

Bob's POV-Ray Front End

Version 1.0

THIS IS NOT AN OFFICIAL RELEASE OF THE POV-Ray TEAM AND IS NOT SUPPORTED BY THE POV-Ray TEAM

This online document is based on the documentation provided as part of the POV-Ray package.

This program is **FREWARE**.

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INTRODUCTION

The Persistence of Vision Raytracer, POV-Ray, allows you to create photo-realistic, three-dimensional images on your computer. The POV-Ray Team did a fantastic job on the program. You are able to specify a multitude of options on the command line, in an environment variable, or in a command file. POV-Ray will run in a DOS box in Windows. Rendering takes a little longer under Windows, but you can do other things with your computer while you are rendering in the background. Bob's POV-Ray Front End, BPOVFE, provides a Windows point and click interface for specifying the POV-Ray command line options.

INSTALLING BOB'S POV-RAY FRONT END

Copy BPOVFE.EXE and BPOVFE.HLP to any directory on your hard drive. Add BPOVFE to a Program Manager group (refer to your Windows manual). Create a PIF file for POV-Ray called POV.PIF(refer to your Windows manual).

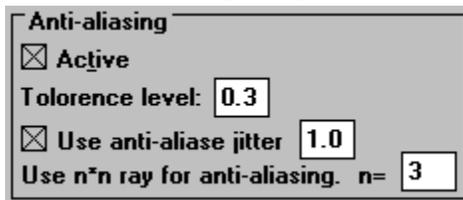
REMOVING BOB'S POV-RAY FRONT END

To remove BPOVFE do the following:

1. Make sure that BPOVFE is not running.
2. Remove any Program Manager entries you made for BPOVFE.
3. Delete the following files: BPOVFE.EXE, BPOVFE.HLP, and BPOVFE.INI.

BPOVFE does not make any entries in your WIN.INI or SYSTEM.INI files.

ANTI-ALIASING



The following command line switch control anti-aliasing:

```
+Ann Anti-alias with tolerance level nnn.  
+A Anti-alias with tolerance level 0.3  
-A Don't anti-alias (default)  
+Jn.nn Scale factor for jittering  
+J Jitter AA with scale 1.0 (default)  
-J Turn off jittering  
+Rn or -Rn Use n*n rays when anti-aliasing (default 3)
```

Anti-aliasing is a technique used to make the ray traced image look smoother. Often the color difference between two objects creates a "jaggy" appearance. When anti-aliasing is turned on, POV-Ray attempts to "smooth" the jaggies by shooting more rays into the scene and averaging the results. This technique can really improve the appearance of the final image. Be forewarned though, anti-aliasing drastically slows the time required to render a scene since it has to do many more calculations to "smooth" the image. Lower numbers mean more anti-aliasing and also more time. Use anti-aliasing for your final version of a picture, not the rough draft.

The +A option enables adaptive anti-aliasing. The number after the +A option determines the threshold for the anti-aliasing.

If the color of a pixel differs from its neighbor (to the left or above) by more than the threshold, then the pixel is subdivided and super-sampled. If r_1, g_1, b_1 and r_2, g_2, b_2 are the rgb components of two pixels then the difference between pixels is computed by:

$$\text{diff} = \text{abs}(r_1 - r_2) + \text{abs}(g_1 - g_2) + \text{abs}(b_1 - b_2)$$

The rgb values are in the range 0.0 to 1.0 thus the most two pixels can differ is 3.0. If the anti-aliasing threshold is 0.0, then every pixel is super-sampled. If the threshold is 3.0, then no anti-aliasing is done.

The lower the contrast, the lower the threshold should be. Higher contrast pictures can get away with higher tolerance values.

Good values seem to be around 0.2 to 0.4.

The super-samples are jittered to introduce noise and to eliminate moire interference patterns. Note that the jittering "noise" is non-random and repeatable in nature, based on an object's 3-D orientation in space. Thus, it's okay to use anti-aliasing for animation sequences, as the anti-aliased pixels won't vary and flicker annoyingly from frame to frame. The +Jnn.nn switch scales down the amount of jitter from its default value 1.0. For example +J0.5 uses half the normal jitter. Values over 1.0 jitter outside the pixel bounds and are not recommended. Use -J to turn off jittering.

The +R switch controls the number of rows and columns of rays per pixel with anti-aliasing.

The default value 3 gives $3 \times 3 = 9$ rays per pixel.
The jittering and multiple rays are only used when +A is on.

