

## C (source: xfaces.c in Emacs)

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```
#if defined HAVE_X_WINDOWS && defined USE_X_TOOLKIT

/* Make menus on frame F appear as specified by the `menu' face. */
static void
x_update_menu_appearance (struct frame *f)
{
    struct x_display_info *dpyinfo = FRAME_DISPLAY_INFO (f);
    XrmDatabase rdb;

    if (dpyinfo && (rdb = XrmGetDatabase (FRAME_X_DISPLAY (f)), rdb != NULL))
    {
        char line[512];
        char *buf = line;
        ptrdiff_t bufsize = sizeof line;
        Lisp_Object lface = lface_from_face_name (f, Qmenu, true);
        struct face *face = FACE_FROM_ID (f, MENU_FACE_ID);
```

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## Emacs lisp (source: esh.el in this library)

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```
(require 'seq)
(require 'color)
(require 'subr-x)

;;; Misc utils

(defun esh--normalize-color (color)
  "Return COLOR as a hex string."
  (upcase (if (= (aref color 0) ?#) color
              (apply #'color-rgb-to-hex (color-name-to-rgb color)))))

(defun esh--filter-cdr (val alist)
  "Remove conses in ALIST whose `cdr' is VAL."
  (seq-filter (lambda (pair) (not (eq (cdr pair) val))) alist))
```

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## Python (source: monospacifier.py)

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```
class AllowWideCharsGlyphScaler(GlyphScaler):
    def __init__(self, cell_width, avg_width):
        """Construct instance based on target CELL_WIDTH and source AVG_WIDTH."""
        GlyphScaler.__init__(self, cell_width)
        self.avg_width = avg_width

    def scale(self, glyph):
        if glyph.width > 0:
            new_width_in_cells = int(math.ceil(0.75 * glyph.width / self.avg_width))
            # if new_width_in_cells > 1:
            #     print("{} is {} cells wide ({} -> {})".format(...))
            GlyphScaler.set_width(glyph, new_width_in_cells * self.cell_width)
```

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## Perl (source: YAGOpt)

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```
#&getopt("f:bar") ||
#die &usage("script", "f:bar", "oo", "[files ...]");
sub getopt {
    local($_,$flag,$opt,$f,$r,@temp) = @_;
    @temp = split(/(.):/);
    while ($#temp >= $[]) {
        $flag .= shift(@temp);
        $opt .= shift(@temp);
    }
    while ($_ = $ARGV[0], /^-(.)(.*)/ && shift(@ARGV)) {
        ($f,$r) = ($1,$2);
        last if $f eq '-';
        if (index($flag,$f) >= $[]) {
            eval "\$opt_{$f}++";
            $r =~ /^-(.)(.*)/,redo if $r ne '';
        }
    }
}
```

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## Ruby (source: parser.rb in Ruby's standard library)

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```
class NotWellFormedError < Error
  attr_reader :line, :element

  # Create a new NotWellFormedError for an error at +line+
  # in +element+.
  def initialize(line=nil, element=nil)
    message = "This is not well formed XML"
    if element or line
      message << "\nerror occurred"
      message << " in #{element}" if element
    end
    message << "\n#{yield}" if block_given?
    super(message)
  end
end
```

---

## Misc

### Inline snippets

ESH works inline as well:

- Here's some C code:  $\langle \text{int main() \{ return 0; \}} \rangle$
- Some Python:  $\langle \text{def method(self, x): yield x} \rangle$
- Some Lisp with prettification:  $\langle (\lambda (x y) (\vee (\leq x y) (\approx (\oplus x y) 0))) \rangle$   
without prettification:  $\langle (\text{lambda} (x y) (\text{or} (<= x y) (\text{approx} (= (+ x y) 0))) \rangle$

### Line breaking

ESH allows line breaks to happen within inline code snippets (here is an example:  $\langle \text{private static volatile int counter = 0} \rangle$ ), but not in code blocks:

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```
(defun esh--normalize-color (color) (upcase (if (= (aref color 0) ?#) color (apply #'color-rgb-to-hex (color-nam
```

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## Highlighting with non-core Emacs packages

The following examples all depend on externally developed packages, and thus require that you run `cask install` to install these dependencies (Cask is the Emacs Lisp equivalent of Python's `virtualenvs`).

