The Snowman of Doom

A Beginner's Guide to 3D Modeling

for Neverwinter Nights

by TheBarbarian

Part 1.4 - Adding a Placeable Appearance to NWN

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- Intro Page / Resuming

Hello! If you've been following along with the rest of the tutorial up until now, I can proudly tell you that we've now reached a magical part of the journey - the one where we actually get our evil snowman into the game, in placeable form. :-D

If you haven't, then hello! You're here to learn how to add a custom placeable appearance to NWN, aren't you? OK! I can tell you how to do that, too.

For starters, some information. At this point of the tutorial, we need to have:

- A .MDL file set up to export as a placeable.
- (Optionally) A .PWK file matching that .MDL file (this is the walkmesh)
- A diffuse texture
- (Optionally) A normalmap
- (Optionally) A specular map.

Note: Version 1.69 and earlier of the game do not support fancymaps, and can only make use of models set up to only use a single texture per object. Normal- and specular maps are strictly Neverwinter Nights: Enhanced Edition stuff. The EE, however, does not *require* fancymapping on the models, and can handle non-fancymapped ones just fine.

We're also going to be using the **NWN Explorer** utility to extract game resources, and the **nwhak** utility to put together a custom hak file, which will contain our custom assets as well as an edited **placeables.2da** file, which is basically just a list of all the available placeable appearances, to which we will be adding our custom placeable .MDL.

NWN Explorer: https://neverwintervault.org/comment/44806#comment-44806
Note that you may need a different version of the Explorer depending on your game version.

The nwhak utility ships with the game itself, and can usually be found somewhere around the installation folder. Covering as many different game versions as I am able:

GAME VERSION	**FOLDER**
Beamdog Client	/BeamdogLibrary/00785/util/win32
1.69 and earlier	/Neverwinter Nights/NWN/utils
Steam	/Steam/steamapps/common/Neverwinter Nights/util/win32

Where these folders are depends on where you've installed the game.

TheAmethystDragon also uploaded nwhak.exe to the Vault at one point, in response to "Where on earth is nwhak exe?!"-searching confusion. :-)
https://neverwintervault.org/project/nwn1/other/tool/nwhakexe

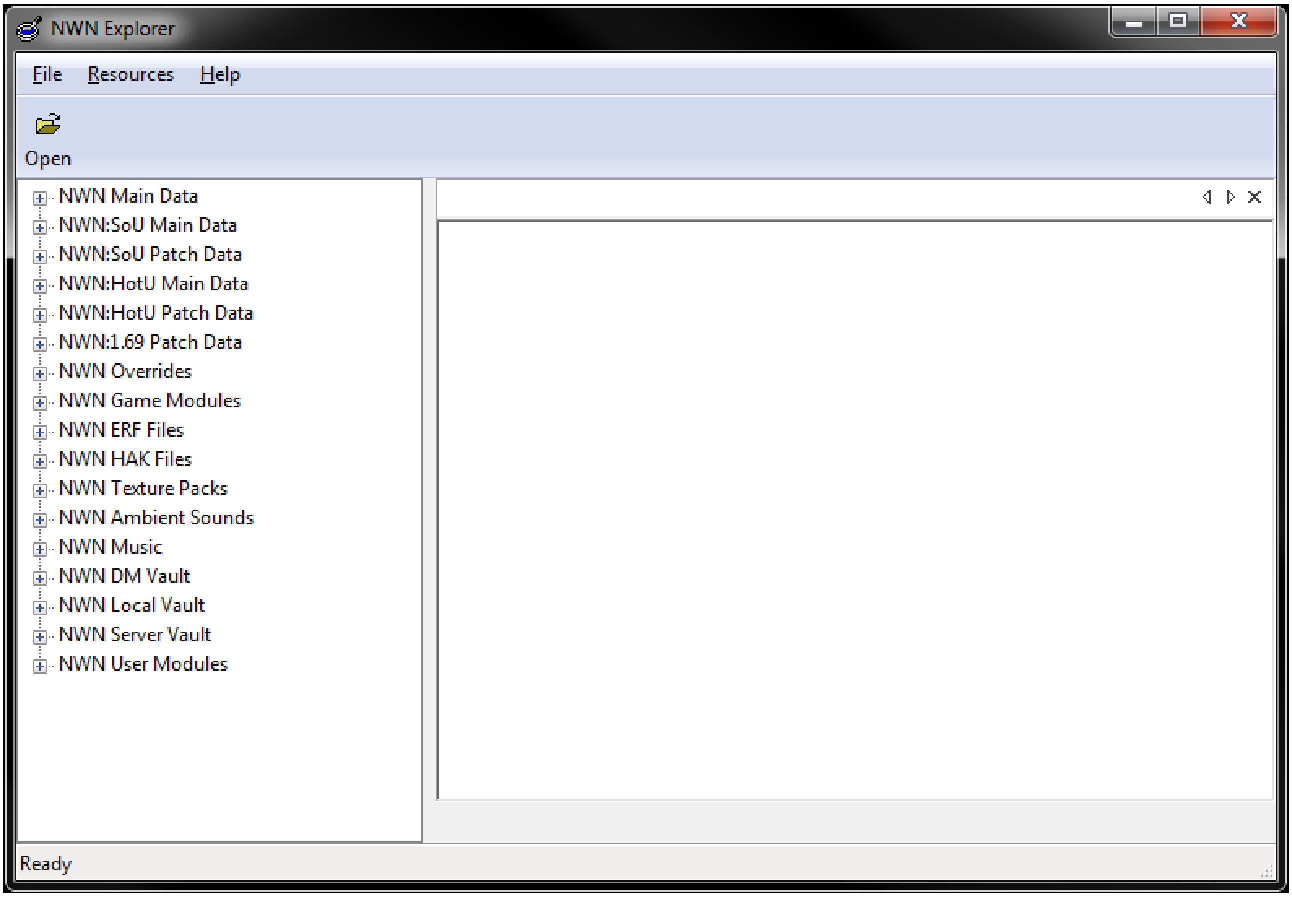
- Acquire an Up-To-Date placeables.2da

First things first. We want to add an entry to placeables.2da, so we need placeables.2da. This is mildly problematic, because there are many different versions of this file, each of which adds new entries that the older ones do not have.

At the time this tutorial is being written, the most up-to-date placeables.2da is the HotU-level one, so I'm going to show you how to get that one, but keep in mind:

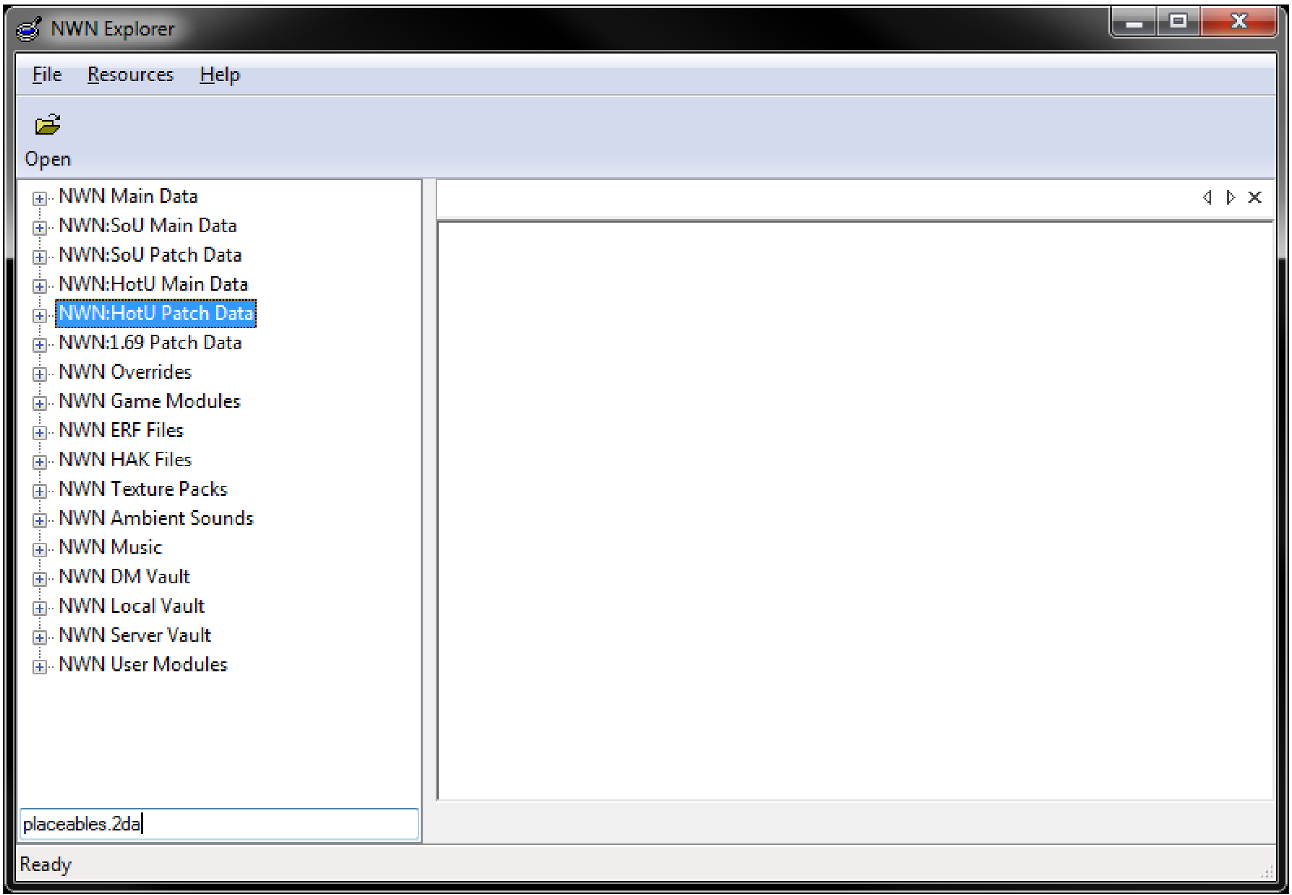
If later updates should add updated 2das, you'll want to get those instead, or the content added by that update will not be available in your module.