BUFFERING

"Buffer size (kilobytes):" sets the +B option.

+Bnnn Use an output file buffer of nnn kilobytes.
-Bnnn Same as +Bnnn

The +B option allows you to assign large buffers to the output file. This reduces the amount of time spent writing to the disk. If this parameter is not specified, then as each scanline is finished, the line is written to the file and the file is flushed. On most systems, this operation insures that the file is written to the disk so that in the event of a system crash or other catastrophic event, at least part of the picture has been stored properly and retrievable on disk. (see also the +C option below.) A value of +B30 is a good value to use to speed up small renderings. A value of +B0 defaults to a small system-dependent buffer size. Note neither +B0 nor -B turns this feature off. Once a buffer is set, subsequent +B commands can change its size but cannot turn it off.

CONTINUE AN ABORTED PARTIAL IMAGE

This checkbox turns the C option on and off.

- +C Continue partially complete rendering
- C Render from beginning (default)

If you abort a render while it's in progress or if you used the +E or +ER options to end the render prematurely, you can use the +C option to continue the render when you get back to it. This option reads in the previously generated output file, displays the image to date on the screen, then proceeds with the ray tracing. This option cannot be used if file output is disabled with -F. It does not work with +S, +SR, +SC or +EC switches.

DISPLAY IMAGE GRAPHICALLY AND DISPLAY TYPE

This checkbox toggles the graphic display with the display type listed. This sets the D option.

- +D Use preview display
- D Turn preview display off (default)

If the +D option is used and your computer supports a graphic display, then the image will be displayed while the program performs the ray tracing. On most systems, the picture displayed is not as good as the one created by the post-processor because it does not try to make optimum choices for the color registers.

RENDER PARTIAL IMAGE

Render Partial Image		
<input checked="" type="checkbox"/> Active		
	Start	End
Row:	.25	.75
Column:	.75	319

The following options are set:

+Snnn or +SRnnn	Start tracing at row number nnn.
+SCnnn	Start tracing at column number nnn.
+Ennn or +ERnnn	End tracing at row number nnn.
+ECnnn	End tracing at column number nnn.

When doing test rendering it is often convenient to define a rectangular section of the whole screen so you can quickly check out one area of the image. The +S and +E switches let you define starting and ending rows and columns for partial renderings.

The +S and +E options also allow you to begin and end the rendering of an image at a specific scan line so you can render groups of scanlines on different systems and concatenate them later.

WARNING: Image files created on with different executables on the same or different computers may not look exactly the same due to different random number generators used in some textures. If you are merging output files from different systems, make sure that the random number generators are the same. If not, the textures from one will not blend in with the textures from the other.

Note if the number following +SR, +SC, +ER or +EC is a greater 1 then it is interpreted as a number of pixels. If it is a decimal value between 0.0 and 1.0 then it is interpreted as a percent of the total width or height of the image. For example: +SR0.75 +SC0.75 starts on a row 75% down from the top at a column 75% from the left and thus renders only the lower-right 25% of the image.

OUTPUT FILE FORMAT

You are able to select TARGA, Dump, Raw , or no file output. The following options are then set:

- +FT Uncompressed Targa-24 format (IBM-PC Default)
- +FD Dump format (QRT-style)
- +FR Raw format - one file each for Red, Green and Blue.
- +F Use default file type for your system
- F Turn off file output

Normally, you don't need to specify any form of +F option. The default setting will create the correct format image file for your computer. The docs included with the executable specify which format is used.

You can disable image file output by using the command line option -F. This is only useful if your computer has display options and should be used in conjunction with the +P option. If you disable file output using -F, there will be no record kept of the image file generated. This option is not normally used.

Unless file output is disabled (-F) POV-Ray will create an image file of the picture. This output file describes each pixel with 24 bits of color information. Currently, three output file formats are directly supported. They are +FT - Uncompressed Targa-24 format (IBM-PC Default), +FD - Dump format (QRT-style) and +FR - Raw format - one file each for Red, Green and Blue.

IMAGE SIZE

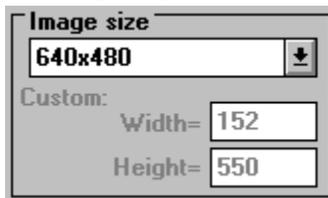


Image size

640x480

Custom:

Width= 152

Height= 550

The drop down box lets you choose standard sizes. If you need a different size, select "custom" and enter the values you want for height and width. The following options are set:

+Hnnn or -Hnnn Set height of image in pixels
+Wnnn or -Wnnn Set width of image in pixels

These switches set the height and width of the image in pixels. This specifies the image size for file output. The preview display with the +D option will generally attempt to pick a video mode to accommodate this size but the +D settings do not in any way affect the resulting file output.

