

How to setup international keyboard in X Window System with Xmodmap

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How to setup international keyboard in X Window System with Xmodmap

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How to setup international keyboard in Linux or Unix with Xmodmap. The Xmodmap is a file that XFree86 reads in order to give you a keyboard layout. This solution will work for you in setting up any international keyboard for (Debian, RedHat, Mandrake, CorelLinux) Linux, FreeBSD, OpenBSD, NetBSD and possibly every Unix that uses XFree86 and KDE. This howto is a little experimental in that that it bypasses some standardized XFree86 solutions (with respect to its older versions), although a standard form of internationalization is included too.

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1. Introduction

1.1 Copyright

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1.2 Revision history

Version 1.0.0

Initial version Summer 1999

Version 1.1

Added copyright information and slight modifications pertaining to newer systems

Version 1.2

Completely rebuilt, added the possibility to force the system to read Xmodmap; some national Xmodmap files added, more information included on building up the standard Xmodmap files

Version 1.3

Minor corrections, spell checking and editation made, few more Xmodmap files added; list of what all ISO8859* specifications mean

1.3 Introduction

The international keyboard Xmodmap HOWTO. Copyright (C) 1999, 2001 Juraj Sipos (xvudpapr@savba.sk). Imagine you use a Linux or BSD OS and want to write a business letter to a person that has a foreign name with a slash or idiaresis. Danish language uses signs like ø and Spanish like ñ.

This is the Xmodmap Howto. With this information you can make your own international keyboard layout without installing any additional packages. The following information will help you set up German, Spanish, Italian, Slovak, Czech, Polish, Slovenian, Croatian, Danish, Dutch, French, Finnish, Norwegian, Estonian, Latvian, Swedish and other keyboards. You can also alternatively look at my homepage at <http://freebsd.nfo.sk> to see layouts of various keyboards. In case you want to install Greek, Hebrew or Russian language, follow my information and apply changes pertinent to these languages also with respect to other documentation (e.g., install Greek fonts, etc., see the Cyrillic, Hebrew, or Danish howto). This howto does not cover the /etc/X11/XF86Config file XKB configuration and don't mail me with questions regarding this matter. There are other howtos in Linux Documentation project, so please look there.

2. Setting up international keyboard in X Window System with Xmodmap

2.1 Quick start

Make your own .Xmodmap file according to information in this file.

Alternatively, write the following in your .bash_profile in home directory:

```
export LANG=language export LC_ALL=language
```

and/or LANG=language (which can be LANG="sk_SK", for example) in your /etc/sysconfig/i18n file

Here "language" is the language you want to use. The languages can be found in the file locale.alias in /usr/X11R6/lib/X11/locale. Run "exit" command on the console or reboot and log in again.

Install fonts (best are ISO8859-2 Type1 fonts for Czech or Slovak), put them in path to your XF86Config. Start X Server.

Please note that KDE 2.0 editors don't display ISO8859-2 fonts even if you have them in path. The modification of /etc/sysconfig/i18n file is necessary here to use the international keyboard.

Run the command "xmodmap /.Xmodmap" from an X terminal window to force the system to read the Xmodmap file.

Switch the keyboard and enjoy.

The other, XKB solution, which is not covered in this file but mentioned at least as it pertains to internationalization too, is another way of configuring international keyboard, and both the XKB and XMODMAP solutions are independent of one another. You may alternatively edit the /etc/X11/Xf86Config file as explained in a Danish Howto, or issue this command in an X terminal window for the Slovak keyboard:

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```
setxkbmap -model pc102 -symbols 'czsk(us_sk_qwertz)' setxkbmap cs -option grp:shift_toggle
```

qwerty or qwertz means that letters z Z and y Y are swapped. The "grp:shift_toggle" gives you an option to switch between keyboards. You may also try to write Option "XkbOptions" "grp:ctrl_shift_toggle" to your XF86Config file, which will change keyboards by pressing Ctrl and Shift at the same time.

To see a variety of languages (symbols), look in the file symbols.dir in /usr/X11R6/lib/X11/xkb directory. Note that some symbols are only in sources and not in binaries (of XFree86).

As you see, this looks quite complicated too and it gets even more difficult when you realize that many national keymaps are not included in the standard XFree86 binary distribution, although they are included in its sources. The kkbd utility for handling international keyboard layouts was removed from KDE 2.0 and documentation is quite insufficient. A simple way would be to start KDE, change the international keyboard settings and immediately write in the language you chose (this will work for German and other languages maybe, but in Eastern European keyboards some letters may not function).

Moreover, the KDE 2.0 command "kcmshell Personalization/kcmlayout" will not show you a Croatian or Macedonian keyboard unless you modify the /etc/sysconfig/i18n file. And although it shows a Czechoslovakian keyboard, Czechoslovakia does not exist as a country anymore and users may be confused with how to define Czech or Slovak language.

Some X Window System managers override .Xmodmap setting. If .Xmodmap doesn't work immediately, a good way is to force the system to read it from your root (home) directory. You will do this by issuing the following command from an X terminal window:

```
xmodmap ~/.Xmodmap
```

After I installed the Slovak keyboard in FreeBSD 4.1 in KDE with Xmodmap file that used the standard definitions for ISO8859-2 keycode entities (lcaron, scaron, etc.), I couldn't write in Slovak or Czech, so I made few changes to the Xmodmap file explained later in this file. After applying these changes, no other changes were necessary.

2.2 How to do it

2.3 This experimental or nonstandard solution is not necessary for newer versions of XFree86

Put the following in your .bash_profile:

```
export LC_ALL=language
```

```
export LANG=language
```

OR

```
export LC_CTYPE=sk_SK export LC_ALL=sk_SK
```

OR for csh shell

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```
setenv LC_ALL=language setenv LANG=language
```

and have the standard Xmodmap file in your home directory. If you ask me where you may obtain such "standard" Xmodmap files, go to GNOME `../share` directory. The file `/usr/X11R6/lib/X11/locale/locale.alias` contains the aliases for languages, so look there in order to find out what is `ca_ES` or `br_FR`, or to find out the exact syntax for your language (you cannot write "croatia" but you must write "croatian", not "Croatian"; this is very important, as Unix is case sensitive).

Now you must install the pertinent fonts and put path in XF86Config file for these fonts. If you want to internationalize your keyboard, use the standard Xmodmap definitions first and use right alt to switch between keyboards (if you use GNOME Xmodmap files). If it does not work, do the following:

- a) Copy the "Compose" file from: `/usr/X11R6/lib/X11/locale/iso8859-2` to: `/usr/X11R6/lib/X11/locale/iso8859-1` directory (yes, `iso8859-1`, not `iso8859-2`). Back up the original "Compose" file if you want (alternatively, copy other `iso885***` Compose files to the `iso8859-1` directory).
- b) Put the included `.Xmodmap` file to your root directory (Slovak language, or make your own `.Xmodmap` file, or choose from the ones listed here).
- c) Install `ISO8859-2` fonts (or other pertinent fonts).

You may try to issue the command from X:

```
xset q
```

to see which fonts are in your path.

If you want to add fonts in your path from X, issue the command:

```
xset fp+ /usr/fonts_path
```

```
xset fp rehash
```

d) Disable every "Scroll Lock" uncommented line in your XF86Config, because our `.Xmodmap` for the Slovak language uses the Scroll Lock to switch between keyboards (you can modify this `.Xmodmap` for any keyboard).

e) Put the appropriate `fontpath` for your newly installed fonts in the XF86Config file, if necessary (some systems may not require this, the `FontPath "unix/:7100"` may be sufficient). The `.Xmodmap` solution may be applied to all X keyboards; `.Xmodmap` file overrides all settings of keyboard layouts as defined in `/usr/X11R6/lib/X11/xkb/symbols/`, where are symbols for many international keyboards.

First, I must say that in my solution (in older XFree86 versions), different mapping is used for `.Xmodmap` keycodes for some `ISO8859-2` keycode entities. `ISO8859-2` definitions (keycode entities) like `lcaron`, `zcaron` actually do not work (without modification of `/etc/sysconfig/i18n` file). This means that the `ISO8859-1` definitions must be used instead and they will either give you what they say they are (aacute [á], eacute [é], etc.), or they will not give you what they say they are (using `ISO8859-2` fonts, putting "threequarters" in your `.Xmodmap` file will not give you "3/4" but "z" with a caron, a reverses ^ above it). For example, "mu" will give `lcaron` (L), "oslash" `rcaron`, etc.

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However, other key definitions, for example, adieresis (a with two dots above it), uacute (u with a slash above it), as well as dead_diaeresis do not require a substitution of other definitions and work pretty well, as they're defined everywhere (a dead key is a key you press, hold it, yet nothing happens, but after pressing another key you will get a special letter).