Start up NWN Explorer.

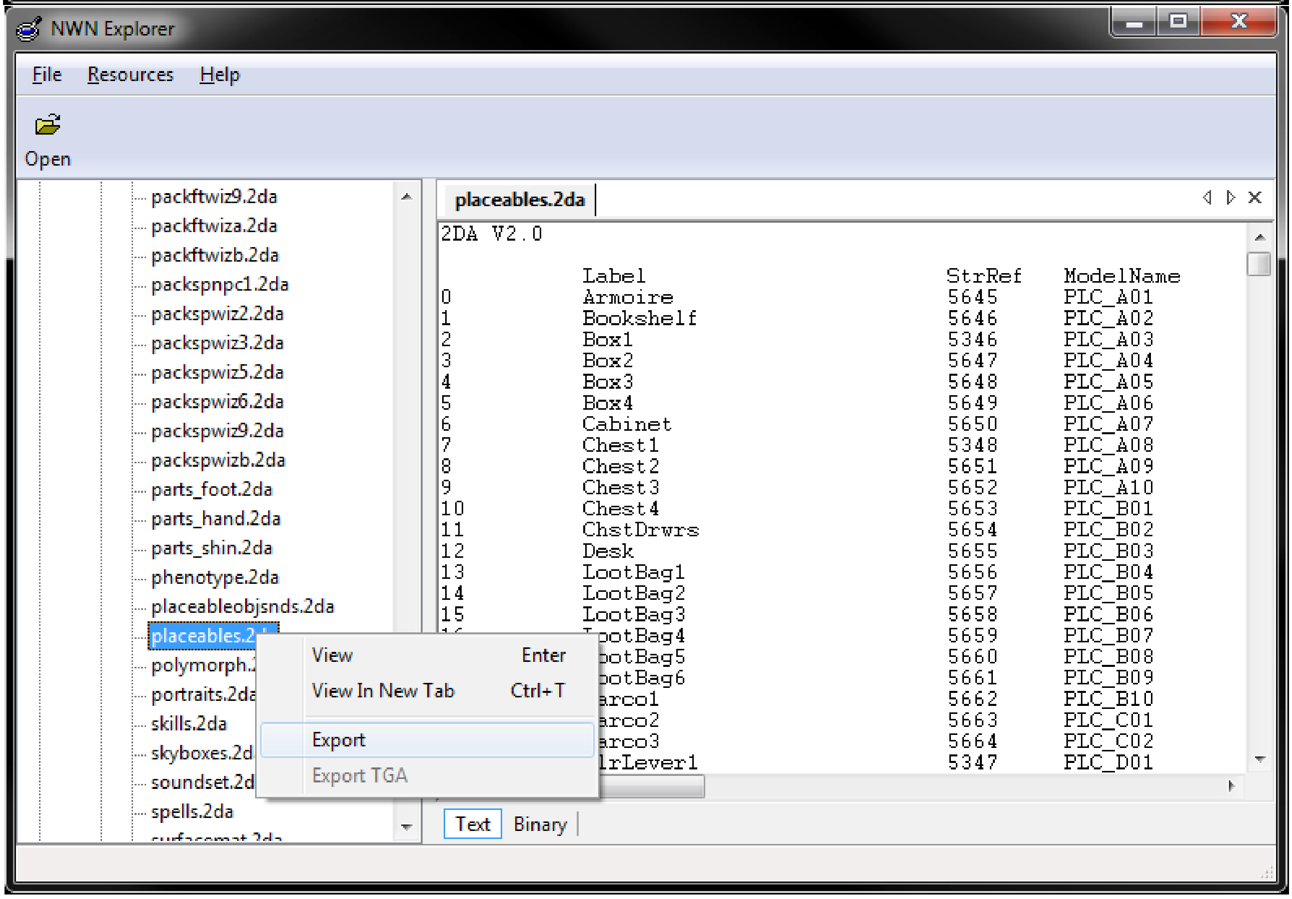


Left-click NWN:HotU Patch Data, then turn the page for FURTHER INSTRUCTIONS.

Hit CTRL+S to open the search text input field, and enter "placeables.2da" into it. Hit Enter.



placeables.2da

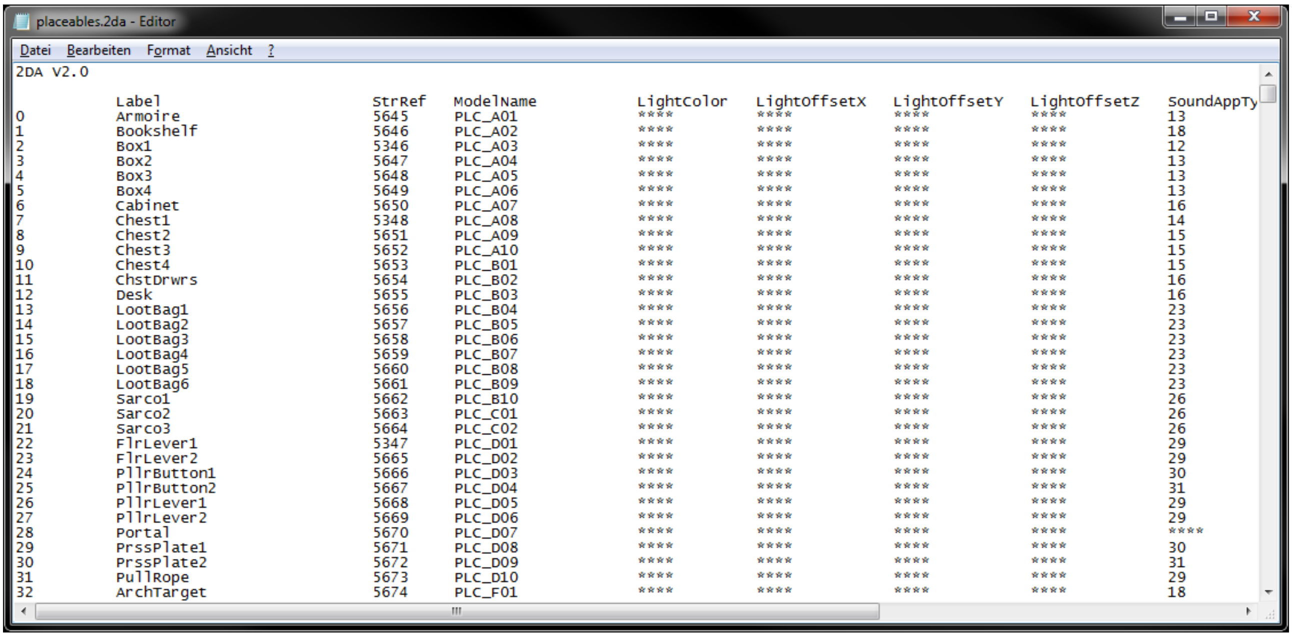


```
2DA V2.0

           Label          StrRef   ModelName
0          Armoire        5645     PLC_A01
1          Bookshelf      5646     PLC_A02
2          Box1           5346     PLC_A03
3          Box2           5647     PLC_A04
4          Box3           5648     PLC_A05
5          Box4           5649     PLC_A06
6          Cabinet        5650     PLC_A07
7          Chest1         5348     PLC_A08
8          Chest2         5651     PLC_A09
9          Chest3         5652     PLC_A10
10         Chest4         5653     PLC_B01
11         ChstDrwrs      5654     PLC_B02
12         Desk           5655     PLC_B03
13         LootBag1       5656     PLC_B04
14         LootBag2       5657     PLC_B05
15         LootBag3       5658     PLC_B06
           LootBag4       5659     PLC_B07
            ootBag5       5660     PLC_B08
            ootBag6       5661     PLC_B09
            arco1         5662     PLC_B10
            arco2         5663     PLC_C01
            arco3         5664     PLC_C02
            lrLever1      5347     PLC_D01
```

Right-click on placeables.2da, select Export, and save the file - preferably in your snowman project folder. Hooray! We now possess placeables.2da.

