top of the levels in the main data file.

For example, to use a PWAD file called MYLEVEL.WAD enter:

```
DOOM -FILE MYLEVEL.WAD
```

That is all there is to it.

Multiple PWAD files may be used:

```
DOOM -FILE E1M1.WAD E1M2.WAD E1M3.WAD...
```

PWAD files are created by saving your edited level with the PWAD save icon on the toolbar.

The PWAD file contains an Episode and Level number that it replaces. When you save a PWAD file you are given the choice of what level to save it as. If you plan to load multiple PWAD files it is important that they have different internal level numbers (set the level number with the scroll bars on the Level Info box when you load or save a PWAD file).

## Printing Level Maps

When you choose the PRINT button a dialog box will show you a preview of the printed page. Check boxes allow you to select which items you want to appear on the printed map. Items are indicated on the printed map as such:

### Monsters

Small circle with a small letter:

T	Trooper
F	Former Human Sergeant
C	Cacodemon
I	Imp
D	Demon
S	Specter
L	Lost Soul
H	Hell Baron
!	Spider Demon/Cyber Lord

### Key Cards/Skulls

Large **Solid** Circle with Large Letter

R	Red Card/Skull
B	Blue Card/Skull
Y	Yellow Card/Skull

### Rad Suits/Goggles/Maps

Large **Hollow** Circle with Large Letter

R	Rad Suit
L	Light Amplification Goggles
C	Computer Map

### Weapons/Ammo Boxes/Armor

Large Shaded Circle

### Ammo

Small Shaded Circle

### Start Locations

Small Hollow Circle

### First Aid/Spheres etc.

Large Shaded Box

### Potions/Helmets

Small Shaded Box

### Bodies and Junk

Very small shaded circle

The Level number, name and author may be optionally printed at the top. The radio buttons may be used to print all or none of the objects, with normal allowing the individual checkboxes to be used.

## **The Bitmap Fiddler**

This screen will allow you to view any of the graphics contained in DOOM and currently has no direct bearing on level editing.

### **Extract**

This will extract the currently viewed picture to a BMP file.

### **Copy**

This will copy the currently viewed picture to the windows clipboard.

## Special/Texture Mode

This mode allows you to alter the attributes of Lines and Sectors. This is the heart of Doom level editing and creation. Things that can be modified and created in this mode include:

- Lighting (including blinking, etc.)
- Damage effects like acid pools
- Texture of floor and ceiling
- Appearance of walls
- Special effects like crushing ceilings, stairs that come out of the floor, teleporters etc.
- Switches for exiting the level

The controls for this mode are simple, but the results are complex. After you switch to this mode you will see only the map lines. Each of these lines has a white control point located in its center, this is used to select it. When you select a line it is highlighted in red, and the Sector that it is part of is highlighted in yellow.

Some line segments border two Sectors. To select the second Sector bordered by that segment click the second mouse button.

The floor and ceiling textures, heights, lighting level and special effects like blinking lights and damage are controlled by Sector attributes. All other special effects, such as switches, teleporters, crushing ceilings and so on are controlled by line attributes.

## Palettes

Textures for the flat surfaces and wall segments are selected from a palette of textures. Palettes can be loaded and saved, allowing you to have different ones for different occasions. It greatly simplifies the selection of textures because you can plan ahead as to which textures you want to use in a level or area of a level and then only have to select from a list of those textures instead of wading through the hundreds available.

Both the flat and wall textures are stored together in one palette. There are separate editors for adding and removing textures. Select the palette shaped picture to get a dialog box that will let you pick which editor you want to use.

Flat textures are added to the palette by grabbing them with the mouse and dragging them into the list. Wall textures are added by double-clicking. Note that in order to view the wall textures, you must first have extracted all the Wall Patch textures. If you have not done this, an empty box will be displayed.

A palette named 'default.p?' will be loaded automatically when the editor is run. The ? is the version of Doom being edited. You can alter this palette to your liking.

## Sector Definition

To select a Sector click anywhere in that Sector. Some lines are between two Sectors. Use the second mouse button to select the Sector that is on the 'back' side of the line, or click on the other side of the line.

Once you have selected a Sector, a great deal of information will be displayed in the tool window. Values in the yellow boxes are altered by editing directly. Click on the value that is present and then type the new value.

