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How To Search For Missing Packages With apt-file On Debian and Ubuntu

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This short article describes how you can search for missing packages with apt-file on Debian and Ubuntu systems. apt-file allows you to search for a file name, and it gives back the name(s) of the package(s) containing that file so that you can install the appropriate package.

I do not issue any guarantee that this will work for you!

1 Initital Situation

I guess you all know this: you try to compile some software from the sources, and suddenly the compilation stops because it complains that some file is missing of which you have never heard before:

```
root@falko-desktop:~/avant-window-navigator-0.1.1# make
make all-recursive
make[1]: Entering directory `/root/avant-window-navigator-0.1.1'
Making all in src
make[2]: Entering directory `/root/avant-window-navigator-0.1.1/src'
if gcc -DHAVE_CONFIG_H -I. -I. -I.. -DORBIT2=1 -pthread -I/usr/include/glib-2.0 -I/usr/lib/glib-2.0/include
-I/usr/include/gtk-2.0 -I/usr/lib/gtk-2.0/include -I/usr/include/atk-1.0 -I/usr/include/cairo -I/usr/include/pango-1.0
-I/usr/include/libwnck-1.0 -I/usr/include/gconf/2 -I/usr/include/orbit-2.0 -DDATADIR="/usr/local/share"
-DGNOMELOCALEDIR="/usr/local/share/locale" -g -O2 -Wall -pedantic -std=c99 -fno-strict-aliasing -fmessage-length=0
-D_FORTIFY_SOURCE=2 -MT main.o -MD -MP -MF ".deps/main.Tpo" -c -o main.o main.c;
then mv -f ".deps/main.Tpo" ".deps/main.Po"; else rm -f ".deps/main.Tpo"; exit 1; fi
main.c:21:21: error: gtk/gtk.h: No such file or directory
```

In file included from main.c:25:

awn-gconf.h:69: error: expected `~` before `~*` token

In file included from main.c:26:

awn-bar.h:43: error: expected specifier-qualifier-list before `~GtkWindow~`

awn-bar.h:45: warning: struct has no members

awn-bar.h:48: error: expected specifier-qualifier-list before `~GtkWindowClass~`

awn-bar.h:49: warning: struct has no members

awn-bar.h:51: error: expected `~=~, ~,~, ~;~, ~asm~` or `~__attribute__~` before `~*~` token

awn-bar.h:55: error: expected `~=~, ~,~, ~;~, ~asm~` or `~__attribute__~` before `~*~` token

awn-bar.h:57: error: expected `~` before `~*~` token

awn-bar.h:58: error: expected `~` before `~*~` token

In file included from main.c:27:

awn-window.h:43: error: expected specifier-qualifier-list before `~GtkWindow~`

awn-window.h:45: warning: struct has no members

awn-window.h:48: error: expected specifier-qualifier-list before `~GtkWindowClass~`

awn-window.h:49: warning: struct has no members

awn-window.h:55: error: expected `~=~, ~,~, ~;~, ~asm~` or `~__attribute__~` before `~*~` token

In file included from main.c:28:

awn-app.h:30:29: error: libwnck/libwnck.h: No such file or directory

In file included from main.c:28:

awn-app.h:60: error: expected specifier-qualifier-list before `~WnckWindow~`

awn-app.h:80: warning: struct has no members

awn-app.h:83: error: expected `~` before `~*~` token

In file included from main.c:29:

awn-win-manager.h:35: error: expected `~=~, ~,~, ~;~, ~asm~` or `~__attribute__~` before `~*~` token

main.c:32: error: expected `~` before `~*~` token

main.c: In function `~main~`:

main.c:48: error: `~GtkWidget~` undeclared (first use in this function)

main.c:48: error: (Each undeclared identifier is reported only once

main.c:48: error: for each function it appears in.)

main.c:48: error: `~win~` undeclared (first use in this function)

main.c:49: error: `~bar~` undeclared (first use in this function)

main.c:50: error: `~box~` undeclared (first use in this function)

```
main.c:51: error: ÃwinmanÃ undeclared (first use in this function)
main.c:52: error: ÃlabÃ undeclared (first use in this function)
main.c:54: warning: implicit declaration of function Ãgtk_initÃ
main.c:56: warning: implicit declaration of function Ãawn_bar_newÃ
main.c:58: warning: implicit declaration of function Ãawn_window_newÃ
main.c:59: warning: implicit declaration of function Ãgtk_window_set_policyÃ
main.c:59: warning: implicit declaration of function ÃGTK_WINDOWÃ
main.c:61: error: ÃexposeÃ undeclared (first use in this function)
main.c:64: warning: implicit declaration of function Ãgtk_hbox_newÃ
main.c:66: warning: implicit declaration of function Ãawn_win_mgr_newÃ
main.c:68: warning: implicit declaration of function Ãgtk_box_pack_startÃ
main.c:68: warning: implicit declaration of function ÃGTK_BOXÃ
main.c:68: warning: implicit declaration of function Ãgtk_label_newÃ
main.c:72: warning: implicit declaration of function Ãgtk_container_addÃ
main.c:72: warning: implicit declaration of function ÃGTK_CONTAINERÃ
main.c:74: warning: implicit declaration of function Ãgtk_widget_show_allÃ
main.c:76: warning: implicit declaration of function Ãgtk_window_set_transient_forÃ
main.c:79: warning: implicit declaration of function Ãgtk_mainÃ
make[2]: *** [main.o] Error 1
make[2]: Leaving directory `/root/avant-window-navigator-0.1.1/src'
make[1]: *** [all-recursive] Error 1
make[1]: Leaving directory `/root/avant-window-navigator-0.1.1'
make: *** [all] Error 2
root@falko-desktop:~/avant-window-navigator-0.1.1#
```

So how do you know which (obviously missing) package contains that file so that you can install the package and try the compilation again?