- Add an entry to placeables.2da

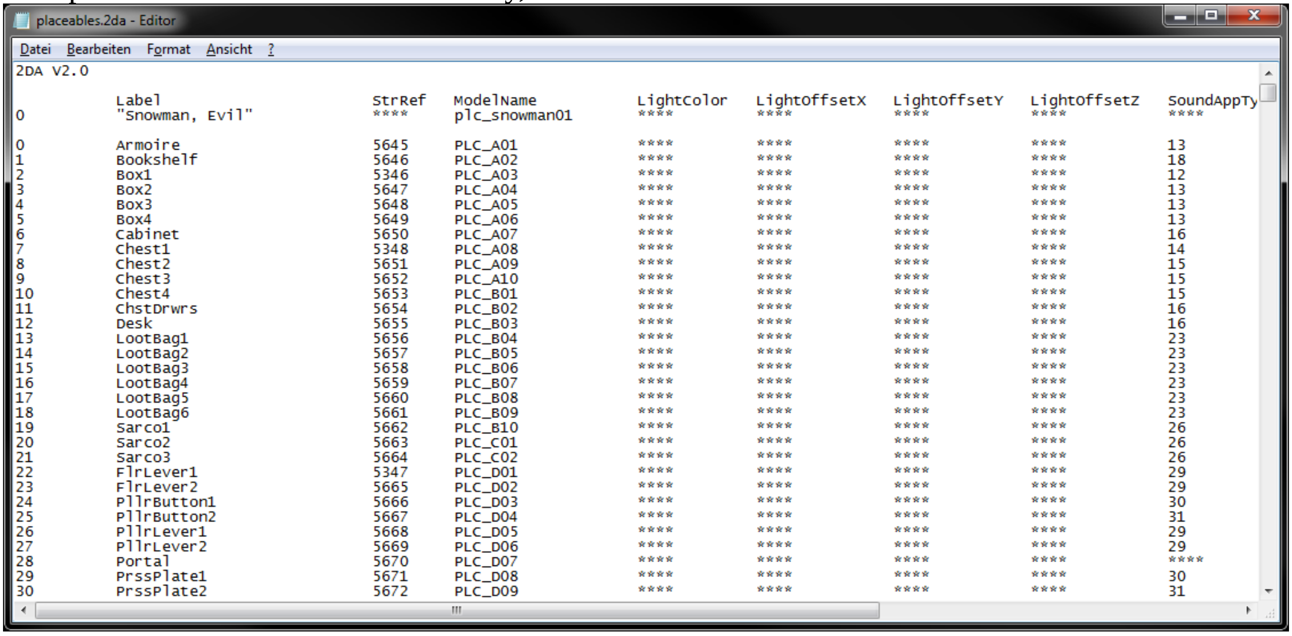
Grab a text editor of your choice, and use it to open placeables.2da. Pretty much any text editor should work for this.



```
2DA V2.0

            Label                     StrRef  ModelName          LightColor  LightoffsetX  LightoffsetY  LightoffsetZ  SoundAppTy
0           Armoire                   5645    PLC_A01            ****        ****          ****          ****          13
1           Bookshelf                 5646    PLC_A02            ****        ****          ****          ****          18
2           Box1                      5346    PLC_A03            ****        ****          ****          ****          12
3           Box2                      5647    PLC_A04            ****        ****          ****          ****          13
4           Box3                      5648    PLC_A05            ****        ****          ****          ****          13
5           Box4                      5649    PLC_A06            ****        ****          ****          ****          13
6           Cabinet                   5650    PLC_A07            ****        ****          ****          ****          16
7           Chest1                    5348    PLC_A08            ****        ****          ****          ****          14
8           Chest2                    5651    PLC_A09            ****        ****          ****          ****          15
9           Chest3                    5652    PLC_A10            ****        ****          ****          ****          15
10          Chest4                    5653    PLC_B01            ****        ****          ****          ****          15
11          ChstDrwrs                 5654    PLC_B02            ****        ****          ****          ****          16
12          Desk                      5655    PLC_B03            ****        ****          ****          ****          16
13          LootBag1                  5656    PLC_B04            ****        ****          ****          ****          23
14          LootBag2                  5657    PLC_B05            ****        ****          ****          ****          23
15          LootBag3                  5658    PLC_B06            ****        ****          ****          ****          23
16          LootBag4                  5659    PLC_B07            ****        ****          ****          ****          23
17          LootBag5                  5660    PLC_B08            ****        ****          ****          ****          23
18          LootBag6                  5661    PLC_B09            ****        ****          ****          ****          23
19          Sarco1                    5662    PLC_B10            ****        ****          ****          ****          26
20          Sarco2                    5663    PLC_C01            ****        ****          ****          ****          26
21          Sarco3                    5664    PLC_C02            ****        ****          ****          ****          26
22          FlrLever1                 5347    PLC_D01            ****        ****          ****          ****          29
23          FlrLever2                 5665    PLC_D02            ****        ****          ****          ****          29
24          PllrButton1               5666    PLC_D03            ****        ****          ****          ****          30
25          PllrButton2               5667    PLC_D04            ****        ****          ****          ****          31
26          PllrLever1                5668    PLC_D05            ****        ****          ****          ****          29
27          PllrLever2                5669    PLC_D06            ****        ****          ****          ****          29
28          Portal                    5670    PLC_D07            ****        ****          ****          ****          ****
29          PrssPlate1                5671    PLC_D08            ****        ****          ****          ****          30
30          PrssPlate2                5672    PLC_D09            ****        ****          ****          ****          31
31          PullRope                  5673    PLC_D10            ****        ****          ****          ****          29
32          ArchTarget                5674    PLC_F01            ****        ****          ****          ****          18
```

So, what you're looking here is basically a great big ledger. Each row is a separate entry. The blueprints in the toolset link to 2da rows by number; to say, a placeable blueprint say that it uses the model on row number 1. If the information on row 1 in the 2da changes, all models that reference row 1 will change along with it.

Set up a new line for the snowman entry, like this:

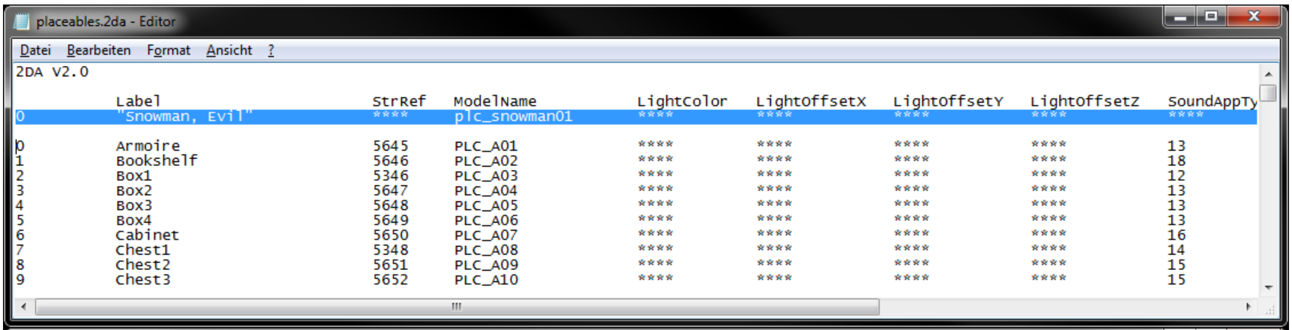


```
2DA V2.0

            Label                     StrRef  ModelName          LightColor  LightoffsetX  LightoffsetY  LightoffsetZ  SoundAppTy
0           "Snowman, Evil"           ****    plc_snowman01      ****        ****          ****          ****          ****

0           Armoire                   5645    PLC_A01            ****        ****          ****          ****          13
1           Bookshelf                 5646    PLC_A02            ****        ****          ****          ****          18
2           Box1                      5346    PLC_A03            ****        ****          ****          ****          12
3           Box2                      5647    PLC_A04            ****        ****          ****          ****          13
4           Box3                      5648    PLC_A05            ****        ****          ****          ****          13
5           Box4                      5649    PLC_A06            ****        ****          ****          ****          13
6           Cabinet                   5650    PLC_A07            ****        ****          ****          ****          16
7           Chest1                    5348    PLC_A08            ****        ****          ****          ****          14
8           Chest2                    5651    PLC_A09            ****        ****          ****          ****          15
9           Chest3                    5652    PLC_A10            ****        ****          ****          ****          15
10          Chest4                    5653    PLC_B01            ****        ****          ****          ****          15
11          ChstDrwrs                 5654    PLC_B02            ****        ****          ****          ****          16
12          Desk                      5655    PLC_B03            ****        ****          ****          ****          16
13          LootBag1                  5656    PLC_B04            ****        ****          ****          ****          23
14          LootBag2                  5657    PLC_B05            ****        ****          ****          ****          23
15          LootBag3                  5658    PLC_B06            ****        ****          ****          ****          23
16          LootBag4                  5659    PLC_B07            ****        ****          ****          ****          23
17          LootBag5                  5660    PLC_B08            ****        ****          ****          ****          23
18          LootBag6                  5661    PLC_B09            ****        ****          ****          ****          23
19          Sarco1                    5662    PLC_B10            ****        ****          ****          ****          26
20          Sarco2                    5663    PLC_C01            ****        ****          ****          ****          26
21          Sarco3                    5664    PLC_C02            ****        ****          ****          ****          26
22          FlrLever1                 5347    PLC_D01            ****        ****          ****          ****          29
23          FlrLever2                 5665    PLC_D02            ****        ****          ****          ****          29
24          PllrButton1               5666    PLC_D03            ****        ****          ****          ****          30
25          PllrButton2               5667    PLC_D04            ****        ****          ****          ****          31
26          PllrLever1                5668    PLC_D05            ****        ****          ****          ****          29
27          PllrLever2                5669    PLC_D06            ****        ****          ****          ****          29
28          Portal                    5670    PLC_D07            ****        ****          ****          ****          ****
29          PrssPlate1                5671    PLC_D08            ****        ****          ****          ****          30
30          PrssPlate2                5672    PLC_D09            ****        ****          ****          ****          31
```

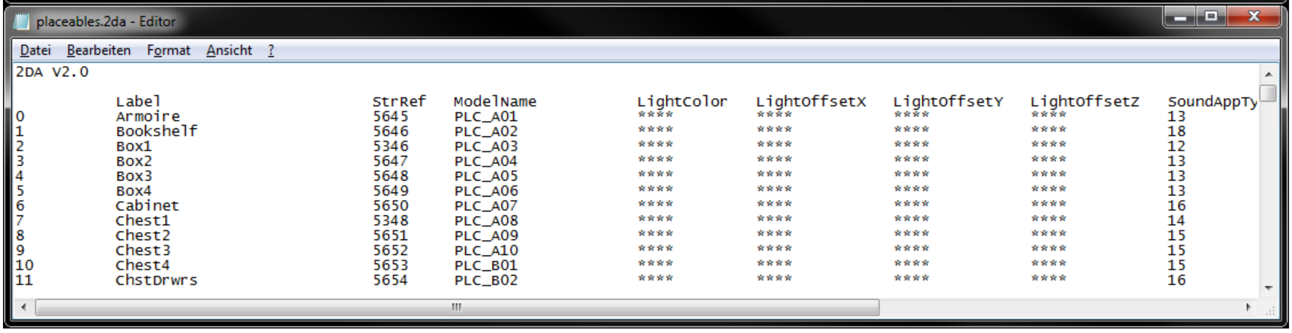
Label is the name under which the model appearance will appear in the toolset. StrRef is a reference number to an entry in the talktable, which is used for language localization. ModelName is the name of the .MDL file associated with this entry. **** means that a field is blank. For our purposes right here, we just need the Label and the ModelName fields.

Note: DO NOT USE TABS HERE. Separate the columns using spaces, not tabs!

When you're done setting up the new row, cut it out of there:

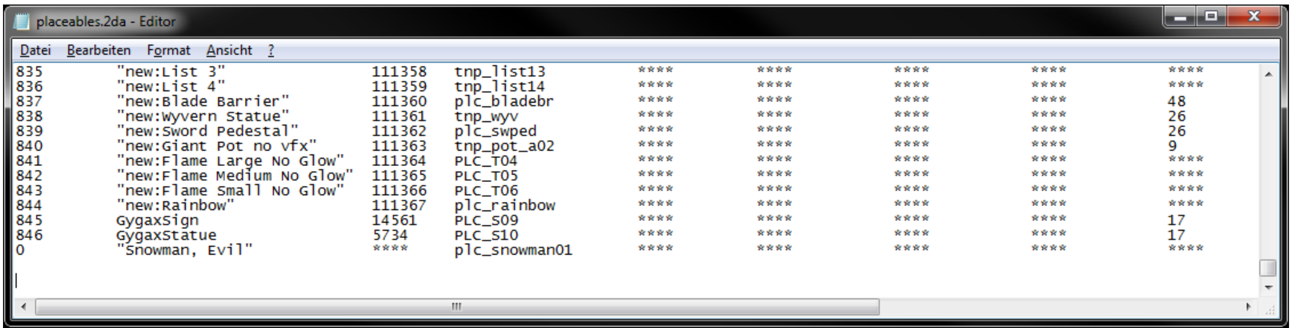


```
2DA V2.0

         Label                StrRef   ModelName      LightColor  LightOffsetX  LightOffsetY  LightOffsetZ  SoundAppTy
0        "Snowman, Evil"      ****     plc_snowman01  ****        ****          ****          ****          ****

0        Armoire              5645     PLC_A01        ****        ****          ****          ****          13
1        Bookshelf            5646     PLC_A02        ****        ****          ****          ****          18
2        Box1                 5346     PLC_A03        ****        ****          ****          ****          12
3        Box2                 5647     PLC_A04        ****        ****          ****          ****          13
4        Box3                 5648     PLC_A05        ****        ****          ****          ****          13
5        Box4                 5649     PLC_A06        ****        ****          ****          ****          13
6        Cabinet              5650     PLC_A07        ****        ****          ****          ****          16
7        Chest1               5348     PLC_A08        ****        ****          ****          ****          14
8        Chest2               5651     PLC_A09        ****        ****          ****          ****          15
9        Chest3               5652     PLC_A10        ****        ****          ****          ****          15
```

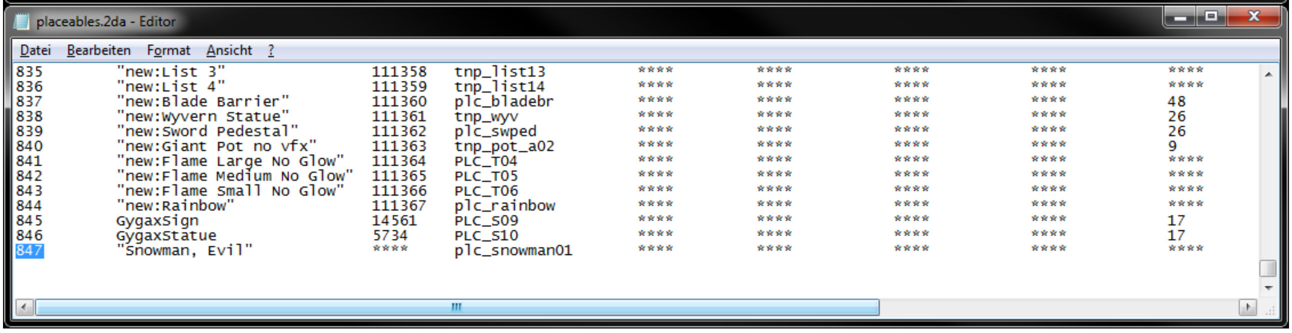


```
2DA V2.0

         Label                StrRef   ModelName      LightColor  LightOffsetX  LightOffsetY  LightOffsetZ  SoundAppTy
0        Armoire              5645     PLC_A01        ****        ****          ****          ****          13
1        Bookshelf            5646     PLC_A02        ****        ****          ****          ****          18
2        Box1                 5346     PLC_A03        ****        ****          ****          ****          12
3        Box2                 5647     PLC_A04        ****        ****          ****          ****          13
4        Box3                 5648     PLC_A05        ****        ****          ****          ****          13
5        Box4                 5649     PLC_A06        ****        ****          ****          ****          13
6        Cabinet              5650     PLC_A07        ****        ****          ****          ****          16
7        Chest1               5348     PLC_A08        ****        ****          ****          ****          14
8        Chest2               5651     PLC_A09        ****        ****          ****          ****          15
9        Chest3               5652     PLC_A10        ****        ****          ****          ****          15
10       Chest4               5653     PLC_B01        ****        ****          ****          ****          15
11       ChstDrwrs            5654     PLC_B02        ****        ****          ****          ****          16
```