### Haskell (source: `Monoid.hs` in Haskell's standard library)

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```
-- | The dual of a 'Monoid', obtained by swapping the arguments of 'mappend'.
newtype Dual a = Dual { getDual :: a }
    deriving (Eq, Ord, Read, Show, Bounded, Generic, Generic1)

instance Monoid a => Monoid (Dual a) where
    mempty = Dual mempty
    Dual x `mappend` Dual y = Dual (y `mappend` x)

-- | The monoid of endomorphisms under composition.
newtype Endo a = Endo { appEndo :: a -> a }
    deriving (Generic)

instance Monoid (Endo a) where
    mempty = Endo id
    Endo f `mappend` Endo g = Endo (f . g)
```

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### Racket (source: `misc.rkt` in Racket's standard library)

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```
(define-syntax define-syntax-rule
  (λ (stx)
    (let-values ([ (err) (λ (what . xs) (apply raise-syntax-error
                                              'define-syntax-rule what stx xs))])
      (syntax-case stx ()
        [(dr (name . pattern) template)
         (identifier? #'name)
         (syntax/loc stx
          (define-syntax name
            (λ (user-stx)
              (syntax-case** dr #t user-stx () free-identifier=? #f
                [( _ . pattern) (syntax-protect (syntax/loc user-stx template))]
                [_ (pattern-failure user-stx 'pattern)])))])))]))
```

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### OCaml (source: `genlex.ml` in OCaml's standard library)

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```
(** The lexer **)
let make_lexer keywords =
  let kwd_table = Hashtbl.create 17 in
  List.iter (λ s → Hashtbl.add kwd_table s (Kwd s)) keywords;
  let ident_or_keyword id =
    try Hashtbl.find kwd_table id with
    Not_found → Ident id
  and keyword_or_error c =
    let s = String.make 1 c in
    try Hashtbl.find kwd_table s with
    Not_found → raise (Stream.Error ("Illegal character " ^ s))
```

---

## Dafny (source: DutchFlag.dfy in Dafny's repo)

```
method DutchFlag(a: array<Color>)
  requires a ≠ null modifies a
  ensures ∀ i, j · 0 ≤ i < j < a.Length ⇒ Ordered(a[i], a[j])
  ensures multiset(a[..]) == old(multiset(a[..]))
{
  var r, w, b := 0, 0, a.Length;
  while w ≠ b
  invariant 0 ≤ r ≤ w ≤ b ≤ a.Length;
  invariant ∀ i · 0 ≤ i < r ⇒ a[i] == Red
  invariant multiset(a[..]) == old(multiset(a[..]))
  {
    match a[w]
    case Red ⇒
      a[r], a[w] := a[w], a[r];
      r, w := r + 1, w + 1;
```

## F\* (source: Handshake.fst in miTLS)

```
val processServerFinished: KeySchedule.ks → HandshakeLog.log → (hs_msg × bytes) → ST (result bytes)
  (requires (λ h → T))
  (ensures (λ h0 i h1 → T))

let processServerFinished ks log (m, l) =
  match m with
  | Finished (f) →
    let svd = KeySchedule.ks_client_12_server_finished ks in
    if (equalBytes svd f.fin_vd) then
      let _ = log @@ (Finished (f)) in
      Correct svd
    else Error (AD_decode_error, "Finished MAC did not verify")
  | _ → Error (AD_decode_error, "Unexpected state")
```

## Coq (source: ExtendedLemmas.v in Fiat; requires a local Proof General setup)

```
Lemma ProgOk_Chomp_lemma :
  ∀ {FacadeWrapper (Value av) A} (ev: Env av) (key: StringMap.key)
  (prog: Stmt) (tail1 tail2: A → Telescope av) ex (v: A),
  key ∉ ex →
  ({ tail1 v }) prog ({ tail2 v }) ∪ ({ [key ▷ wrap v] :: ex }) // ev ↔
  ({ [[`key ↦ v as vv]] :: tail1 vv }) prog ({ [[`key ↦ v as vv]] :: tail2 vv }) ∪ ({ ex }) // ev.
Proof.
  repeat match goal with
  | _ ⇒ tauto
  | _ ⇒ progress (intros || split)
  | [ H: ?a ∧ ?b ⊢ _ ] ⇒ destruct H
  | [ H: ?a ≤ Cons _ _ ∪ _ ⊢ _ ] ⇒ learn (Cons_PushExt _ _ _ _ H)
  | [ H: ProgOk ?fmap _ _ ?t1 ?t2, H': _ ≤ ?t1 ∪ ?fmap ⊢ _ ] ⇒ destruct (H _ H'); no_dup
  | [ H: RunsTo _ _ ?from ?to, H': ∀ st, RunsTo _ _ ?from st → _ ⊢ _ ] ⇒ specialize (H' _ H)
  | [ H: _ ≤ _ ∪ [ _ ▷ _ ] :: _ ⊢ _ ] ⇒ apply Cons_PopExt in H
  end.
Qed.
```