The original "Compose" file in `../iso8859-1` directory can be fully utilized for English, Slovak or Czech keyboard layouts (Polish, Hungarian, Slovenian, Croatian) in some older XFree86 distributions, but there is only one problem – dead keys do not work. That's why you have to copy the "Compose" file from the `iso8859-2` directory to `iso8859-1` directory, or alternatively, you can edit the "Compose" file in `iso8859-1` directory.

You can leave the Keyboard section in your XF86Config file without much change. Put (if it's not already there) the following in the "Keyboard" section:

```
Section "Keyboard"
```

```
Protocol "Standard"
```

```
XkbRules "xfree86"
```

```
XkbModel "pc101"
```

```
XkbLayout "us"
```

Some X managers and/or environments override `.Xmodmap` settings, so if you use KDE and `.Xmodmap` doesn't work, force the system to read it by issuing the command `xmodmap /.Xmodmap`. Alternatively, you can have 60 `.Xmodmap` files like `.Xmo1`, `.Xmo2`, `.Xmo3`, `.Xmo4`, etc., and you may force the system to read them (`xmodmap /.Xmo1`). The dot means it is a hidden file and it is not necessary. You may also have `xmo1`, `xmo2`, or `xmo3` `Xmodmap` files.

You may write in a national keyboard only with applications that have access to your ISO8859-2 fonts (or other fonts), but this may not work with StarOffice or with other applications that have their own built-in fonts. StarOffice has its own fonts directory – for afm fonts in `StarOffice/share/xp3/fontmetrics/afm`, and for ps fonts in `StarOffice/share/xp3/pssoffonts`, so you must add the ISO8859-2 fonts to these directories (to tell StarOffice to use these fonts too) and edit `fonts.dir` file and add the symlinked fonts there. Here is a script that will do it for you. Cut it, name it "so52", make it executable (`chmod +x so52`), copy it to the `StarOffice/share/xp3` directory and execute it there.

```
-----cut_here-----  
#!/bin/sh  
  
STAR_OFFICE_ROOT=/StarOffice52  
  
FONTS_DIR=/usr/X11R6/lib/X11/fonts/ISO8859-2/Type1  
  
# The above fonts directory is for SuSE 7.0 and previous  
  
# If you have Soffice instead of StarOffice52, change the second line to Soffice  
  
# FONTS_DIR=/usr/share/fonts/ISO8859-2/Type1
```

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```
# The above fonts directory is for RedHat and Mandrake
# uncomment it if you use those systems
# -----
# Don't edit the following script!
# -----
XP3_DIR=$STAR_OFFICE_ROOT/share/xp3
if [ -e $XP3_DIR/psstd.fonts.il2 ]; then
echo "Changes were already made."
echo "If you want to do it, delete the file"
echo " $XP3_DIR/psstd.fonts.il2"
exit 1
fi
if [ -e $FONTS_DIR/afm ]; then
AFM_DIR=$FONTS_DIR/afm
else
AFM_DIR=$FONTS_DIR
fi -----cut_here-----
```

StarOffice 5.2 fully recognizes Word97 documents even written in other languages, but for the older versions or other editors, you may use a converter from iso8859-2 to win1250 encoding.

StarOffice 5.2 can be thus used by professional translators who may translate in any languages and give outputs in MS Word97 or rtf format.

2.4 Xmodmap theory and standard Xmodmap solution

If you want to edit and make your own .Xmodmap keyboard layout definitions, I'll explain one line of the .Xmodmap file to make clear what you should do.

This explanation can be used for all keycodes. For example, the line:

```
keycode 0x11 = 8 asterisk aacute 8
```

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(note: keycode 0x11 is derived from the "xkeycaps" utility; you can also use the X "xev" utility to explore keyboard puzzles.)

says that the first pair, the default one, (number "8" and "asterisk") will display number "8" when you press keycode 0x11 ("8"), will display asterisk when a "shift" key is pressed. After pressing the scroll lock, there's another definition: ISO_NEXT_GROUP, which means that when you press the default "8" key, no "8" will be displayed, but aacute ("á"); when you press the "shift" key, number "8" will be displayed. So if you change "aacute" and "8", anything you put instead of "aacute" and "8" will be displayed, for example:

```
keycode 0x11 = 8 asterisk semicolon colon
```

will give you "semicolon" and "colon" in your 0x11 keycode after pressing the Scroll Lock.

The ISO_NEXT_GROUP is defined by another line. If this line is not defined, you will be able to use only two definitions ("8" and "asterisk") – look at my .Xmodmap file. If you delete the ISO_NEXT_GROUP (the next pair of definitions on the right), you will have only one group of keyboard definitions ("8" and "asterisk"). Be careful when editing the .Xmodmap file. You mustn't delete definitions that enable utilization of the Scroll Lock unless you know what you are doing (or you map the second keyboard by right Alt). These are the lines such as:

```
keycode 0x4e = ISO_Next_Group
```

```
add mod5 = ISO_Next_Group,
```

etc. You must also keep in mind that Unixes are case sensitive. If you want to find out more about keycodes, install the package "xkeycaps" or use "xev".

2.5 Experimental .Xmodmap sample file for the Slovak language typewriter

layout _____ cut_here _____

```
keycode 0x09 = Escape
```

```
keycode 0x43 = F1 F11 F1 Multi_key
```

```
keycode 0x44 = F2 F12 F2 F12
```

```
keycode 0x45 = F3 F13 F3 F13 idiaeresis
```

```
keycode 0x46 = F4 F14 F4 F14 mu yen
```

```
keycode 0x47 = F5 F15 F5 F15 guillemotright guillemotleft
```

```
keycode 0x48 = F6 F16 F6 F16 ograve
```

```
keycode 0x49 = F7 F17 F7 dead_abovedot oacute
```

```
keycode 0x4A = F8 F18 F8 dead_breve acute
```

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keycode 0x4B = F9 F19 F9 dead_cedilla ugrave

keycode 0x4C = F10 F20 F10 dead_ogonek

keycode 0x5F = F11 F21 dead_acute dead_caron

keycode 0x60 = F12 F22 dead_abovering dead_diaeresis

keycode 0x6F = Print Execute dead_iota

keycode 0x4E = ISO_Next_Group

keycode 0x6E = Pause

keycode 0x31 = grave asciitilde semicolon dead_diaeresis

keycode 0x0A = 1 exclam plus 1

keycode 0x0B = 2 at mu 2

keycode 0x0C = 3 numbersign onesuperior 3

keycode 0x0D = 4 dollar egrave 4

keycode 0x0E = 5 percent 0x0bb 5

keycode 0x0F = 6 asciicircum threequarters 6

keycode 0x10 = 7 ampersand yacute 7

keycode 0x11 = 8 asterisk aacute 8

keycode 0x12 = 9 parenleft iacute 9

keycode 0x13 = 0 parenright eacute 0

keycode 0x14 = minus underscore equal percent

keycode 0x15 = equal plus dead_acute dead_caron

keycode 0x33 = backslash bar ograve parenright

keycode 0x16 = BackSpace

keycode 0x6A = Insert

keycode 0x61 = Home

keycode 0x63 = Prior

keycode 0x4D = Num_Lock Pointer_EnableKeys

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keycode 0x70 = KP_Divide slash

keycode 0x3F = KP_Multiply asterisk

keycode 0x52 = KP_Subtract minus

keycode 0x17 = Tab ISO_Left_Tab

keycode 0x18 = q Q

keycode 0x19 = w W

keycode 0x1A = e E

keycode 0x1B = r R

keycode 0x1C = t T

keycode 0x1D = y Y z Z

keycode 0x1E = u U

keycode 0x1F = i I

keycode 0x20 = o O

keycode 0x21 = p P

keycode 0x22 = bracketleft braceleft acute slash

keycode 0x23 = bracketright braceright diaeresis parenleft

keycode 0x24 = Return

keycode 0x6B = Delete

keycode 0x67 = End

keycode 0x69 = Next

keycode 0x4F = KP_Home 7 KP_Home

keycode 0x50 = KP_Up 8

keycode 0x51 = KP_Prior 9

keycode 0x56 = KP_Add plus

keycode 0x42 = Caps_Lock

keycode 0x26 = a A

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keycode 0x27 = s S

keycode 0x28 = d D

keycode 0x29 = f F

keycode 0x2A = g G

keycode 0x2B = h H

keycode 0x2C = j J

keycode 0x2D = k K

keycode 0x2E = l L

keycode 0x2F = semicolon colon ocircumflex quotedbl

keycode 0x30 = apostrophe quotedbl section exclam

keycode 0x53 = KP_Left 4

keycode 0x54 = KP_Begin 5

keycode 0x55 = KP_Right 6

keycode 0x32 = Shift_L ISO_Next_Group

keycode 0x34 = z Z y Y

keycode 0x35 = x X

keycode 0x36 = c C

keycode 0x37 = v V

keycode 0x38 = b B

keycode 0x39 = n N

keycode 0x3A = m M

keycode 0x3B = comma less comma question

keycode 0x3C = period greater period colon

keycode 0x3D = slash question minus underscore

keycode 0x3E = Shift_R

keycode 0x62 = Up

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keycode 0x57 = KP_End 1

keycode 0x58 = KP_Down 2

keycode 0x59 = KP_Next 3

keycode 0x6C = KP_Enter Return

keycode 0x25 = Control_L ISO_Next_Group

!keycode 0x40 = Alt_L Meta_L

keycode 0x40 = Meta_L Alt_L

keycode 0x41 = space

keycode 0x71 = Alt_R Meta_R

keycode 0x6D = Control_R

keycode 0x64 = Left

keycode 0x68 = Down

keycode 0x66 = Right

keycode 0x5A = KP_Insert 0

keycode 0x5B = KP_Delete period

!keysym Alt_L = Meta_L

!keysym F12 = Multi_key

clear Shift

!clear Lock

clear Control

clear Mod1

clear Mod2

clear Mod3

clear Mod4

clear Mod5

add Shift = Shift_L Shift_R