... and paste it in at the bottom of the file, then renumber it:



```
835      "new:List 3"               111358   tnp_list13     ****   ****   ****   ****   ****
836      "new:List 4"               111359   tnp_list14     ****   ****   ****   ****   ****
837      "new:Blade Barrier"        111360   plc_bladebr    ****   ****   ****   ****   48
838      "new:Wyvern Statue"        111361   tnp_wyv        ****   ****   ****   ****   26
839      "new:Sword Pedestal"       111362   plc_swped      ****   ****   ****   ****   26
840      "new:Giant Pot no vfx"     111363   tnp_pot_a02    ****   ****   ****   ****   9
841      "new:Flame Large No Glow"  111364   PLC_T04        ****   ****   ****   ****   ****
842      "new:Flame Medium No Glow" 111365   PLC_T05        ****   ****   ****   ****   ****
843      "new:Flame Small No Glow"  111366   PLC_T06        ****   ****   ****   ****   ****
844      "new:Rainbow"              111367   plc_rainbow    ****   ****   ****   ****   ****
845      GygaxSign                  14561    PLC_S09        ****   ****   ****   ****   17
846      GygaxStatue                5734     PLC_S10        ****   ****   ****   ****   17
0        "Snowman, Evil"            ****     plc_snowman01  ****   ****   ****   ****   ****
```



```
835      "new:List 3"               111358   tnp_list13     ****   ****   ****   ****   ****
836      "new:List 4"               111359   tnp_list14     ****   ****   ****   ****   ****
837      "new:Blade Barrier"        111360   plc_bladebr    ****   ****   ****   ****   48
838      "new:Wyvern Statue"        111361   tnp_wyv        ****   ****   ****   ****   26
839      "new:Sword Pedestal"       111362   plc_swped      ****   ****   ****   ****   26
840      "new:Giant Pot no vfx"     111363   tnp_pot_a02    ****   ****   ****   ****   9
841      "new:Flame Large No Glow"  111364   PLC_T04        ****   ****   ****   ****   ****
842      "new:Flame Medium No Glow" 111365   PLC_T05        ****   ****   ****   ****   ****
843      "new:Flame Small No Glow"  111366   PLC_T06        ****   ****   ****   ****   ****
844      "new:Rainbow"              111367   plc_rainbow    ****   ****   ****   ****   ****
845      GygaxSign                  14561    PLC_S09        ****   ****   ****   ****   17
846      GygaxStatue                5734     PLC_S10        ****   ****   ****   ****   17
847      "Snowman, Evil"            ****     plc_snowman01  ****   ****   ****   ****   ****
```

There we go.

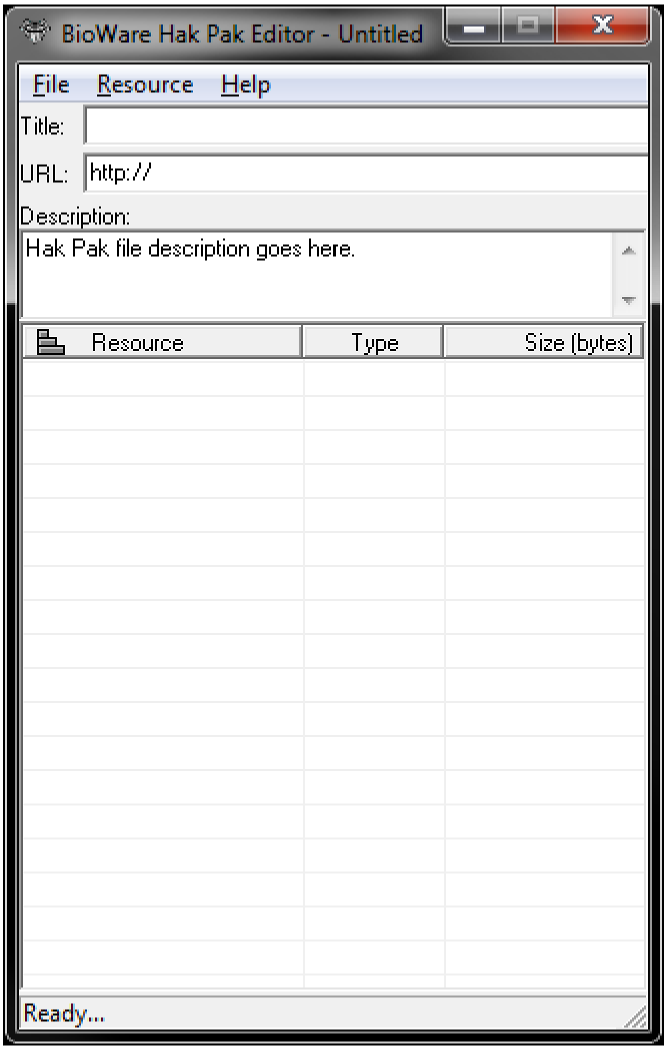
Generally speaking, it's a good idea to add empty entries to 2das as puffer space, when you modify them to set up custom ones. If the "official" 2das get new entries at some point, they're most likely going to be set up on the numbers at the ends of the 2das, so, exactly here where I just put Snowman, Evil.

We have utilities for 2das, too:
https://neverwintervault.org/project/nwn1/other/tool/tlkedit2-2datlkgfferf-editor
https://neverwintervault.org/project/nwn1/other/tool/fix-and-tidy-2da-files
https://neverwintervault.org/project/nwn1/other/tool/meaglyns-perl-2da-diff-utility

- Create a new hak file

If you don't already have module haks to add this to, then at this point, you'll want to make a new hak.

Start nwhak.exe!



BioWare Hak Pak Editor - Untitled

Title:

URL: http://

Description:

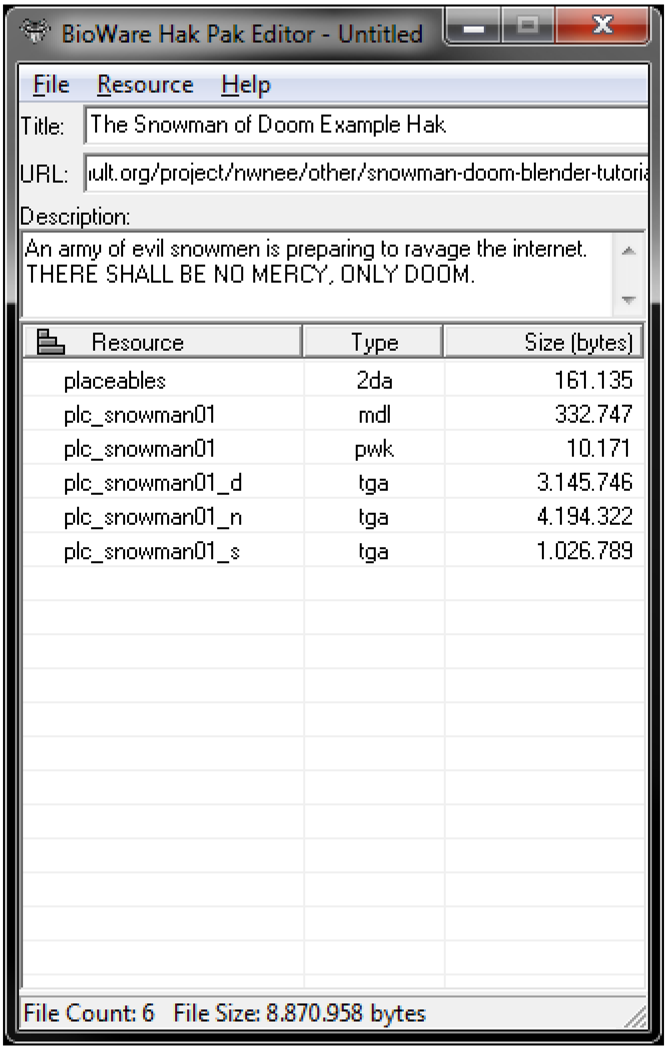
Hak Pak file description goes here.