INPUT AND OUTPUT FILE NAMES

Input and output file names are selected using Windows common dialog boxes. The following options are set:

+Ifilename Set the input filename
+Ofilename Set output filename

The default input filename is "object.pov". The default output filename is "data" and the suffix for your default file type. The +O switch has no effect unless file output is turned on with +F.

IBM-PC default file type is Targa, so the file is "data.tga".

Raw mode writes three files, "data.red", "data.grn" and "data.blu". On IBM-PC's, the default extensions for raw mode are ".r8", ".g8", and ".b8" to conform to Piclab's "raw" format. Piclab is a widely used free-ware image processing program. Normally, Targa files are used with Piclab, not raw files.

ANIMATION CLOCK VARIABLE

The "Use animation clock variable" checkbox toggles the use of the value in the edit box. The following option is then set:

+Knnn or -Knnn Set the "clock" float value

The +K switch may be used to pass a single float value to the program for basic animation. The value is stored in the float identifier "clock". If an object had a "rotate <0,clock,0>" attached then you could rotate the object by different amounts over different frames by setting +K10, +K20... etc. on successive renderings.

LIBRARY PATH

Library path specifies the library search path. The following command option is set:

`+Lpathspec` Specify one of 10 library search paths

The `+L` option may be used to specify a "library" pathname to look in for include, parameter and image files. Multiple uses of the `+L` switch do not override previous settings. Up to ten `+L` options may be used to specify a search path. The home (current) directory will be searched first followed by the indicated library directories in order.

Note: POV-Ray allows you to have up to 10 `+L` options, but this version of BPOVFE only uses one. Use the `POVRAY.DEF` file to specify more library search paths.

BOUNDING SLABS

Bounding Slabs
 Disable
Use bounding slabs if more
than objects in
scene.

This control specifies the bounding slabs option

-MB Turn off bounding slabs
+MBnnn Use bounding slabs if more than nnn objects in scene.

New in POV-Ray 2.0 is a spatial sub-division system called bounding slabs. It compartmentalizes all of the objects in a scene into rectangular slabs and computes which slabs a particular ray hits before testing the objects within the slab. This can greatly improve rendering speed. However for scenes with only a few objects the overhead of using slabs is not worth the effort. The +MB switch sets the minimum number of objects before slabs are used. The default is +MB25. The -MB switch turns off slabs completely.

SYMBOL TABLE SIZE

This allows you to set the +MS option.

+MSnnn or -MSnnn Sets symbol table size (default 1000)

POV-Ray allocates a fixed number of spaces in its symbol table for declared identifiers. The default of 1000 may be increased if you get a "Too many symbols" error message.

VERSION COMPATIBILITY



These radio buttons allow you to specify the +MV.

+MVn.n or -MVn.n Set version compatibility mode

While many language changes have been made for POV-Ray 2.0, most version 1.0 syntax still works. One new feature in 2.0 that is incompatible with any 1.0 scene files is the parsing of float expressions. Setting +MV1.0 turns off expression parsing as well as many warning messages so that nearly all 1.0 files will still work. The "#version" language directive also can be used to change modes within scene files. The +MV switch affects only the initial setting.

PAUSE WHEN FINISHED

This checkbox allows you to toggle the pause after rendering on and off. It set the P option.

- +P Pause when image is complete so preview image can be seen.
- P Do not pause. (default)

Normally when preview display is on you want to look at the image awhile before continuing. The +P switch pauses and waits for you to press a key before going on.

IMAGE QUALITY

This allows you to specify the image quality settings.

+Qn or -Qn Set rendering quality

The +Q option allows you to specify the image rendering quality, for quickly rendering images for testing. You may also use -Q with no difference. The parameter can range from 0 to 9. The values correspond to the following quality levels:

- 0,1 Just show quick colors. Ambient lighting only.
Quick colors are used only at 5 or below.
- 2,3 Show Diffuse and Ambient light
- 4,5 Render shadows, use extended lights at 5 but not 4
- 6,7 Create surface textures
- 8,9 Compute reflected, refracted, and transmitted rays.

The default is +Q9 (maximum quality) if not specified.

VERBOSE STATISTICS

"Display verbose image stats while rendering" toggle the V option.