```
add Control = Control_L Control_R

!add Mod1 = Alt_L Alt_R

add Mod1 = Meta_L Alt_R

add Mod2 = Num_Lock

add Mod5 = ISO_Next_Group

!add Mod1 =

!add Mod2 = Alt_R Alt_L Mode_switch

keycode 0x73 = ISO_Next_Group

keycode 0x74 = dead_acute dead_diaeresis

keycode 0x75 = dead_caron dead_avoring

_____cut_here_____
```

You may find almost any xmodmap file in the GNOME directory in (SuSE) /opt/gnome/share/xmodmap (with standard ISO8859-1, ISO8859-2 and other definitions). If GNOME is not installed in the /opt directory, look in /usr/share. To switch between the keyboards, use right Alt. It is defined in these Xmodmap files already.

2.6 Character sets

The purpose of the following info is to help you build any .Xmodmap keyboard layout with ISO8859-2 or other fonts. The ISO8859-2 Character Set definitions are included here for you to know which names are used for which keys. You should not bother about the numbers, but notice how keys are named. Much of this information is useful to build a keyboard with ISO8859-1 characters only, or a combination of Eastern European characters and Western characters. If you're going to use other languages than the Central European or Western European ones, find a pertinent table for your ISO*** character set on Internet. The gdkkeysyms.h file, that contains all the crazy names for keycode entities including hexcodes, is in (RedHat) /usr/include/gdk/ directory. If no gdkkeysyms.h file is on your system, see the file /usr/X11R6/include/X11/keysymdef.h, or try to look in /lib/perl5/site_perl/5.6.0/i386-linux/GTK/keysyms.pm (it also contains names of keycode entities including hex codes). If you have a newer version of PERL, the "5.6.0" may differ. The similar should apply to other systems (FreeBSD), as all these use PERL.

2.7 ISO-8859-2 (ISO Latin2) character set

Xmodmap entity

space

How to setup international keyboard in X Window System with Xmodmap

exclam !

quotedbl "

numbersign #

dollar \$

percent

ampersand &

quoteright '

parenleft (

parenright)

asterisk *

plus +

comma ,

hyphen -

period .

slash /

zero 0

one 1

two 2

three 3

four 4

five 5

six 6

seven 7

eight 8

nine 9

colon :

2.6 Character sets

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semicolon ;

less <<

equal =

greater >>

question ?

at @

A A

B B

C C

D D

E E

F F

G G

H H

I I

J J

K K

L L

M M

N N

O O

P P

Q Q

R R

S S

T T

How to setup international keyboard in X Window System with Xmodmap

U U

V V

W W

X X

Y Y

Z Z

bracketleft [

backslash \

bracketright]

asciicircum ^

underscore _

quoteleft `

a a

b b

c c

d d

e e

f f

g g

h h

i i

j j

k k

l l

m m

n n

2.6 Character sets

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o o

p p

q q

r r

s s

t t

u u

v v

w w

x x

y y

z z

braceleft {

bar |

braceright }

tilde

space

Aogonek

breve

Lslash

currency

Lcaron

Sacute

section

dieresis

Scaron

2.6 Character sets

Scedilla

Tcaron

Zacute

hyphen

Zcaron

Zdotaccent

degree

aogonek

ogonek

lslash

acute

lcaron

sacute

caron

cedilla

scaron

scedilla

tcaron

zacute

hungarumlaut

zcaron

zdotaccent

Racute

Aacute

Acircumflex

Abreve

Adieresis

Lacute

Cacute

Ccedilla

Ccaron

Eacute

Eogonek

Edieresis

Ecaron

Iacute

Icircumflex

Dcaron

Eth

Nacute

Ncaron

Oacute

Ocircumflex

Ohungarumlaut

Odieresis

multiply

Rcaron

Uring

Uacute

hungarumlaut

Udieresis

Yacute

Tcedilla

germandbls

racute

aacute

acircumflex

abreve

adieresis

iacute

ccacute

ccedilla

ccaron

eacute

eogonek

edieresis

ecaron

iacute

icircumflex

dcaron

dbar

nacute

ncaron

oacute

ocircumflex

ohungarumlaut

odieresis

divide

How to setup international keyboard in X Window System with Xmodmap

rcaron

uring

uacute

uhungarumlaut

udieresis

yacute

tcedilla

dotaccent

First, try to see if standard definitions will give you (after installing pertinent fonts and building Xmodmap with keyboard definitions for X) what they say they are. If they will not give you what they say they are (some keycodes will be unfunctional), then put to your `bash_profile` the "export LANG=language" and "export LC_ALL=language" statements and if you are still unsuccessful, you must make a substitution. Definitions which will not give you what they say they are can be traced by their visual shape in Western Latin 1 encoding. If you are a Czech, for example, you may issue a command:

