

# XText 0.9

## Introduction

I was unhappy to discover after switching from my NeXTStation to an Intel P5 running NeXTStep that XText 0.8 broke. This is because version 0.8 uses keyboard specific "key codes".

XText 0.9 is a hardware independent version of XText, with a few extra goodies thrown in for fun. It uses "character codes", which are NeXT/Adobe's generalization of ASCII codes.

XText reads character codes from keyboard events and allows the user considerable flexibility in redefining keystrokes. This is achieved by Mike Dixon's remarkable "action parsing" code, where text strings are converted into XText method calls.

XText 0.8 was written by Mike Dixon:

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Much of the discussion below is based on the original XText0.8 README file. Major changes to XText are:

a. An expanded version of XTDemo saves keybinding files, and XText reads keybinding files.

b. Hardware independent modifiers:

l = NX\_ALPHASHIFTMASK

Alpha Lock is set and Shift key is NOT\* down

s = NX\_SHIFTMASK

a shift key is down

c = NX\_CONTROLMASK

Control key is down

a = NX\_ALTERNATEMASK

Alternate key is down

m = NX\_COMMANDMASK

Command key is down

n = NX\_NUMERICPADMASK

Key is on numeric keypad

h = NX\_HELPMASK

Help Key

c. Keycodes can be entered by Capitalized HEX numbers.

## Basic Concepts

XText lets users execute complex text editing and formatting commands by redefining keystrokes. It does this by letting the user associate, for every key, text object methods. For

example, to associate the "control a" key with the method

```
[xtext replaceSel:"Hello World\n"];
```

The user, or application programmer, constructs a keybinding format

```
c'a = replaceSel: "Hello World\n"
```

XText can parse, in this way, methods with at most two arguments, which must be either integers or strings. XText has an expanded set of useful methods, that give users "emacs like" control over their keystrokes. The expanded list is given below.

XText enables programmers to easily incorporate this keyboard functionality into their applications. Keybindings can be loaded at run time, using an XText method which parses strings of keybindings, or (new to version 0.9) a method which reads a file of keybinding strings. The file reader method was added to work with the concept of an application wrapper. (That is, programmers can save keybindings as a file in their .app directory.)

## **XText 0.9 methods for keybindings**

The following methods were written for easy keybinding

construction. All of the cursor-movement methods take a

`mode' argument, which may be

- 0 just move the point to new location
- 1 delete to new location
- 2 cut to new location
- 3 extend selection to new location

### **The methods for cursor-movement are:**

`goto:end:mode:` implements all movement;  
second argument specifies  
the other end of the selection when `mode != 0`

`moveWord:mode:` move `n` words forward from  
point (back if `n<0`)

`moveChar:mode:` move `n` chars forward from  
point (back if `n<0`)

`moveLine:mode:` move `n` lines down from point  
(up if `n<0`)

`lineBegin:` move to beginning of current line

`lineEnd:`  
move to end of current line

docBegin:                    move to beginning of document

docEnd:                    move to end of document

collapseSel:(int)dir                    move to beginning of selection  
(dir<0), end of                    selection (dir>0), or active end of sel  
(dir=0)

transChars                    transpose characters around point

openLine                    insert new line after point

scroll:(int)n:(int)m                    scroll window n pages + m  
lines

scrollIfRO::                    scroll window n pages + m lines if doc is  
read-only; returns nil if doc is editable

insertChar:                    inserts the character associated with a key  
event

insertNextChar                    sets nextAction so that the next  
key event will be                    interpreted as a character

## **Methods for c program formatting:**

autoIndent  
creates a new line with space and tab indentation  
equal to the current line

match:"LR";

Finds previous correctly nested matched character L

and

briefly displays it; then prints R. Useful for "()" "{}"  
and "[]".

## Character Codes

Keyboard independent character codes which XText 0.9  
uses

are constructed using simple rules. They can be found  
in the

insertKeyCombination: method of XText  
(In the file XText.subproj/XText.m).

a. Type the following characters to denote modifier keys:

**c** control key down,

**s** shift key down,

**a** alt key down,

**m** command key down,

**n** a numeric keypad character, on my `101' keyboard,

the

arrow keys and the keypad,

**l** caps-lock key down, and shift key NOT pressed,

**h** help key down

Note: Use "l" if you want a character code to

be active only if the caps-lock key is down. Other character codes work with the caps-lock key down or up.

b. Add the ' (right quote) key to denote the beginning of the actual key.

c. If the key will print, type it.

Note: Alt characters are generally mapped to the upper 127 characters of the Adobe/NeXT extended character set. Being non-ASCII characters, they look unusual.

d. If it is a non-printing character like space, tab, or return, type its hexadecimal character code. Character codes are found in Appendix C of the AppKit Documentation (Figure C1).

e. Hexadecimal codes are denoted by the characters 1-9, A-F.  
(The uppercase in the hex numbering is important.)

f. If it is a control character, type the key of the character; i.e.  
"control a" = c'a, "control shift A" = cs'A etc.

## **Binding Specifications (Putting it all together)**

A binding spec is a comma separated list of key codes, followed by an equal sign, followed by an action (a

method

above with input data). For example,

c'w, a'ã = moveWord:-1 mode:1

(control w and alt h = delete last word)

The strange looking character `ã` is what you get when typing alt'h.

Note: If you are testing keys with Edit.app, turn off Global Options/Emacs Keybindings to print this character. Otherwise, you will delete the last word.

Another example:

c'b=moveChar:-1 mode:0; c'B=moveChar:-1  
mode:3

Comment lines in the example files below begin with ``#'`

## The Format of Binding Specifications

The format used to specify bindings is:

A *binding spec* is a sequence of zero or more *bindings*, separated by ``;'s`

A *binding* is a key spec, followed by an ``='`, followed by an *action*



A *key spec* is a sequence of one or more *key combinations*, separated by `,'s

A *key combination* is a sequence of zero or more *modifiers*, followed by a *key*

A *modifier* is

**c** (control),

**s** (shift),

**a** (alt),

**m** (command),

**n** (numeric keypad),

**l** (caps-lock),

**h** (help key)

A *key* is a `"' followed by any character (designates the key that generates that character), or a 2-digit hex key code, as documented in

NextLibrary/Documentation/NextDev/GeneralRef/  
\_ApC\_KeyboardEvents/KeyInfo.rtf

An *action* is a *message*, or a sequence of *actions* separated by  
by `,'s and enclosed in `{}'s

A *message* is something like

`moveWord:-1 mode:1' or

`replaceSel: "hi there\n"

(at most two arguments, which must be either integers or

strings)

Paul Griffin, 8/95

### **Adding new keybindings in Alexandra**

If you want to add your own keybings use  
*dwrite Alexandra KeyString "your key string"*

The keybindings are used in the text editor in the  
Compose window.