For Debian based systems (like Ubuntu) the solution is apt-file. apt-file lets you search for file names and gives back the package(s) containing that file.

2 Install apt-file

apt-file is installed as follows:

```
apt-get install apt-file
```

After the installation, we must update apt-file's package database like this:

```
apt-file update
```

You must also do this whenever you modify `/etc/apt/sources.list`.

3 Search For Packages

Now let's search for the package containing the file `gtk/gtk.h`. You could search like this:

```
apt-file search gtk.h
```

but this would give back lots of packages, so let's narrow down the search by running

```
apt-file search gtk/gtk.h
```

The output looks like this:

```
root@falko-desktop:~/avant-window-navigator-0.1.1# apt-file search gtk/gtk.h
libgfcui-dev: usr/include/gfc-2.0/gfc/gtk/gtk.hh
libgtk+2.0-directfb-dev: usr/include/directfb/gtk-2.0/gtk/gtk.h
libgtk1.2-dev: usr/include/gtk-1.2/gtk/gtk.h
libgtk2.0-dev: usr/include/gtk-2.0/gtk/gtk.h
libgtk2.0-doc: usr/share/doc/libgtk2.0-doc/gtk/gtk.html
root@falko-desktop:~/avant-window-navigator-0.1.1#
```

As you see there are three packages containing `gtk/gtk.h` (one contains `gtk/gtk.hh`, another one `gtk/gtk.html` which is not what we are looking for),

and it's now up to you to install the right one. If you are unsure, you can install all three packages, or you install one after the other and check after each one if the compilation error still occurs. In our case the right package is `libgtk2.0-dev`, so we install that one:

```
apt-get install libgtk2.0-dev
```

Now we try the compilation again:

```
root@falko-desktop:~/avant-window-navigator-0.1.1# make
make all-recursive
make[1]: Entering directory `/root/avant-window-navigator-0.1.1'
Making all in src
make[2]: Entering directory `/root/avant-window-navigator-0.1.1/src'
if gcc -DHAVE_CONFIG_H -I. -I. -I.. -DORBIT2=1 -pthread -I/usr/include/glib-2.0 -I/usr/lib/glib-2.0/include
-I/usr/include/gtk-2.0 -I/usr/lib/gtk-2.0/include -I/usr/include/atk-1.0 -I/usr/include/cairo -I/usr/include/pango-1.0
-I/usr/include/libwnck-1.0 -I/usr/include/gconf/2 -I/usr/include/orbit-2.0 -DDATADIR="/usr/local/share"
-DGNOMELOCALEDIR="/usr/local/share/locale" -g -O2 -Wall -pedantic -std=c99 -fno-strict-aliasing -fmessage-length=0
-D_FORTIFY_SOURCE=2 -MT main.o -MD -MP -MF ".deps/main.Tpo" -c -o main.o main.c;
then mv -f ".deps/main.Tpo" ".deps/main.Po"; else rm -f ".deps/main.Tpo"; exit 1; fi
In file included from /usr/include/gtk-2.0/gtk/gtk.h:170,
from main.c:21:
/usr/include/gtk-2.0/gtk/gtktextbuffer.h:52: warning: ISO C restricts enumerator values to range of 'int'
/usr/include/gtk-2.0/gtk/gtktextbuffer.h:53: warning: ISO C restricts enumerator values to range of 'int'
/usr/include/gtk-2.0/gtk/gtktextbuffer.h:55: warning: ISO C restricts enumerator values to range of 'int'
In file included from main.c:28:
awn-app.h:30:29: error: libwnck/libwnck.h: No such file or directory
In file included from main.c:28:
awn-app.h:60: error: expected specifier-qualifier-list before 'WnckWindow'
awn-app.h:80: warning: struct has no members
awn-app.h:83: error: expected ')' before '*' token
main.c: In function 'main':
main.c:52: warning: unused variable 'lab'
make[2]: *** [main.o] Error 1
```

```
make[2]: Leaving directory `/root/avant-window-navigator-0.1.1/src'
make[1]: *** [all-recursive] Error 1
make[1]: Leaving directory `/root/avant-window-navigator-0.1.1'
make: *** [all] Error 2
root@falko-desktop:~/avant-window-navigator-0.1.1#
```

As you see, the initial error is now gone, but still another file is missing, *libwnck/libwnck.h*, so let's search for the missing package:

```
apt-file search libwnck/libwnck.h
```

This time we're lucky, there's only one package containing that file:

```
root@falko-desktop:~/avant-window-navigator-0.1.1# apt-file search libwnck/libwnck.h
libwnck-dev: usr/include/libwnck-1.0/libwnck/libwnck.h
root@falko-desktop:~/avant-window-navigator-0.1.1#
```

So let's install the missing package:

```
apt-get install libwnck-dev
```

4 Links

- Debian: <http://www.debian.org>
- Ubuntu: <http://www.ubuntu.com>