+V	Verbose statistics on
-V	Verbose statistics off

When the +D option is not used, it is often desirable to monitor progress of the rendering. The +V switch turns on verbose reporting while -V turns it off. The format of the output is system dependent.

ALLOW ABORT WITH KEYPRESS

This toggles the X option.

- +X Allow abort with keypress
- X Disable abort with keypress

When you specify the +X switch then any keypress will abort rendering. The -X switch disables this feature.

POV.PIF

You need to create a program information file (PIF) for POV-Ray called POV.PIF. Use the PIF Editor application that came with Windows.

BPOVFE.INI

BPOVFE creates an initialization file called BPOVFE.INI in you Windows directory. This file is where your settings are saved from session to session.

RENDER BUTTON

This button starts POV-Ray with the selected options.

HELP BUTTON

This button displays this help file.

EXIT BUTTON

This button exits BPOVFE. Your current options are saved in the BPOVFE.INI file.

ABOUT BUTTON

This button displays the "About" dialog box.

Bob's Software

OTHER PROGRAMS FROM BOB'S SOFTWARE

[Bob's CD Player](#)

[DiskSpace](#)

[BOING!](#)

[DiskInsert](#)

[Mouse Cursor Editor](#)

[PSPrint](#)

[PC-Piano](#)

[CHKM \(Check Mouse\)](#)

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BOB'S CD PLAYER



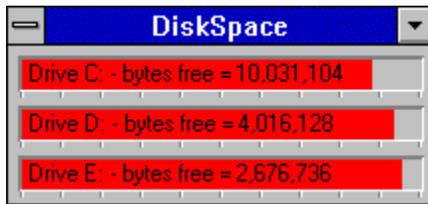
Current version: **1.0**

Archive name: **BCDP10.ZIP**

Registration Fee: **\$10.00**

Bob's CD Player (BCDP) is a program for the Windows™ operating system that will enable you to control your computer's CD-ROM drive when playing audio compact discs. BCDP provides familiar tape deck style controls for your CD-ROM drive. BCDP's window is small and unobtrusive, with the look of an audio component from your stereo. This program takes full advantage of the Windows™ interface, allowing you access to its features with a pointing device or the keyboard. The program includes online help.

DISKSPACE



Current Version: **0.5**

Archive/BBS file name: **DSW050.(ZIP,ARC,LHA...)**

Registration Fee: **\$6.00**

DiskSpace is a program for the Microsoft® Windows™ operating system that will allow you to easily monitor the amount of free space on your computer's hard disks. DiskSpace's window displays the number of bytes free and graphically shows the percent of the disk's space allocated. DiskSpace will work with up to 10 logical local drives, and with any size drive. DiskSpace updates every second, but redraws the bars only if the amount of free space has changed. When minimized, the bars still display the percent of free disk space. This version allows you to select which drives you want to display and optionally have DiskSpace appear on top of all other windows. Registered users receive FloppySpace, DiskSpace's brother specially designed for removable drives.

BOING!



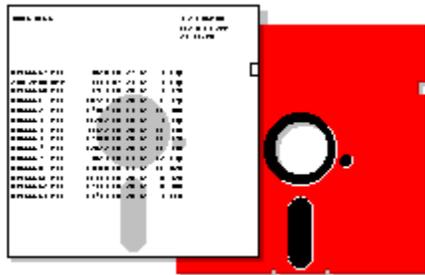
Current Version: **1.0**

Archive/BBS file name: **BOING1.(ZIP,ARC,LHA...)**

Registration Fee: **\$5.00**

BOING! is a program for the Microsoft® Windows™ operating system that will allow you to play sound files (WAVE format) with the click of a mouse button. The neat thing about BOING! is that it sits as an icon on your desk top, or on top of other windows, and when you click on it with your right button the sound file that you indicated will play. And since you click it with the right button, the application that you have active does not become inactive. You can run multiple copies of BOING! so you can have lots of sounds just a click away. Be just like those wacky morning radio DJs with crazy sounds livening up your conversations. If you have a sound card, or even just the pc-speaker driver, you'll love BOING!.

DISKINSERT



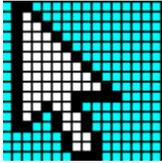
Current version: **0.3**

Archive name: **DI03.ZIP**

Registration Fee: **\$5.00**

DiskInsert v.0.3, DiskInsert will print the directory of a diskette, using a PostScript printer, so that it can be placed in the sleeve with the disk. Requires a PostScript printer and EGA compatible graphics. A mouse is supported, but not required.