```
setxkbmap -model pc102 -symbols 'czsk(us_cz_qwertz)' setxkbmap cs -option grp:shift_toggle
```

and see what will give you an X terminal window (press both Shift keys or press alt and hold it to see the other keyboard layout). This means that by pressing a letter "3" you will get a real "onesuperior" key. It is good that X terminal window does not make use of ISO8859-2 fonts now, so you will see what you must use instead of scaron (scaron = onesuperior). By putting "onesuperior" in an `.Xmodmap` file you will get a REAL "scaron", but obviously, only with use of ISO8859-2 fonts (with use of ISO8859-1 fonts, you will get a REAL "onesuperior").

Thus, the X terminal window will show you fonts like micron, onesuperior, threequarters, and so on. You will see what you must substitute. But if you don't know what "?" is called in ISO terminology, find and download an appropriate character set table for ISO8859-1, or look in `gdkkeysyms.h` file, `/lib/perl5/site_perl/5.6.0/i386-linux/GTK/keysyms.pm` file, or `../ISO8859-1/Compose` file. Alternatively, you may experiment with all codes defined in `/usr/X11R6/lib/X11/locale/ISO8859-1/Compose` file. You must use the ISO8859-1 entities when the system refuses to display the ISO8859-2 entities correctly.

The following symbols on your right is what I found out through my research. This is just an example. When you use a "Pound" definition in the Xmodmap file, the X will display you a Lslash instead (in relation to using iso8859-2 fonts, of course). When you choose some easy KDE text editor, select iso8859-2 fonts charset from the fonts menu. NOTE: vowel *acute (uacute, eacute, etc.) signs require no substitution, therefore I omitted iacute, aacute, etc., here.

ISO8859-1 entity will give you the: ISO8859-2 entity

in our nonstandard or experimental Xmodmap keycode definition

How to setup international keyboard in X Window System with Xmodmap

egrave ccaron

ugrave uring

agrave racute

ecircumflex "c" with something at the bottom of it

ucircumflex Lslash "Pound" in Xmodmap gives you Lslash.

Lcaron Writing "yen" will give us Lcaron

Scaron copyright (will give us Scaron)

Tcaron guillemotleft (will give us Tcaron)

Zcaron registered

lcaron mu

scaron onesuperior

tcaron guillemotright

zcaron threequarters

Cacute AE

Eogonek find out yourself

Edieresis Edieresis

ecaron igrave

onequarter zacute

questiondown z with a ring above it

Dcaron find out yourself

Ooblique Rcaron

thorn t with something at the bottom of it

Sterling Lstroke

yen Lcaron

copyright Scaron

brokenbar Sacute

2.6 Character sets

macron Z with something above it

paragraph sacute

periodcentered caron

masculine s with something at the bottom of it

onequarter zacute

ecircumflex d with a line above it

ETH Dstroke

Ntilde Nacute

Otilde O with two dots above it

registered Zcaron

Nacute Ograve

nacute ograve

Ocircumflex Ocircumflex

ccaron egrave

nacute ntilde

2.8 The standard ISO8859–2 definitions in the Xmodmap file

The example of a standard .Xmodmap file from keycode 0x31 to 0x33. This file will make X Server correctly display lcaron, scaron, etc., if you use a newer version of XFree86 and/or have a LC_LANG=language and LC_ALL=language statements in your bash_profile or in /etc/sysconfig/i18n. Just copy the following text from keycode 0x31 to 0x33 to the above-listed Xmodmap file (delete the experimental definitions from keycode 0x31 to 0x33).

keycode 0x31 = grave asciitilde semicolon dead_diaeresis

keycode 0x0A = 1 exclam plus 1

keycode 0x0B = 2 at lcaron 2

keycode 0x0C = 3 numbersign scaron 3

keycode 0x0D = 4 dollar ccaron 4

keycode 0x0E = 5 percent tcaron 5

keycode 0x0F = 6 asciicircum scaron 6

keycode 0x10 = 7 ampersand yacute 7

keycode 0x11 = 8 asterisk aacute 8

keycode 0x12 = 9 parenleft iacute 9

keycode 0x13 = 0 parenright eacute 0

keycode 0x14 = minus underscore equal percent

keycode 0x15 = equal plus dead_acute dead_caron

keycode 0x33 = backslash

bar ograve parenright

2.9 ISO* specifications

ISO8859-0 old, replaced by ISO 8859-14 and ISO 8859-15.

ISO8859-1 Western Europe: Danish, Dutch, English, Faeroese, Finnish, Flemish, French, German, Icelandic, Irish, Italian, Norwegian, Portuguese, Spanish, and Swedish. Many other languages can be written with this.

ISO8859-2 Eastern Europe: Czech, Slovak, English, German, Hungarian, Polish, Romanian, Serbo-Croatian, Slovak, Slovene. (Please note that Serbian language uses both Latin ISO8859-2 and Cyrillic ISO8859-5).

ISO8859-3 English, Esperanto, Galician, Maltese and Turkish.

ISO8859-4 English, Baltic languages – Estonian, Latvian, Lithuanian, and Scandinavian languages – Danish, Faeroese, Icelandic, Lappish, Norwegian, and Swedish.

ISO8859-5 Latin/Cyrillic alphabet: Bulgarian, Byelorussian, English, Macedonian, Russian, Serbian, Ukrainian.

ISO8859-6 Latin/Arabic alphabet: English, Arabic.

ISO8859-7 Latin/Greek alphabet: English, Greek.

ISO8859-8 Latin/Hebrew alphabet: English, Hebrew.

ISO8859-9 Latin alphabet: Danish, Dutch, English, Finnish, French, German, Irish, Italian, Norwegian, Portuguese, Spanish, Swedish, Turkish, formed by extending ISO8859-1.

ISO8859-10 Latin alphabet: Modification of ISO8859-4

ISO8859-11 Latin/Thai alphabet.

ISO8859-12 Reserved.

ISO8859-13 Baltic.

ISO8859-14 Celtic

ISO8859-15 Similar to Latin-1

ISO8859-16 Albanian, Croatian, English, Finnish, French, German, Hungarian, Irish Gaelic, Italian, Latin, Polish, Romanian, Slovenian, Lithuanian, and Scandinavian languages (Danish, Faeroese, Icelandic).

3. How this Xmodmap solution works on various systems

3.1 SuSE

SuSE 6.4

Everything works well with Xmodmap standard definitions. GNOME, KDE 1.x and other X Window managers, too, nicely display ISO8859-2 characters. No modification of other system files is required. The problematic here is KDE 2.0, if you install it for this system.

SuSE 7.0 with XFree86 version 3.3.6 and KDE 2.0

No LANG=language and LC_ALL=language statements are necessary in your bash_profile. You may use the Xmodmap file with standard ISO8859-2 keycode definitions (not "threequarters" but "scaron", etc.). Unfortunately, although you may immediately start writing with ISO8859-2 keycodes, the dead keys are not working properly and export LANG=language does not work here in order to make these dead keys work. Internal KDE 2.0 editors do not properly display ISO8859-2 fonts unless the i18n file, or its equivalent, is modified. You may also try to modify the KDE 2.0 settings in Preferences > Personalization > Country & Language, where you change the charset to ISO8859-2 characters. Old kedit, newest GNOME's gedit and StarOffice work well without modification of system files. Other X Window managers like GNOME work well, too.

After copying the Compose file from /usr/X11R6/lib/X11/locale/iso8859-2/ to the /usr/X11R6/lib/X11/locale/iso8859-1/, you may start elegantly working with dead keys. This was also tested on StarOffice 5.2. The FontPath must be in /etc/XF86Config, not in /etc/X11/Xf86Config.

The following is the FontPath section for ISO8859-2 fonts from my SuSE 7.0 /etc/XF86Config file (these ISO8859-2 fonts are on your Linux CD):

```
FontPath "/usr/X11R6/lib/X11/fonts/ISO8859-2/Type1"
```

```
FontPath "/usr/X11R6/lib/X11/fonts/ISO8859-2/Type1/afm"
```

```
FontPath "/usr/X11R6/lib/X11/fonts/ISO8859-2/Type1/pfm"
```

3.2 Mandrake Linux

Mandrake Linux 7.2 with KDE 2.0

GNOME and other X Window managers work well even without modification of `/etc/sysconfig/i18n` file. KDE 2.0 is a little bit harder, as this file needs to be modified. I used the "kcmshell Personalization/kcmlayout" command, (or go to menu Configuration > KDE > Personalization > keyboard layout) to select the keyboard, and after putting the `LANG=language` in the `/etc/sysconfig/i18n` file (and rebooting afterwards), KDE 2.0 works nicely and StarOffice works immediately (with ISO8859-2 fonts in its directory) with dead keys. I chose Czechoslovakian as the second language and could write in Czech with ISO8859-2 characters on my screen even without the Xmodmap file. However, after using the Xmodmap file (standard definitions), I could use the Slovak keyboard layout.

The following is my Mandrake `/etc/sysconfig/i18n` file (I commented the previous definitions for English):

```
#LC_MONETARY=en_US

#LC_CTYPE=sk_SK

#LC_NUMERIC=en_US

#LC_MESSAGES=en_US

LANGUAGE=sk_SK

#LC_TIME=en_US

#RPM_INSTALL_LANG=en

#LC_COLLATE=en_US
```

The maps in `/usr/X11R6/lib/X11/xkb/symbols` can be modified on the fly while in X; you only switch keyboards from the panel (clicking on icon). You can edit those maps and modify them for your choice. After changing some Czech definitions in the "cs" file to Slovak ones StarOffice displayed them well.

3.3 RedHat

RedHat 5.1, 5.2, 6.0, 6.1 and 6.2 (XFree86 3.3.6 and older)

No `LANG=language` and `LC_ALL=language` statements are necessary in your `bash_profile`. Here the "experimental" Xmodmap solution works well ("mu" instead of "lcaron", etc., unless you modify the `/etc/sysconfig/i18n` file; then you may try to use the "standard" entities) and you must copy the Compose file from `../ISO8859-2` to `../ISO8859-1` directory to make dead keys work. The `XF86Config` file may remain untouched.

RedHat 7.0 with KDE 2.0 and XFree86 4.x

GNOME and other X Window managers work well. You do not have to copy the Compose file from `../ISO8859-2` to `../ISO8859-1` directory. KDE 1.x works well, too, but KDE 2.0 requires modification of

How to setup international keyboard in X Window System with Xmodmap

/etc/sysconfig/i18n file. The following is syntax of my i18n file from RedHat 7.0:

```
LANG="sk_SK"
```

I changed nothing in the Menu in Preferences > Personalization except that I added the additional keyboard (Czechoslovakian) layout. Please note that some other systems may require a different attitude. The following is the syntax from my KDE kxkbrc file in /root/.kde/share/config directory: [Layout]

