

PakMan

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Chapter 1

PakMan

1.1 main

PakMan v0.2β

by
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A simple Amiga program to browse, edit and create Quake PAK files.

Introduction

Using PakMan

** IMPORTANT **

About PAK files

The AQUA Project

1.2 intro

Introduction to PakMan

PakMan is a rather simple program that will help you manage PAK files, as used by games such as id Software / clickBOOM's Quake. A PAK is simply one big "archive" of stuff to avoid cluttering the users hard drive with lots of small files.

For people to be able to create their own modifications and conversions for Quake, a PAK utility is one of the essentials. This is the primary reason I wrote PakMan - it will hopefully be a useful little stepping stone for people to get divine inspiration and start making cool stuff for Amiga Quake. PakMan's simple MUI interface makes it easy to browse PAK contents, extract, add, delete and rename PAKs, and hopefully soon, optimize them.

PakMan is in no way a finished program, it will continue to be extended and modified until such time that I find it good enough. If you have any suggestions please do not hesitate to mail me at shitlips@fido.euroline.no, and I will consider implementing it.

1.3 Using PakMan

Using PakMan

Using PakMan should be fairly intuitive and straight forward, but here is a run down of the different buttons and menu items just in case:

GUI buttons:

'Extract':

Use this to extract the selected file(s) and/or director(y/ies) from the PAK onto your Amigas hard disk or wherever. It will ask you where to extract the stuff. Any subdirectories will be created to keep the structure intact.

'Add':

Add a file to the current directory. Will currently only add one file at a time.

'Delete':

Delete currently selected file(s) and director(y/ies). No mercy, doesn't even ask ;)

'Make dir':

Create a new subdirectory in the current dir. Can also create multiple levels of directories in one go; If you enter something like this ..
extra/fun/directory/creation
.. it will create extra, then fun under it, directory under it again, and finally creation at the "bottom" level.

'Rename':

Renames currently selected file(s) / director(y/ies). There is nothing to prevent you from having several files with the same name in one directory, Quake will simply select the first one.

'Quit':

Duh.

Menu items, Project menu:

'Create new PAK' Amiga-C

Create a new PAK file. You will be asked where to create it.

'Open PAK file' Amiga-O

Open an existing PAK file.

'PAK Info Window' Amiga-I

Open a little window with information about the opened PAK.

'Optimize PAK' Amiga-P

Optimize the open PAK file. This is the same as defragmenting a file

system. It might save you some space.

'About PakMan' Amiga-?
 Display silly information about PakMan.

'About MUI'
 Information about the excellent MagicUserInterface by Stefan Stuntz.

'Quit' Amiga-Q
 Still duh.

1.4 Stuff you really should know

Stuff you really should know

This version of PakMan fixes one major bug; The crashing of clickBOOM's Quake and QuakePlayer programs. This was caused by an embarrassing and obscure bug that occurred while saving directory information in the PAK file. This was spotted and fixed thanks to and with the help of Sigbjørn Skjæret. Thanks a lot man!

1.5 About PAK files

The theory of PAK files

A PAK file is just a collection of files stuck together, much like a lha archive, but without the compression. There are basically three items making up the PAK; The header, the directory structure, and the storage area. The header occupies the first 12 bytes of the file, and basically just identifies the file as a PAK and tells you where the directory structure is stored. The directory structure is stored wherever is possible, but normally at the end of the file, and contains information about the name, placement and size of each of the files. It is, in many ways, quite similar to a file system. This also means that it has some flaws. The biggest of these is fragmentation.

Imagine that you have a PAK containing these three files:

```
start.bsp    1,532,630 bytes
intro.wav    94,794 bytes
player.mdl    191,852 bytes
```

They're stored in the PAK file in this order. Now, say that the start.bsp file needs to be replaced with a new one, and that this new one is 1,615,400 bytes. First we have to delete the original start.bsp, leaving an open space of 1,5MB at the beginning of the file. Then we have to add the new one, but since it doesn't fit in the space left by the old one, we have to extend the end of the file and put it there instead. Suddenly, we have a fragmented PAK file. Another common situation is that the directory structure is stored in the middle of the file, then the file grows, and the directory structure is too large for its previous spot. This spot is then left vacant while the structure is rewritten at the end of the file.

The bad news is that this is very hard to avoid, and not really something you want a program like PakMan to fix for you automatically. The reason for this is that these files are huge (id Software's original files are 18 and 34MB). The good news is that new, smaller files will automatically be stuffed into this smaller space. And the even better news is that PakMan has an optimization feature, but it has to be activated manually.

Now, does this fragmentation really mean a lot of grief? Depends. id's original PAK0.PAK (the one you get with the shareware PC version) wastes over 400kB of disk space. If this is a lot to you, optimize it with PakMan. If you write a total conversion or modification for Quake, released as a or with an included PAK, optimize it so that users won't be annoyed with your space wasting.

Another of the built-in limitations of a PAK file is the file name space. Even tho PakMan displays it this way, there really is no directory structure in a PAK file. Each file has a 50 character string to describe both the placement and the file name, like this:

```
sound/items/r_item1.wav
```

This means that the total length of the directory names and the file name cannot exceed 49 characters (one is used for the '\0' termination). PakMan sets no limitations to the amount of subdirs you can have, but when it saves the directory structure, anything that is longer than 49 characters is dealt with in a very simple way; It is put in a directory called trunc. So if you had something like this in your PAK:

```
sound/monsters/huge_ones/dragon/flames/initialflame.wav
```

It would end up like this:

```
trunc/initialflame.wav
```

Just be aware of this limitation when you build your PAKs, and you'll be fine. Also note that because of the way this works, empty directories will NOT appear in the PAK.

1.6 The AQUA Project