The maximum difference in floor height that can be crossed by the player is 30, if the difference in floor heights between two Sectors is greater than this the player will not be able to get up to the higher Sector, though you may fall any distance.



The minimum difference between floor and ceiling height for a player to be able to pass is 65. The total height of the Sector will be displayed between the Ceiling and Floor heights.

The brightness of the Sector is a number between 0 and 255. 0 is complete darkness and 255 is the brightest possible. Light effects like flickering are achieved with Sector specials.

To assign a new texture, first select it from the top list, then drag the texture name onto the box that represents the floor or ceiling texture.

## Line Definition

The checkboxes and Special and Tag values correspond to the line, the textures apply to a single side of the line. The 'front' side of the line faces the sector that is highlighted when selecting the line with the first mouse button, the 'back' side faces the other sector. Most line segments are on a wall that has nothing behind it, i.e. no sector is defined there. These line segments only have one side.

To alter a line attribute simply click the checkbox. The special and Tag values can be changed by clicking on the contents of the box and typing a new value. Pressing the 'list' button will bring up a help file which contains a listing of all the known special values.

Use the 'Block Monster' attribute to keep monsters from behaving stupidly, like walking off the edge of staircases etc. The 'Block Player' attribute is used to make walls solid. By changing this attribute you can change existing levels to have very different paths through them. Watch out for areas where no Sector is defined, such as the inside of a column. If you allow a player to get into there the display will be screwed up.

## Side Definition

For each side of a line segment there are five things defined:

### X offset, Y offset

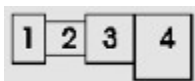
These are an offset for the mapping of the texture onto the surface. These are used to center or otherwise shift bitmaps around on the wall surface.

**Top** Texture mapped onto an 'overhang' if any  
**Wall** Texture mapped onto the main part of the wall  
**Step** Texture mapped onto the front of 'step' if any

## Assigning Wall Textures



Consider the situation illustrated above. This is a side view of an area with five lines crossing it, breaking it into four Sectors:



Walls A and E each border only a single Sector, so they would only have one 'side' defined. Each of the other lines has borders two Sectors and so has a front and back.

The Red arrows indicate portions of the wall texture that would be in the 'top' part of the texture description for the line side. The Green arrows indicate the 'wall' portions and the Blue arrows indicate the 'step'.

A texture of 'nothing' is indicated by a - in the texture name box. This is used where no texture would need to be displayed, such as above and below the wall sections, or where you want the wall to be transparent, like a window or corridor.

Consider the side of Line B that faces Sector 1. From this side all you see at the point of the line is the ceiling and floor. There is no change in ceiling height between the Sectors and the floor gets lower from one so an observer on that side would not be able to see the 'step'. So the texture defined for B1 would be: -, -, -.

If you were standing in Sector 2 looking at Line B, you would see the step. From this side the texture for the step would need to be defined. The texture defined for B2 could be: -, -, STEP6.

**But its so easy!** The editor will only show you the spaces where a texture is needed. If you are editing a simple wall, only the box containing the Wall texture will be show. If that line is a step, the step portion will be shown.

Note that the line and sector designations used in the example are only to explain which line is being referred to and have nothing to do with the editing.

## Structure Mode

Doom levels are composed entirely of Sectors. A room is a Sector, a teleporter pad is a Sector, a door is a Sector. Every place that you can see is within a Sector. Sectors are defined by the lines that border them.

Doom level creation is accomplished by building up a structure of Sectors which will be made into the level. Everything needed can be accomplished using the tools provided in the Structure editing mode. These three tools are the Vertex tool, the Sector tool and the Automatic Structure tool. The AutoStruct tool is really just a more powerful version of the Sector tool.

### Vertex Tool

The Vertex tool has two functions: inserting new vertices on existing lines, and moving vertices. To move a vertex simply click on it and drag it to its new location. If you drop a vertex on top of another vertex it will be merged.

Inserting a new vertex is really breaking a line in half. This is done by clicking on a line **anywhere** with the second mouse button. The inserted vertex will be aligned to the grid snap if it is turned on, and may not be directly on the line if it is at a diagonal.