Resource	Type	Size (bytes)

Ready...

You can drag and drop files into the field, here. If you want to be orderly about it, give your hak a title, an URL, and a description.

In my case, I'm going to be chucking my modified placeables.2da, the snowman .MDL, .PWK, and the three .TGA textures into this.



Title: The Snowman of Doom Example Hak

URL: ıult.org/project/nwnee/other/snowman-doom-blender-tutoria

Description:
An army of evil snowmen is preparing to ravage the internet.
THERE SHALL BE NO MERCY, ONLY DOOM.

Resource	Type	Size (bytes)
placeables	2da	161.135
plc_snowman01	mdl	332.747
plc_snowman01	pwk	10.171
plc_snowman01_d	tga	3.145.746
plc_snowman01_n	tga	4.194.322
plc_snowman01_s	tga	1.026.789

File Count: 6 File Size: 8.870.958 bytes

Hit CTRL+S to save, or select File -> Save, or File -> Save As, and save your new hak. I'll be calling mine snowmanofdoom.hak.

Then, close nwhak.exe. The toolset cannot load a hak file that is currently open in nwhak.exe, so if we try to add it to the module while it's still open in here, it won't show up in the hak list.

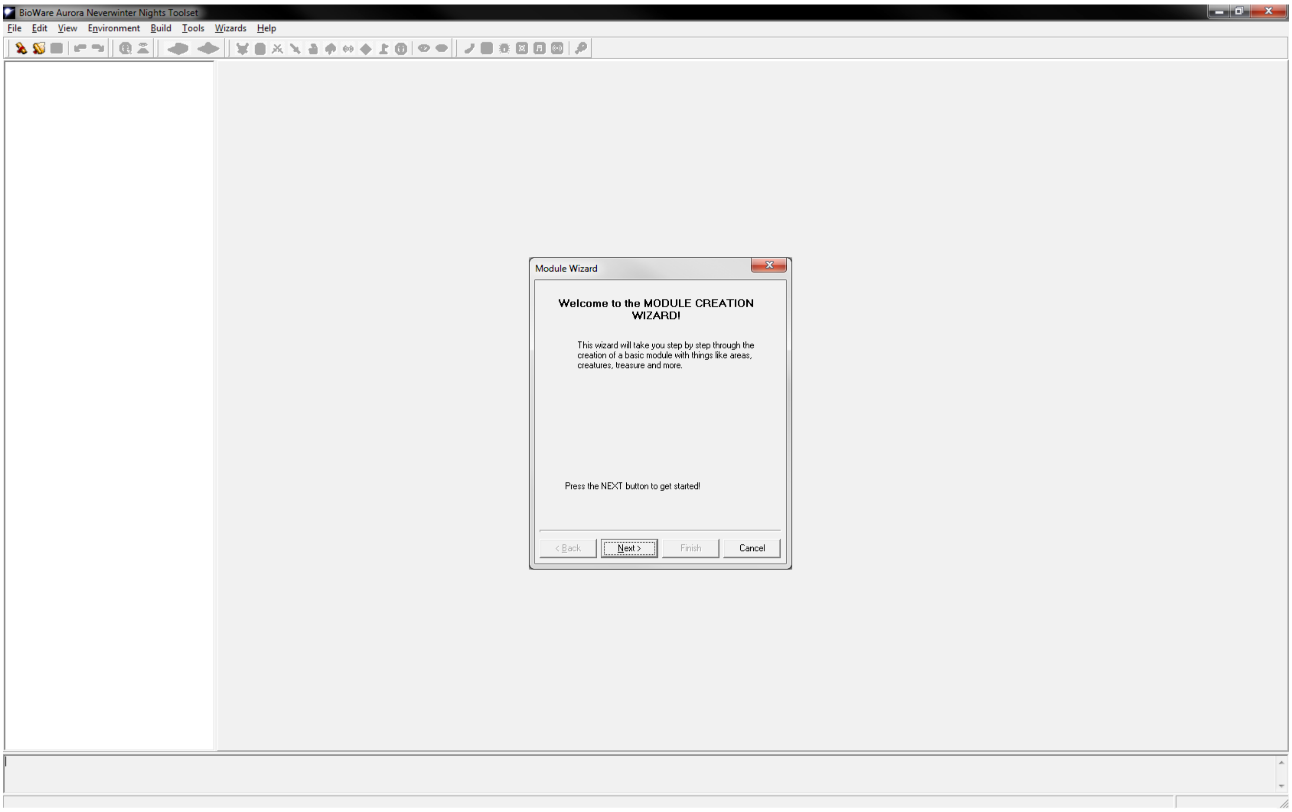
Side information, while we're at this:

Different haks frequently contain their own version of the same 2da files, which are incompatible with one another as the 2da file that was most recently loaded (is highest up in the hak list (the load order) in the module) will overwrite all the 2das below it.

To work with this, it's pretty commonplace for modulebuilders to set up a top hak, which is a hak that contains their custom 2da files and sits at the very top of the load order.

- (Optionally) Create a new module

Start up the toolset, and hit CTRL+N, or select File -> New to create a new module.

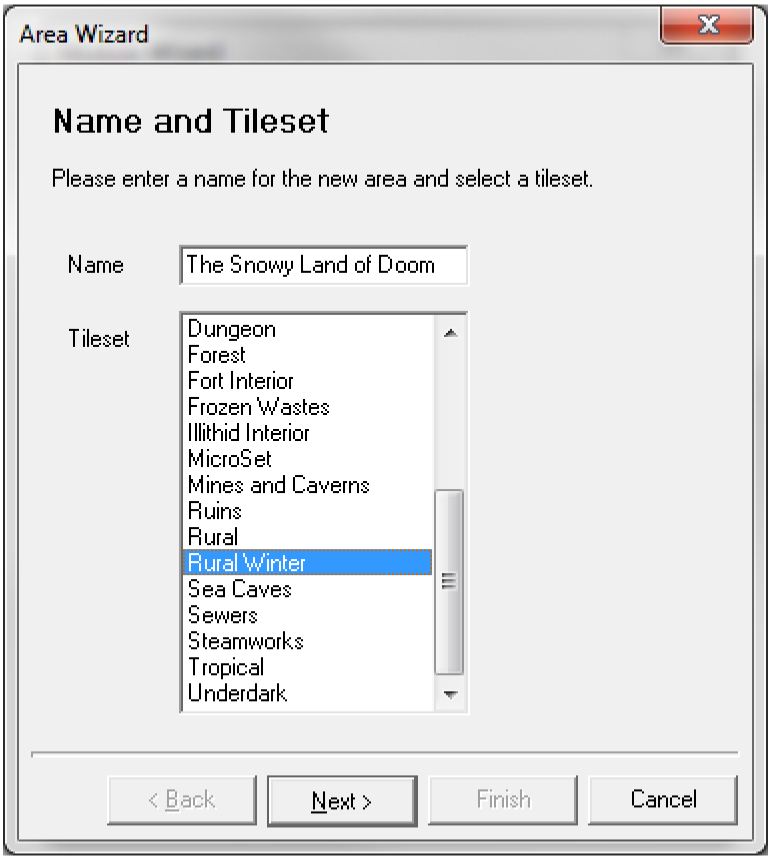

BioWare Aurora Neverwinter Nights Toolset
File Edit View Environment Build Tools Wizards Help
Module Wizard
< Back
Next >
Finish
Cancel

Welcome to the MODULE CREATION WIZARD!

This wizard will take you step by step through the creation of a basic module with things like areas, creatures, treasure and more.

Press the NEXT button to get started!

Follow along with the module creation wizard, then also create an area.



Name and Tileset

Please enter a name for the new area and select a tileset.