MOUSE CURSOR EDITOR



Current version: **1.0**

Archive name: **MCEDIT10.ZIP** (MCED10.ZIP on CompuServe)

Registration Fee: **\$5.00**

Mouse Cursor EDITor is a programming tool that will enable developers to graphically create mouse cursors. If you have ever manually coded the screen and cursor masks for a mouse cursor you will appreciate this program. Mouse Cursor EDITor will work with all languages. Requires a mouse and EGA compatible graphics. Includes a demo with source and a TP5 mouse unit.

PSPRINT

*** .TXT**  **PostScript**

Current version: **2.4**

Archive name: **PSP24.ZIP**

Registration Fee: **\$5.00**

PSPrint will print a text file to a PostScript printer from the DOS command line. Each page is printed with a header containing the file name, the date printed, page number and the total number of pages. Allows font choice and will print up to 220 lines per page. Requires a PostScript printer.

PC-PIANO



Current version: **1.1**

Archive name: **PC-PIANO.ZIP**

Registration Fee: **none**

PCPIANO Version 1.1 is a fun little program to play simple tunes on you computer.

CHKM



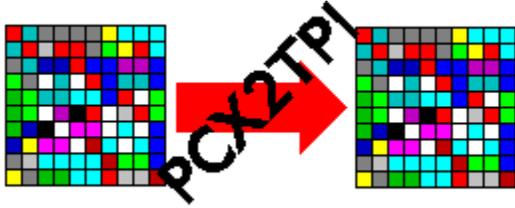
Current version: **1.1**

Archive name: **CHKM11.ZIP**

Registration Fee: **none**

CHKM (Check Mouse) Version: 1.1 CHKM, is a small, free utility that checks the status of the mouse driver and mouse. The program will tell you if a mouse driver is installed, the mouse driver version, the mouse type, the IRQ used by the mouse, and the number of buttons.

PCX2TPI



Current version: **2.0**

Archive name: **PCXTPI.ZIP**

Registration Fee: **\$5.00**

PCX2TPI is a programmers tool to convert 16-color PCX images into a format that can be linked into a Turbo Pascal program and displayed with the PutImage() procedure. Includes an example program with source code. Requires Turbo Pascal and BINOBJ.EXE.

PROGRAM AVAILABILITY

Programs from Bob's Software are available from the following sources:

Directly from Bob's Software - All of the programs listed in this on-line document are available directly from Bob's Software. You may order registered versions of any of the software listed, or you may order a disk containing the Shareware (non-registered) versions of all of the programs for just \$5.00. To make it easy, just print and use the convenient order form included in this file.

Online Services

CompuServe

America Online

Channel 1 - (617) 354-3230

Exec PC - (414) 789-4214

Windows OnLine - (510) 736-8343

Waldo's Magic Inc - (301) 929-1722 Established in May, 1991 Running rOverboard 2.0, 20 message areas, and over 350 meg of files of all types, leaning toward games, sound, and Windows apps. Mike Focke's DC BBS listing available monthly. Help with parts and systems available. File requests will be searched on off-line CD. New members welcome at 1200, 2400, or 9600 baud.

Programmer's Corner - (301) 621-3424

and many more BBSs all over North America

Shareware Disk Vendors

EMS Professional Shareware Libraries

4505 Buckhurst Ct.

Olney, MD 20832

(301) 924-3594

JCSM Shareware Collection CD

JCS Marketing Inc.

P.O. Box 1216

Lakeview, MN 55044

(612) 469-5898

and many more...

If you are a Disk Vendor or a BBS operator and would like to distribute programs from Bob's Software, and perhaps be listed here, please contact me.

CONTACTING BOB'S SOFTWARE

I would like to hear from you, your comments and suggestions are important to me. If you need to contact me, please send all correspondence to:

Bob Hayes
Bob's Software
10104 Blue Tee Terrace
Gaithersburg, MD 20879

Or you can also reach me on CompuServe @ 71224,3202 or on America Online, screen name: Bob Hayes1.

PROGRAMMING SERVICES

Shareware registrations don't pay the mortgage, but they are making the payments on a 486. Thank you to everyone that has registered.

I am available on a contract basis to provide custom programming services. Services include:

- Windows™ - Based Applications
- DOS Applications (text and/or graphic)
- PostScript Programming
- Demos
- Animations
- On-line Documents

If there is a task that you do over and over again, and you think that there has to be a better way, maybe there is, maybe you need some custom software. Contact me and we can talk about developing a better way. It probably costs less than you think.