```
Additional=cs
```

```
AdditionalEncodings=ISO8859-2
```

```
Encoding=ISO8859-1
```

```
Layout=us
```

```
Model=pc104
```

```
Test=Test
```

```
Use=true
```

However, this file is generated automatically after you add a keyboard layout.

3.4 FreeBSD

FreeBSD 3.1 and 3.2

Same as with RedHat 5.1, 5.2, 6.0, 6.1, 6.2.

FreeBSD 4.1

No LANG=language and LC_ALL=language statements are necessary in your bash_profile. However, you can use two strategies:

a) either you modify the /etc/profile file and put there a statement like: LANG=sk_SK.ISO8859-2; export LANG

After you reboot, you will have a Slovak keyboard in KDE immediately and you can use the right Alt key to use ISO8859-1 keycodes. But dead keys will not work and you have to copy the ../ISO8859-2/Compose file to ../ISO8859-1 directory to make them work. Irritating may be using the right Alt to switch to keycodes like "@", if you use an email client often, for example.

b) Same strategy as for FreeBSD 3.1, 3.2 with nonstandard xmodmap definitions and copying the ../ISO8859-2/Compose file to ../ISO8859-1 directory.

3.5 Corel Linux

Corel Linux 1.0 and 1.2

Same as with FreeBSD.

4. [Some national Xmodmap files](#)

Please note: I am not the author of these files and don't mail me if you find something incorrect in them. These files were taken from the GNOME distribution and the main focus of this howto is to tell you how to map various keycode entities, so that you can make your own keyboard layouts. Use right Alt to switch the keyboard.

4.1 German

clear Mod1

clear Mod2

keycode 9 = Escape Escape

keycode 10 = 1 exclam

keycode 11 = 2 quotedbl twosuperior

keycode 12 = 3 section threesuperior

keycode 13 = 4 dollar dollar

keycode 14 = 5 percent

keycode 15 = 6 ampersand

keycode 16 = 7 slash braceleft

keycode 17 = 8 parenleft bracketleft

keycode 18 = 9 parenright bracketright

keycode 19 = 0 equal braceright

keycode 20 = ssharp question backslash

keycode 21 = dead_acute dead_grave

keycode 22 = BackSpace Delete

keycode 23 = Tab Tab

keycode 24 = q Q at

How to setup international keyboard in X Window System with Xmodmap

keycode 25 = w

keycode 26 = e

keycode 27 = r

keycode 28 = t

keycode 29 = z

keycode 30 = u

keycode 31 = i

keycode 32 = o

keycode 33 = p

keycode 34 = udiaeresis Udiaeresis

keycode 35 = plus asterisk dead_tilde

keycode 36 = Return

keycode 37 = Control_L

keycode 38 = a

keycode 39 = s

keycode 40 = d

keycode 41 = f

keycode 42 = g

keycode 43 = h

keycode 44 = j

keycode 45 = k

keycode 46 = l

keycode 47 = odiaeresis Odiaeresis

keycode 48 = adiaeresis Adiaeresis

keycode 49 = dead_circumflex degree

keycode 50 = Shift_L

How to setup international keyboard in X Window System with Xmodmap

keycode 51 = numbersign apostrophe

keycode 52 = y

keycode 53 = x

keycode 54 = c

keycode 55 = v

keycode 56 = b

keycode 57 = n

keycode 58 = m

keycode 59 = comma semicolon

keycode 60 = period colon Multi_key

keycode 61 = minus underscore

keycode 62 = Shift_R

keycode 63 = KP_Multiply

keycode 64 = Alt_L Meta_L

keycode 65 = space space

keycode 66 = Caps_Lock

keycode 67 = F1 F11

keycode 68 = F2 F12

keycode 69 = F3 F13

keycode 70 = F4 F14

keycode 71 = F5 F15

keycode 72 = F6 F16

keycode 73 = F7 F17

keycode 74 = F8 F18

keycode 75 = F9 F19

keycode 76 = F10 F20

How to setup international keyboard in X Window System with Xmodmap

keycode 77 = Num_Lock

keycode 78 = Scroll_Lock

keycode 79 = KP_7

keycode 80 = KP_8

keycode 81 = KP_9

keycode 82 = KP_Subtract

keycode 83 = KP_4

keycode 84 = KP_5

keycode 85 = KP_6

keycode 86 = KP_Add

keycode 87 = KP_1

keycode 88 = KP_2

keycode 89 = KP_3

keycode 90 = KP_0

keycode 91 = KP_Decimal

keycode 94 = less greater bar

keycode 95 = F11 F11

keycode 96 = F12 F12

keycode 108 = KP_Enter

keycode 109 = Control_R

keycode 112 = KP_Divide

keycode 113 = Mode_switch

keycode 114 = Break

keycode 110 = Find

keycode 98 = Up

keycode 99 = Prior

keycode 100 = Left

keycode 102 = Right

keycode 115 = Select

keycode 104 = Down

keycode 105 = Next

keycode 106 = Insert

! right windows–logo key

! in "windows" keyboards the position of the key is annoying, is where AltGr

! usually resides, so go define it as AltGr

keycode 116 = Mode_switch

! right windows–menu key

keycode 117 = Multi_key

add Mod1 = Alt_L

add Mod2 = Mode_switch

4.2 Hungarian

clear Mod1

clear Mod2

!charset "iso-8859-2"

keycode 9 = Escape

keycode 10 = 1 apostrophe asciitilde

keycode 11 = 2 quotedbl dead_caron

keycode 12 = 3 plus dead_circumflex

keycode 13 = 4 exclam dead_breve

keycode 14 = 5 percent degree

keycode 15 = 6 slash dead_ogonek

How to setup international keyboard in X Window System with Xmodmap

keycode 16 = 7 equal dead_grave

keycode 17 = 8 parenleft dead_abovedot

keycode 18 = 9 parenright dead_acute

keycode 19 = odiaeresis Odiaeresis dead_doubleacute

keycode 20 = udiaeresis Udiaeresis dead_diaeresis

keycode 21 = oacute Oacute dead_cedilla

keycode 22 = BackSpace Delete

keycode 23 = Tab Tab

keycode 24 = q Q backslash

keycode 25 = w W bar

keycode 26 = e E currency

keycode 27 = r

keycode 28 = t

keycode 29 = z

keycode 30 = u

keycode 31 = i I iacute Iacute

keycode 32 = o

keycode 33 = p

keycode 34 = odoubleacute Odoubleacute division

keycode 35 = uacute Uacute

keycode 36 = Return

keycode 37 = Control_L

keycode 38 = a

keycode 39 = s S dstroke

keycode 40 = d D Dstroke

keycode 41 = f F bracketleft

4.2 Hungarian

How to setup international keyboard in X Window System with Xmodmap

keycode 42 = g G bracketright

keycode 43 = h

keycode 44 = j J Iacute iacute

keycode 45 = k K lstroke Lstroke

keycode 46 = l L Lstroke lstroke

keycode 47 = eacute Eacute dollar

keycode 48 = aacute Aacute ssharp

keycode 49 = o section

keycode 50 = Shift_L

keycode 51 = udoubleacute Udoubleacute currency

keycode 52 = y Y greater

keycode 53 = x X numbersign

keycode 54 = c C ampersand

keycode 55 = v V at

keycode 56 = b B braceleft

keycode 57 = n N braceright

keycode 58 = m

keycode 59 = comma question semicolon

keycode 60 = period colon Multi_key

keycode 61 = minus underscore asterisk

keycode 62 = Shift_R

keycode 63 = KP_Multiply

keycode 64 = Alt_L Meta_L

keycode 65 = space space

keycode 66 = Caps_Lock

keycode 67 = F1 F11

4.2 Hungarian

How to setup international keyboard in X Window System with Xmodmap

keycode 68 = F2 F12

keycode 69 = F3 F13

keycode 70 = F4 F14

keycode 71 = F5 F15

keycode 72 = F6 F16

keycode 73 = F7 F17

keycode 74 = F8 F18

keycode 75 = F9 F19

keycode 76 = F10 F20

keycode 77 = Num_Lock

keycode 78 = Scroll_Lock

keycode 79 = KP_7

keycode 80 = KP_8

keycode 81 = KP_9

keycode 82 = KP_Subtract

keycode 83 = KP_4

keycode 84 = KP_5

keycode 85 = KP_6

keycode 86 = KP_Add

keycode 87 = KP_1