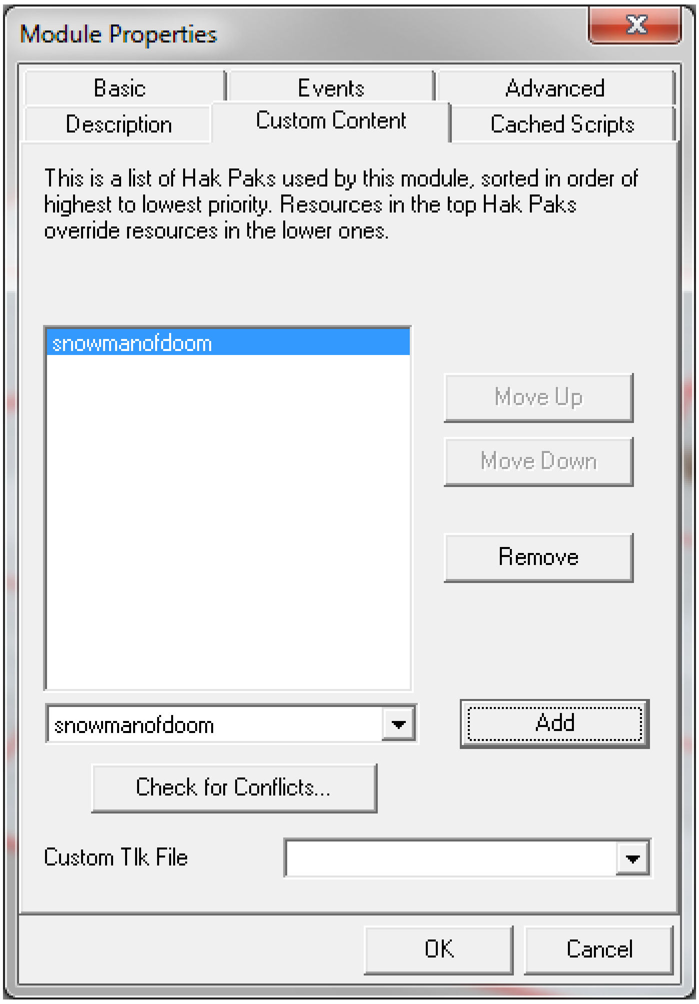
Name: The Snowy Land of Doom

Tileset: Dungeon, Forest, Fort Interior, Frozen Wastes, Illithid Interior, MicroSet, Mines and Caverns, Ruins, Rural, Rural Winter (selected), Sea Caves, Sewers, Steamworks, Tropical, Underdark

- Attach the new hak to the module

In the toolset, with your module open, click **Edit -> Module Properties**.

Go to the Custom Content tab. From the dropdown list, select your newly-created hak file, and then hit the Add button. This is the result you want:



This is a list of Hak Paks used by this module, sorted in order of highest to lowest priority. Resources in the top Hak Paks override resources in the lower ones.

snowmanofdoom

snowmanofdoom

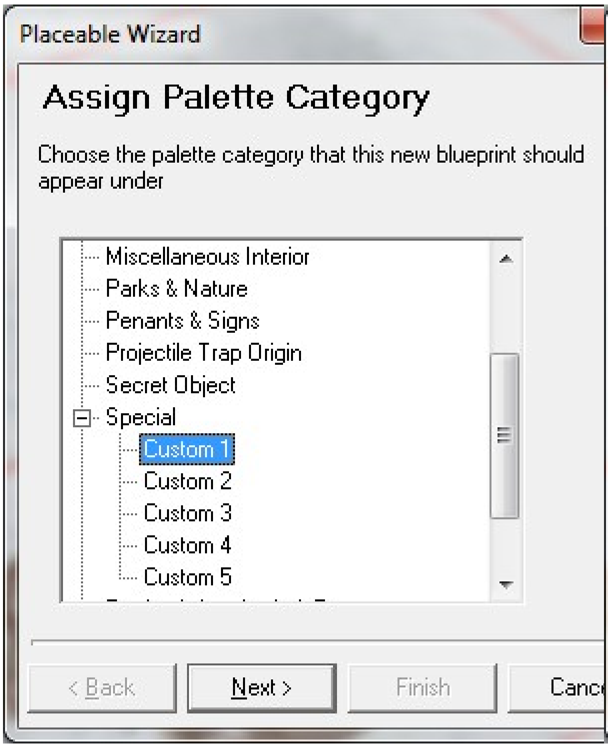
Custom Tlk File

Hit OK, and confirm that you want to change the list of hak files the module uses. :-)

After doing this, right-click on your area, and hit View Area.

- (Optionally) Create a new placeable blueprint

In the toolset, go to the Placeables tab. Right-click on any of the categories and select New to create a new placeable blueprint.

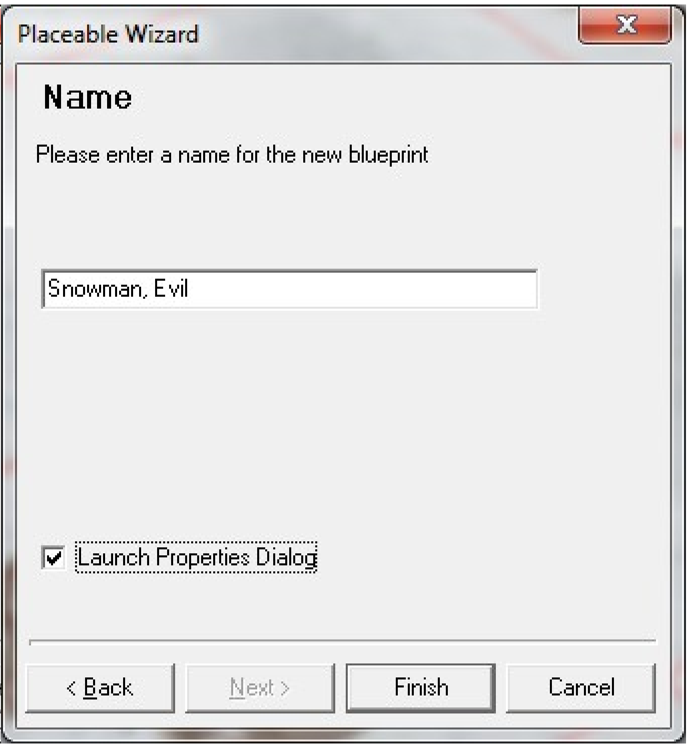


Placeable Wizard

Assign Palette Category

Choose the palette category that this new blueprint should appear under

- Miscellaneous Interior
- Parks & Nature
- Penants & Signs
- Projectile Trap Origin
- Secret Object
- Special
  - Custom 1
  - Custom 2
  - Custom 3
  - Custom 4
  - Custom 5