If by moving vertices you cause two lines to take up the exact same space, they will be merged and the sectors on either side will become adjacent to each other. If you move the vertices on either end of the same line to meet each other, the line between them is deleted.

### Sector Tool

There are two kinds of Sectors, those that stand alone and those that are inside other Sectors. A stand alone Sector has nothing outside it, though it may have other Sectors attached to it. A Sector within a Sector is surrounded on most or all sides by the inside of another Sector.

To insert a Sector simply draw it out. The Sector will be created. The new Sector can then have its lines broken and moved with the vertex tool if desired.

Sectors can also contain voids, empty spaces surrounded by walls but containing no Sector. These are created in the same manner as Sectors within Sectors. Follow the same procedure but use the second mouse button to draw the void. You can also create voids by deleting a sector that is inside another.

While it is perfectly acceptable to join Sectors by drawing them next to each other and then moving the vertices together so they meet, it is not the best or fastest way. The fast way to do it is to just draw the new sector starting at the side of an existing sector. The new sector will be automatically attached to the first one. Note that this assumes the new sector line adjoining the existing sector is shorter. If you draw a longer sector they will not attach automatically.

To **cancel** the drawing of a new Sector or void, return the mouse pointer close to the start point of the box so that it is zero in one dimension (it appears as a line). When you release the mouse button nothing will be added.

### AutoStruct Tool

The AutoStruct tool will create the desired structure Sectors automatically. The available structures are pools, doors and stairs.

The location of an AS is drawn in the same manner as a Sector. Vertices are inserted where Sectors will be adjacent to each other, a box is drawn that will contain the Sector, and it is inserted.

The AS's can be inserted as stand alone Sectors or within a Sector. Select the container Sector with the shift key just as you would for a Sector within a Sector.

**AS Attributes** are set by selecting the AS tool button with the second mouse button.

**Pools** are inserted at a depth of 16 below the current Sector's floor. Pools **must** be inserted as a Sector within a Sector.

**Doors** should be drawn with a width of 64 or 128. Other widths will be accepted by the results will look strange. The 'frame' Sectors on either side of the door can be any length, and in many cases will in fact be hallways. The frame Sectors are useful in placing a door in a room with a high ceiling, as the Sectors on either side of the door should generally be between 72 and 128 in height.

Level Design Guide:

## **Monsters**

There is more to Doom than carnage. Though it's certainly important. What is exciting about Doom is not just the mayhem, but the feel of being there, the adrenaline rush when you get surprised.

In designing a level, monster placement can be very important. Monsters can serve several purposes:

- Nuisance
- Clue
- Hazard
- Obstacle

Nuisance monsters are the ones that don't have to be killed, are not a surprise, and don't serve any other purpose but to bother the player. Try to avoid creating nuisance monsters.

Clue monsters are monsters that cause a player to realize something; "If there are monsters in there, there must be some way to get there."

Hazard monsters are the ones that make it tough to make it through the day. Remember when you pushed the switch you thought would raise the walkway to the exit and instead a Cacodaemon came out? That's a Hazard.

Obstacle monsters are pretty obvious. They are monsters that you have to kill to get to the next part of the level.

Try to surprise people with your placement of monsters. Let them feel that adrenaline rush when they are casually walking through an area they think they have 'cleared' and a demon gets in their face!

The DEAF attribute plays a big factor in getting monsters to surprise players. When this attribute is set the monster will sit still until they can see the player or their bullets. This is handy for putting monsters around the corners where they will sit through the chaos happening just on the other side. If you do not set this attribute the monster will come investigate the noise.

## **Tricks**

Take a good long look at the Specials lists in the editor. There are literally a hundred different effects available. There is a huge amount of potential in these, and by combining them you can make some truly devious traps and levels. Be aware that two specials cannot be triggered too closely together or one will be ignored. Keep lines that trigger two specials far enough apart for them both to take effect.

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Although the Doom Editor is only one of many things we do, we try to give it our best. If you have any comments about the product please send them to:

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Sweetwater TN 37874

Attn: Product Support

If you are reporting a problem, be sure to tell us:

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What version and country setting of Windows you are running

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If you are having problems with a specific WAD send it to the BBS. Do NOT send it through e-mail.

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