keycode 88 = KP_2

keycode 89 = KP_3

keycode 90 = KP_0

keycode 91 = KP_Decimal

keycode 94 = iacute Iacute less

keycode 95 = F11 F11

4.2 Hungarian

keycode 96 = F12 F12

keycode 108 = KP_Enter

keycode 109 = Control_R

keycode 112 = KP_Divide

keycode 113 = Mode_switch

keycode 114 = Break

keycode 110 = Find

keycode 98 = Up

keycode 99 = Prior

keycode 100 = Left

keycode 102 = Right

keycode 115 = Select

keycode 104 = Down

keycode 105 = Next

keycode 106 = Insert

keycode 107 = Delete

! as dead_ogonek, dead_caron, dead_breve and dead_doubleacute doesn't exist

! (yet), I put also compose lines for use with respectively dead_cedilla,

! dead_circumflex, dead_tilde and dead_tilde

add Mod1 = Alt_L

add Mod2 = Mode_switch

4.3 Czech

! Converted keytable file to xmodmap file

clear Mod1

clear Mod2

How to setup international keyboard in X Window System with Xmodmap

keycode 9 = Escape Escape

keycode 10 = plus 1 asciitilde

keycode 11 = ecaron 2 dead_caron

keycode 12 = scaron 3 asciicircum

keycode 13 = ccaron 4 dead_breve

keycode 14 = rcaron 5 degree

keycode 15 = zcaron 6 dead_ogonek

keycode 16 = yacute 7 dead_grave

keycode 17 = aacute 8 dead_abovedot

keycode 18 = iacute 9 dead_acute

keycode 19 = eacute 0 dead_doubleacute

keycode 20 = equal percent dead_diaeresis

keycode 21 = dead_acute dead_caron dead_cedilla

keycode 22 = BackSpace Delete

keycode 23 = Tab Tab

keycode 24 = q Q backslash

keycode 25 = w W bar

keycode 26 = e E currency

keycode 27 = r

keycode 28 = t

keycode 29 = z

keycode 30 = u

keycode 31 = i

keycode 32 = o

keycode 33 = p

keycode 34 = uacute slash division

4.3 Czech

How to setup international keyboard in X Window System with Xmodmap

keycode 35 = parenright parenleft

keycode 36 = Return

keycode 37 = Control_L

keycode 38 = a

keycode 39 = s S dstroke Dstroke

keycode 40 = d D Dstroke dstroke

keycode 41 = f F bracketleft

keycode 42 = g G bracketright

keycode 43 = h

keycode 44 = j

keycode 45 = k K lstroke Lstroke

keycode 46 = l L Lstroke lstroke

keycode 47 = uring quotedbl dollar

keycode 48 = section exclam ssharp

keycode 49 = semicolon degree

keycode 50 = Shift_L

keycode 51 = dead_diaeresis dead_acute currency

keycode 52 = y Y greater

keycode 53 = x X numbersign

keycode 54 = c

keycode 55 = v V at

keycode 56 = b B braceleft

keycode 57 = n N braceright

keycode 58 = m

keycode 59 = comma question

keycode 60 = period colon Multi_key

4.3 Czech

How to setup international keyboard in X Window System with Xmodmap

keycode 61 = minus underscore

keycode 62 = Shift_R

keycode 63 = KP_Multiply

keycode 64 = Alt_L Meta_L

keycode 65 = space space

keycode 66 = Caps_Lock

keycode 67 = F1 F11

keycode 68 = F2 F12

keycode 69 = F3 F13

keycode 70 = F4 F14

keycode 71 = F5 F15

keycode 72 = F6 F16

keycode 73 = F7 F17

keycode 74 = F8 F18

keycode 75 = F9 F19

keycode 76 = F10 F20

keycode 77 = Num_Lock

keycode 78 = Scroll_Lock

keycode 79 = KP_7

keycode 80 = KP_8

keycode 81 = KP_9

keycode 82 = KP_Subtract

keycode 83 = KP_4

keycode 84 = KP_5

keycode 85 = KP_6

keycode 86 = KP_Add

4.3 Czech

How to setup international keyboard in X Window System with Xmodmap

keycode 87 = KP_1

keycode 88 = KP_2

keycode 89 = KP_3

keycode 90 = KP_0

keycode 94 = ampersand asterisk less

keycode 95 = F11 F11

keycode 96 = F12 F12

keycode 108 = KP_Enter

keycode 109 = Control_R

keycode 112 = KP_Divide

keycode 113 = Mode_switch

keycode 114 = Break

keycode 110 = Find

keycode 98 = Up

keycode 99 = Prior

keycode 100 = Left

keycode 102 = Right

keycode 115 = Select

keycode 104 = Down

keycode 105 = Next

keycode 106 = Insert

! right windows–logo key

! in "windows" keyboards the position of the key is annoying, is where AltGr

! usually resides, so go define it as AltGr

keycode 116 = Mode_switch

! right windows–menu key

4.3 Czech

keycode 117 = Multi_key

add Mod1 = Alt_L

add Mod2 = Mode_switch

4.4 Polish

! The "AltGr" (right Alt) key generates Mode_switch

keycode 0x09 = Escape

keycode 0x43 = F1

keycode 0x44 = F2

keycode 0x45 = F3

keycode 0x46 = F4

keycode 0x47 = F5

keycode 0x48 = F6

keycode 0x49 = F7

keycode 0x4A = F8

keycode 0x4B = F9

keycode 0x4C = F10

keycode 0x5F = F11

keycode 0x60 = F12

keycode 0x6F = Print

keycode 0x4E = Multi_key

keycode 0x6E = Pause

keycode 0x31 = grave asciitilde

keycode 0x0A = 1 exclam

keycode 0x0B = 2 at

keycode 0x0C = 3 numbersign

How to setup international keyboard in X Window System with Xmodmap

keycode 0x0D = 4 dollar

keycode 0x0E = 5 percent

keycode 0x0F = 6 asciicircum

keycode 0x10 = 7 ampersand section

keycode 0x11 = 8 asterisk

keycode 0x12 = 9 parenleft

keycode 0x13 = 0 parenright

keycode 0x14 = minus underscore

keycode 0x15 = equal plus

keycode 0x33 = backslash bar

keycode 0x16 = BackSpace

keycode 0x6A = Insert

keycode 0x61 = Home

keycode 0x63 = Prior

keycode 0x4D = Num_Lock

keycode 0x70 = KP_Divide

keycode 0x3F = KP_Multiply

keycode 0x52 = KP_Subtract

keycode 0x17 = Tab

keycode 0x18 = Q

keycode 0x19 = W

keycode 0x1A = e E eogonek Eogonek

keycode 0x1B = R

keycode 0x1C = T

keycode 0x1D = Y

keycode 0x1E = U

4.4 Polish

How to setup international keyboard in X Window System with Xmodmap

keycode 0x1F = I

keycode 0x20 = o O oacute Oacute

keycode 0x21 = P

keycode 0x22 = bracketleft braceleft

keycode 0x23 = bracketright braceright

keycode 0x24 = Return

keycode 0x6B = Delete

keycode 0x67 = End

keycode 0x69 = Next

keycode 0x4F = KP_7

keycode 0x50 = KP_8

keycode 0x51 = KP_9

keycode 0x56 = KP_Add

keycode 0x42 = Caps_Lock

keycode 0x26 = a A aogonek Aogonek

keycode 0x27 = s S sacute Sacute

keycode 0x28 = D

keycode 0x29 = F

keycode 0x2A = G

keycode 0x2B = H

keycode 0x2C = J

keycode 0x2D = K

keycode 0x2E = l L lstroke Lstroke

keycode 0x2F = semicolon colon

keycode 0x30 = apostrophe quotedbl

keycode 0x53 = KP_4

4.4 Polish

How to setup international keyboard in X Window System with Xmodmap

keycode 0x54 = KP_5

keycode 0x55 = KP_6

keycode 0x32 = Shift_L

keycode 0x34 = z Z zabovedot Zabovedot

keycode 0x35 = x X zacute Zacute

keycode 0x36 = c C cacute Cacute

keycode 0x37 = V

keycode 0x38 = B

keycode 0x39 = n N nacute Nacute

keycode 0x3A = M

keycode 0x3B = comma less

keycode 0x3C = period greater Multi_key

keycode 0x3D = slash question

keycode 0x3E = Shift_R

keycode 0x62 = Up

keycode 0x57 = KP_1

keycode 0x58 = KP_2

keycode 0x59 = KP_3

keycode 0x6C = KP_Enter

keycode 0x25 = Control_L

keycode 0x40 = Alt_L Meta_L

keycode 0x41 = space

keycode 0x71 = Mode_switch

keycode 0x6D = Control_R

keycode 0x64 = Left

keycode 0x68 = Down

4.4 Polish

How to setup international keyboard in X Window System with Xmodmap

keycode 0x66 = Right

keycode 0x5A = KP_0

keycode 0x5B = KP_Decimal