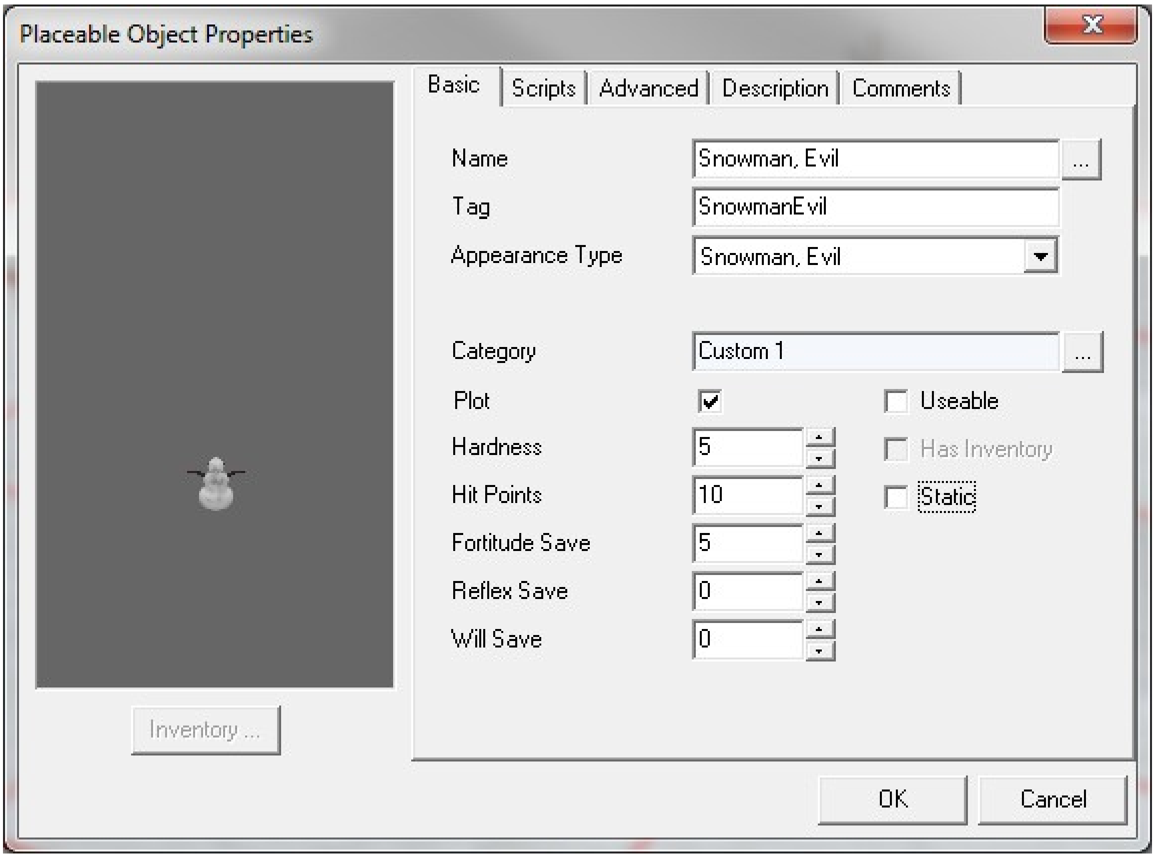
Placeable Wizard

Name

Please enter a name for the new blueprint

Snowman, Evil

☑ Launch Properties Dialog



Placeable Object Properties

Name	Snowman, Evil
Tag	SnowmanEvil
Appearance Type	Snowman, Evil
Category	Custom 1
Plot	☑
Hardness	5
Hit Points	10
Fortitude Save	5
Reflex Save	0
Will Save	0

☐ Useable

☐ Has Inventory

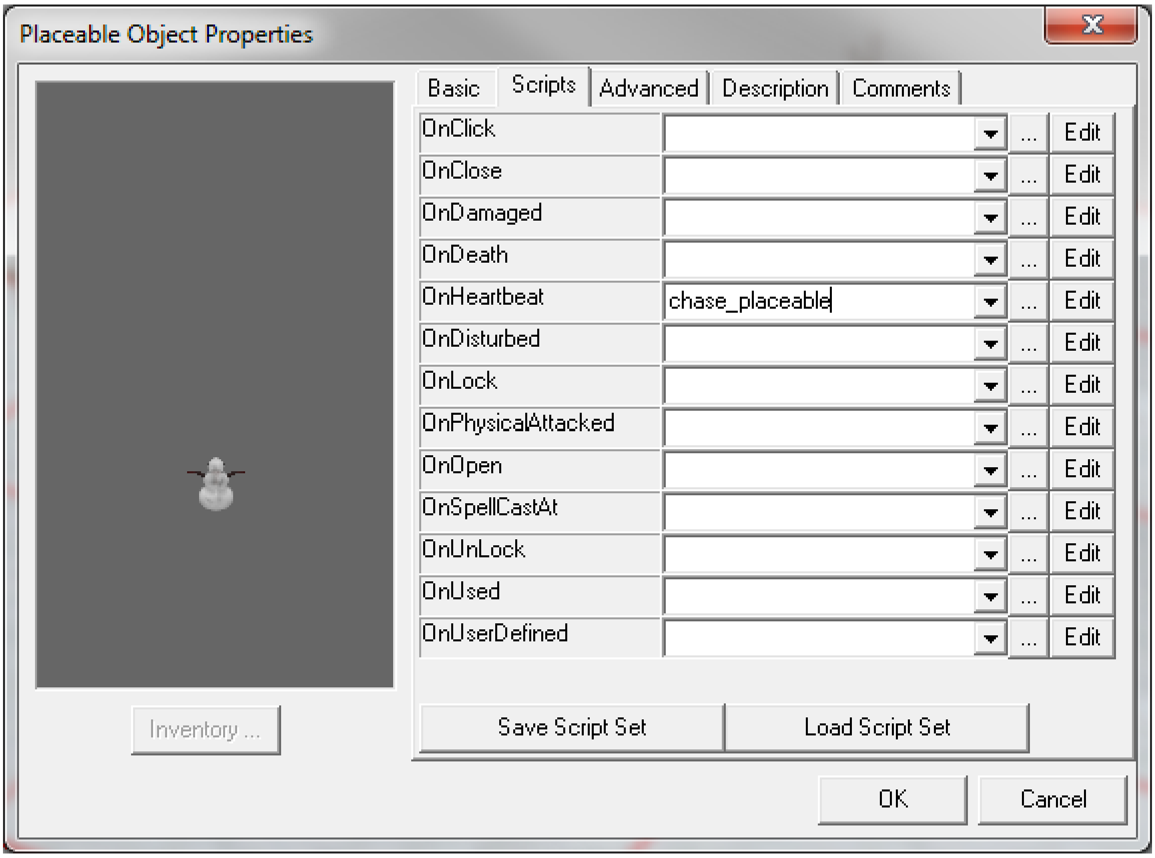
☐ Static

The snowman appearance should be listed under the name we put into the "Label" field in the 2da.

If you want to move ahead to the bonus section, set the blueprint to be Plot and non-static, please.

- (Optionally) Bonus: The Chase-Placeable Script

I've included a small script for purposes of FUN and MAYHEM. Go to the Scripts tab of the snowman, and add a new script to the OnHeartbeat event of the placeable:



OnHeartbeat: chase_placeable

Hit the Edit button for this event to edit the script therein. As the chase_placeable script does not currently exist, the toolset will create a new script with that name.

Erase the current contents (void main() {}) so that the script is fully empty. Next, grab the code - either from the download, or from the project page. It's "chase_placeable.txt".

Copypaste the code into the script, save it, place a snowman placeable (using the blueprint) in the area, and then start the module. :-) See what happens.

You can modify the code in the chase_placeable script we just created to personalize your snowman a little further, too. For instance, you can edit the things it says:

```
// ... and if they aren't in range, we might say threatening things!
switch (Random(30))
    {
    case 0: sMsg = "I'm going to catch you..."; break;
    case 1: sMsg = "You don't have to run from me..."; break;
    case 2: sMsg = "Come to me..."; break;
    case 3: sMsg = "Hello..."; break;
    case 4: sMsg = "You're made of meat..."; break;
    case 5: sMsg = "We could be friends..."; break;
    case 6: sMsg = "We could be such good friends..."; break;
    case 7: sMsg = "Give me a hug..."; break;
    case 8: sMsg = "Come closer..."; break;
    }
if (sMsg != "")
    DelayCommand(0.5, AssignCommand(oPlaceableNew, SpeakString(StringToRGBString(sMsg, "666"))));
```

... and you can edit the text color in which it says the things it says:

```
if (sMsg != "")
    DelayCommand(0.5, AssignCommand(oPlaceableNew, SpeakString(StringToRGBString(sMsg, "666"))));
```

Modify the "666" number string to do this. Node that there are two separate instances of text colouring in this script - the normal speech and the 'player caught'-speech are separate from one another.

https://neverwintervault.org/project/nwn1/other/tool/colours-and-codes-stringtorgbstring
^- Colour code reference!

... and you can edit the visual effects that appear when the snowman reaches the player:

```
ApplyEffectAtLocation(DURATION_TYPE_INSTANT, EffectVisualEffect(VFX_COM_BLOOD_LRG_RED), lPlayer);
```

Replace VFX_COM_BLOOD_LRG_RED with any other VFX number or constant - or, heck, add a separate ApplyEffectAtLocation()-call, to maintain the blood splatter while adding another VFX on top.

https://nwnlexicon.com/index.php?title=Vfx_imp
^- Impact VFX reference!

And... there we go. :-) Done, we are. Centuries have passed, but we have persevered. For thy persistent fortitude in perusing arcane writs scribed by mad people, I hereby dub thee, noble reader, ... a... WIZARD.

I can do that because the unlimited power of tutorial-writing has gotten to my head.

Gotten to my head like brain-freeze does.

Get it? Brain freeze? Because **snow**m... OK, nevermind, that isn't even slightly funny.

Anyway. Part 1 is over, you're a wizard now, and I'm glad we talked about this. See you in Part 2, for turning this thing into an animated creature. :-)

You have reached the end of Part 1 of the tutorial and are now a wizard. Hooray for that!