! right windows–logo key

! in "windows" keyboards the position of the key is annoying, is where AltGr

! usually resides, so go define it as AltGr

keycode 116 = Mode_switch

! right windows–menu key

keycode 117 = Multi_key

clear Shift

clear Lock

clear Control

clear Mod1

clear Mod2

clear Mod3

clear Mod4

clear Mod5

add Shift = Shift_L Shift_R

add Lock = Caps_Lock

add Control = Control_L Control_R

add Mod1 = Alt_L

!Mode_switch

add Mod2 = Mode_switch

4.5 French

clear Mod1

How to setup international keyboard in X Window System with Xmodmap

clear Mod2

keycode 9 = Escape Escape

keycode 10 = ampersand 1

keycode 11 = eacute 2 dead_tilde

keycode 12 = quotedbl 3 numbersign

keycode 13 = apostrophe 4 braceleft

keycode 14 = parenleft 5 bracketleft

keycode 15 = minus 6 bar

keycode 16 = egrave 7 dead_grave

keycode 17 = underscore 8 backslash

keycode 18 = ccedilla 9 asciicircum

keycode 19 = agrave 0 at

keycode 20 = parenright degree bracketright

keycode 21 = equal plus braceright

keycode 22 = BackSpace

keycode 23 = Tab Tab

keycode 24 = a

keycode 25 = z

keycode 26 = e E currency

keycode 27 = r

keycode 28 = t

keycode 29 = y

keycode 30 = u

keycode 31 = i

keycode 32 = o

keycode 33 = p

4.5 French

How to setup international keyboard in X Window System with Xmodmap

keycode 34 = dead_circumflex dead_diaeresis

keycode 35 = dollar sterling currency

keycode 36 = Return

keycode 37 = Control_L

keycode 38 = q

keycode 39 = s

keycode 40 = d

keycode 41 = f

keycode 42 = g

keycode 43 = h

keycode 44 = j

keycode 45 = k

keycode 46 = l

keycode 47 = m M

keycode 48 = ugrave percent

keycode 49 = twosuperior

keycode 50 = Shift_L

keycode 51 = asterisk mu

keycode 52 = w

keycode 53 = x

keycode 54 = c

keycode 55 = v

keycode 56 = b

keycode 57 = n

keycode 58 = comma question dead_cedilla

keycode 59 = semicolon period

4.5 French

How to setup international keyboard in X Window System with Xmodmap

keycode 60 = colon slash Multi_key

keycode 61 = exclam section

keycode 62 = Shift_R

keycode 63 = KP_Multiply

keycode 64 = Alt_L Meta_L

keycode 65 = space space

keycode 66 = Caps_Lock

keycode 67 = F1 F11

keycode 68 = F2 F12

keycode 69 = F3 F13

keycode 70 = F4 F14

keycode 71 = F5 F15

keycode 72 = F6 F16

keycode 73 = F7 F17

keycode 74 = F8 F18

keycode 75 = F9 F19

keycode 76 = F10 F20

keycode 77 = Num_Lock

keycode 78 = Scroll_Lock

keycode 79 = KP_7

keycode 80 = KP_8

keycode 81 = KP_9

keycode 82 = KP_Subtract

keycode 83 = KP_4

keycode 84 = KP_5

keycode 85 = KP_6

4.5 French

How to setup international keyboard in X Window System with Xmodmap

keycode 86 = KP_Add

keycode 87 = KP_1

keycode 88 = KP_2

keycode 89 = KP_3

keycode 90 = KP_0

keycode 92 = Sys_Req

keycode 94 = less greater bar

keycode 95 = F11 F11

keycode 96 = F12 F12

keycode 107 = Delete

keycode 108 = KP_Enter

keycode 109 = Control_R

keycode 112 = KP_Divide

keycode 113 = Mode_switch

keycode 114 = Break

keycode 110 = Find

keycode 98 = Up

keycode 99 = Prior

keycode 100 = Left

keycode 102 = Right

keycode 104 = Down

keycode 105 = Next

keycode 106 = Insert

! right windows–logo key

! in "windows" keyboards the position of the key is annoying, is where AltGr

! usually resides, so go define it as AltGr

4.5 French

keycode 116 = Mode_switch

! right windows-menu key

keycode 117 = Multi_key

add Mod1 = Alt_L

add Mod2 = Mode_switch

4.6 Croatian/Slovenian

clear Mod1

clear Mod2

keycode 9 = Escape

keycode 10 = 1 exclam asciitilde

keycode 11 = 2 quotedbl caron

keycode 12 = 3 numbersign asciicircum

keycode 13 = 4 dollar breve

keycode 14 = 5 percent degree

keycode 15 = 6 ampersand ogonek

keycode 16 = 7 slash grave

keycode 17 = 8 parenleft abovedot

keycode 18 = 9 parenright acute

keycode 19 = 0 equal doubleacute

keycode 20 = apostrophe question diaeresis

keycode 21 = plus asterisk cedilla

keycode 22 = Delete Delete

keycode 23 = Tab Tab

keycode 24 = q Q backslash

keycode 25 = w W bar

How to setup international keyboard in X Window System with Xmodmap

keycode 26 = e

keycode 27 = r

keycode 28 = t

keycode 29 = z

keycode 30 = u

keycode 31 = i

keycode 32 = o

keycode 33 = p

keycode 34 = scaron Scaron division

keycode 35 = dstroke Dstroke multiply

keycode 36 = Return

keycode 37 = Control_L

keycode 38 = a

keycode 39 = s

keycode 40 = d

keycode 41 = f F bracketleft

keycode 42 = g G bracketright

keycode 43 = h

keycode 44 = j

keycode 45 = k K lstroke

keycode 46 = l L Lstroke

keycode 47 = ccaron Ccaron

keycode 48 = cacute Cacute ssharp

keycode 49 = cedilla diaeresis

keycode 50 = Shift_L

keycode 51 = zcaron Zcaron currency

4.6 Croatian/Slovenian

How to setup international keyboard in X Window System with Xmodmap

keycode 52 = y

keycode 53 = x

keycode 54 = c

keycode 55 = v V at

keycode 56 = b B braceleft

keycode 57 = n N braceright

keycode 58 = m M section

keycode 59 = comma semicolon

keycode 60 = period colon

keycode 61 = minus underscore

keycode 62 = Shift_R

keycode 63 = KP_Multiply

keycode 64 = Alt_L Meta_L

keycode 65 = space space

keycode 66 = Caps_Lock

keycode 67 = F1 F11

keycode 68 = F2 F12

keycode 69 = F3 F13

keycode 70 = F4 F14

keycode 71 = F5 F15

keycode 72 = F6 F16

keycode 73 = F7 F17

keycode 74 = F8 F18

keycode 75 = F9 F19

keycode 76 = F10 F20

keycode 77 = Num_Lock

4.6 Croatian/Slovenian

How to setup international keyboard in X Window System with Xmodmap

keycode 78 = Scroll_Lock

keycode 79 = KP_7

keycode 80 = KP_8

keycode 81 = KP_9

keycode 82 = KP_Subtract

keycode 83 = KP_4

keycode 84 = KP_5

keycode 85 = KP_6

keycode 86 = KP_Add

keycode 87 = KP_1

keycode 88 = KP_2

keycode 89 = KP_3

keycode 90 = KP_0

keycode 91 = KP_Decimal

keycode 92 = X386Sys_Req

keycode 94 = less greater

keycode 95 = F11 F1

keycode 96 = F12 F12

keycode 108 = KP_Enter

keycode 109 = Control_R

keycode 112 = KP_Divide

keycode 113 = Mode_switch

keycode 114 = Break

keycode 110 = Find

keycode 98 = Up

keycode 99 = Prior

4.6 Croatian/Slovenian

keycode 100 = Left

keycode 102 = Right

keycode 104 = Down

keycode 105 = Next

keycode 106 = Insert

add Mod1 = Alt_L

add Mod2 = Mode_switch

4.7 Lithuanian keyboard (AZERTY layout)

clear Mod1

clear Mod2

keycode 9 = Escape Escape

keycode 10 = exclam 1

keycode 11 = quotedbl 2 at

keycode 12 = slash 3 numbersign

keycode 13 = semicolon 4 dollar

keycode 14 = colon 5 percent

keycode 15 = comma 6 asciicircum

keycode 16 = period 7 ampersand

keycode 17 = question 8 asterisk

keycode 18 = parenleft 9

keycode 19 = parenright 0

keycode 20 = underscore minus minus underscore

keycode 21 = plus equal equal plus

keycode 22 = BackSpace

keycode 23 = Tab Tab

How to setup international keyboard in X Window System with Xmodmap

keycode 24 = aogonek Aogonek q Q

keycode 25 = zcaron Zcaron w W

keycode 26 = e E currency

keycode 27 = r

keycode 28 = t

keycode 29 = y

keycode 30 = u

keycode 31 = i

keycode 32 = o

keycode 33 = p

keycode 34 = iogonek Iogonek bracketleft braceleft

keycode 35 = leftright doublelowquotemark bracketright braceright

keycode 36 = Return

keycode 37 = Control_L

keycode 38 = a

keycode 39 = s

keycode 40 = d

keycode 41 = f

keycode 42 = g

keycode 43 = h

keycode 44 = j

keycode 45 = k

keycode 46 = l

keycode 47 = uogonek Uogonek semicolon colon

keycode 48 = eabovedot Eabovedot apostrophe quotedbl

keycode 49 = grave asciitilde

4.7 Lithuanian keyboard (AZERTY layout)

How to setup international keyboard in X Window System with Xmodmap

keycode 50 = Shift_L

keycode 51 = backslash bar

keycode 52 = z

keycode 53 = umacron Umacron x X

keycode 54 = c

keycode 55 = v

keycode 56 = b

keycode 57 = n

keycode 58 = m

keycode 59 = ccaron Ccaron comma less

keycode 60 = scaron Scaron period greater

keycode 61 = eogonek Eogonek slash question

keycode 62 = Shift_R

keycode 63 = KP_Multiply

keycode 64 = Alt_L Meta_L

keycode 65 = space space

keycode 66 = Caps_Lock

keycode 67 = F1 F11

keycode 68 = F2 F12

keycode 69 = F3 F13

keycode 70 = F4 F14

keycode 71 = F5 F15

keycode 72 = F6 F16

keycode 73 = F7 F17

keycode 74 = F8 F18

keycode 75 = F9 F19

4.7 Lithuanian keyboard (AZERTY layout)

How to setup international keyboard in X Window System with Xmodmap

keycode 76 = F10 F20

keycode 77 = Num_Lock

keycode 78 = Scroll_Lock

keycode 79 = KP_7

keycode 80 = KP_8

keycode 81 = KP_9

keycode 82 = KP_Subtract

keycode 83 = KP_4

keycode 84 = KP_5

keycode 85 = KP_6

keycode 86 = KP_Add

keycode 87 = KP_1

keycode 88 = KP_2

keycode 89 = KP_3

keycode 90 = KP_0

keycode 94 = less greater bar

keycode 95 = F11 F11

keycode 96 = F12 F12

keycode 108 = KP_Enter

keycode 109 = Control_R

keycode 112 = KP_Divide

keycode 113 = Mode_switch

keycode 114 = Break

keycode 110 = Find

keycode 98 = Up

keycode 99 = Prior

4.7 Lithuanian keyboard (AZERTY layout)

keycode 100 = Left

keycode 102 = Right

keycode 115 = Select

keycode 104 = Down

keycode 105 = Next

keycode 106 = Insert

! right windows–logo key

! in "windows" keyboards the position of the key is annoying, is where AltGr

! usually resides, so go define it as AltGr

keycode 116 = Mode_switch

! right windows–menu key, redefined as Compose key

keycode 117 = Multi_key

add Mod1 = Alt_L

add Mod2 = Mode_switch

4.8 Polish

! The "& 7" key generates 7, ampersand, and section

! The "E" key generates e, E, eogonek, and Eogonek

! The "O" key generates o, O, oacute, and Oacute

! The "A" key generates a, A, aogonek, and Aogonek

! The "S" key generates s, S, sacute, and Sacute

! The "L" key generates l, L, lstroke, and Lstroke

! The "Z" key generates z, Z, zabovedot, and Zabovedot

! The "X" key generates x, X, xacute, and Xacute

! The "C" key generates c, C, cacute, and Cacute

! The "N" key generates n, N, nacute, and Nacute

How to setup international keyboard in X Window System with Xmodmap

! The "AltGr" key generates Mode_switch

keycode 0x09 = Escape

keycode 0x43 = F1

keycode 0x44 = F2

keycode 0x45 = F3

keycode 0x46 = F4

keycode 0x47 = F5

keycode 0x48 = F6

keycode 0x49 = F7

keycode 0x4A = F8

keycode 0x4B = F9

keycode 0x4C = F10

keycode 0x5F = F11

keycode 0x60 = F12

keycode 0x6F = Print

keycode 0x4E = Multi_key

keycode 0x6E = Pause

keycode 0x31 = grave asciitilde

keycode 0x0A = 1 exclam

keycode 0x0B = 2 at

keycode 0x0C = 3 numbersign

keycode 0x0D = 4 dollar

keycode 0x0E = 5 percent

keycode 0x0F = 6 asciicircum

keycode 0x10 = 7 ampersand section

keycode 0x11 = 8 asterisk

4.8 Polish

How to setup international keyboard in X Window System with Xmodmap

keycode 0x12 = 9 parenleft

keycode 0x13 = 0 parenright

keycode 0x14 = minus underscore

keycode 0x15 = equal plus

keycode 0x33 = backslash bar

keycode 0x16 = BackSpace

keycode 0x6A = Insert

keycode 0x61 = Home

keycode 0x63 = Prior

keycode 0x4D = Num_Lock

keycode 0x70 = KP_Divide

keycode 0x3F = KP_Multiply

keycode 0x52 = KP_Subtract

keycode 0x17 = Tab

keycode 0x18 = Q

keycode 0x19 = W

keycode 0x1A = e E eogonek Eogonek

keycode 0x1B = R

keycode 0x1C = T

keycode 0x1D = Y

keycode 0x1E = U

keycode 0x1F = I

keycode 0x20 = o O oacute Oacute

keycode 0x21 = P

keycode 0x22 = bracketleft braceleft

keycode 0x23 = bracketright braceright

4.8 Polish

How to setup international keyboard in X Window System with Xmodmap

keycode 0x24 = Return

keycode 0x6B = Delete

keycode 0x67 = End

keycode 0x69 = Next

keycode 0x4F = KP_7

keycode 0x50 = KP_8

keycode 0x51 = KP_9

keycode 0x56 = KP_Add

keycode 0x42 = Caps_Lock

keycode 0x26 = a A aogonek Aogonek

keycode 0x27 = s S sacute Sacute

keycode 0x28 = D

keycode 0x29 = F

keycode 0x2A = G

keycode 0x2B = H

keycode 0x2C = J

keycode 0x2D = K

keycode 0x2E = l L lstroke Lstroke

keycode 0x2F = semicolon colon

keycode 0x30 = apostrophe quotedbl

keycode 0x53 = KP_4

keycode 0x54 = KP_5

keycode 0x55 = KP_6

keycode 0x32 = Shift_L

keycode 0x34 = z Z zabovedot Zabovedot

keycode 0x35 = x X zacute Zacute

4.8 Polish

How to setup international keyboard in X Window System with Xmodmap

keycode 0x36 = c C cacute Cacute

keycode 0x37 = V

keycode 0x38 = B

keycode 0x39 = n N nacute Nacute

keycode 0x3A = M

keycode 0x3B = comma less

keycode 0x3C = period greater Multi_key

keycode 0x3D = slash question

keycode 0x3E = Shift_R

keycode 0x62 = Up

keycode 0x57 = KP_1

keycode 0x58 = KP_2

keycode 0x59 = KP_3

keycode 0x6C = KP_Enter

keycode 0x25 = Control_L

keycode 0x40 = Alt_L Meta_L

keycode 0x41 = space

keycode 0x71 = Mode_switch

keycode 0x6D = Control_R

keycode 0x64 = Left

keycode 0x68 = Down

keycode 0x66 = Right

keycode 0x5A = KP_0

keycode 0x5B = KP_Decimal

! right windows–logo key

! in "windows" keyboards the position of the key is annoying, is where AltGr

! usually resides, so go define it as AltGr

keycode 116 = Mode_switch

! right windows–menu key keycode 117 = Multi_key

clear Shift

clear Lock

clear Control

clear Mod1

clear Mod2

clear Mod3

clear Mod4

clear Mod5

add Shift = Shift_L Shift_R

add Lock = Caps_Lock

add Control = Control_L Control_R

add Mod1 = Alt_L

!Mode_switch add Mod2 = Mode_switch

5. Some Xmodmap tips

If you want to list the current keymap table, issue the command: `xmodmap -pk | more`

The `xkeycaps` program is a sort of graphical front–end for `xmodmap`. Start it and see which numbers mean which keycode.

To make the mouse buttons left–handed, use a command: `xmodmap -e "pointer = 3 2 1"`

To remove the CapsLock and change it to control key, write this in your Xmodmap file:

```
remove Lock = Caps_Lock keysym Caps_Lock = Control_L add Control = Control_L
```
