

```
1: (* $Id: absyn.mli,v 1.2 2019-01-24 17:42:06-08 - - $ *)
2:
3: (*
4:  * Abstract syntax definitions for SB.
5:  *)
6:
7: type linenr      = int
8: type ident       = string
9: type label       = string
10: type number      = float
11: type oper        = string
12:
13: type printable = Printexpr of expr
14:                | String of string
15:
16: and memref       = Arrayref of ident * expr
17:                | Variable of ident
18:
19: and expr         = Number of number
20:                | Memref of memref
21:                | Unary of oper * expr
22:                | Binary of oper * expr * expr
23:
24: type stmt        = Dim of ident * expr
25:                | Let of memref * expr
26:                | Goto of label
27:                | If of expr * label
28:                | Print of printable list
29:                | Input of memref list
30:
31: type propline    = linenr * label option * stmt option
32:
33: type program     = propline list
34:
```

```
1: (* $Id: etc.mli,v 1.1 2019-01-24 15:47:38-08 - - $ *)
2:
3: (*
4:  * Main program and system access.
5:  *)
6:
7: val warn : string list -> unit
8:
9: val die : string list -> unit
10:
11: val syntax_error : Lexing.position -> string list -> unit
12:
13: val usage_exit : string list -> unit
14:
15: val read_number : unit -> float
16:
```

```
1: (* $Id: etc.ml,v 1.2 2019-01-25 15:10:01-08 - - $ *)
2:
3: let execname = Filename.basename Sys.argv.(0)
4:
5: let exit_status_ref = ref 0
6:
7: let quit () =
8:   if !Sys.interactive
9:   then Printf.printf "quit (): exit %d\n%!" !exit_status_ref
10:    else exit !exit_status_ref
11:
12: let eprint_list message =
13:   (exit_status_ref := 1;
14:    flush_all ();
15:    List.iter prerr_string message;
16:    prerr_newline ();
17:    flush_all ())
18:
19: let warn message = eprint_list (execname :: ": " :: message)
20:
21: let die message = (warn message; quit ())
22:
23: let syntax_error position message =
24:   warn (position.Lexing.pos_fname :: ": "
25:        :: string_of_int position.Lexing.pos_lnum :: ": "
26:        :: message)
27:
28: let usage_exit message =
29:   (eprint_list ("Usage: " :: execname :: " " :: message); quit ())
30:
31: let buffer : string list ref = ref []
32:
33: let rec read_number () = match !buffer with
34:   | head::tail -> (buffer := tail;
35:                    try float_of_string head
36:                    with Failure _ -> nan)
37:   | [] -> let line = input_line stdin
38:            in (buffer := Str.split (Str.regexp "[ \\t]+") line;
39:               read_number ())
40:
```

```
1: (* Generated: Tue Nov 26 14:09:51 PST 2019 *)
2: type variable_table_t = (string, float) Hashtbl.t
3: type array_table_t = (string, float array) Hashtbl.t
4: type unary_fn_table_t = (string, float -> float) Hashtbl.t
5: type binary_fn_table_t = (string, float -> float -> float) Hashtbl.t
6: type label_table_t = (string, Absyn.program) Hashtbl.t
7: val variable_table : variable_table_t
8: val array_table : array_table_t
9: val unary_fn_table : unary_fn_table_t
10: val binary_fn_table : binary_fn_table_t
11: val label_table : label_table_t
12: val init_label_table : Absyn.program -> unit
13: val dump_label_table : unit -> unit
```

```
1: (* $Id: tables.ml,v 1.5 2019-01-29 17:26:15-08 - - $ *)
2:
3: type variable_table_t = (string, float) Hashtbl.t
4: type array_table_t = (string, float array) Hashtbl.t
5: type unary_fn_table_t = (string, float -> float) Hashtbl.t
6: type binary_fn_table_t = (string, float -> float -> float) Hashtbl.t
7: type label_table_t = (string, Absyn.program) Hashtbl.t
8:
9: let variable_table : variable_table_t = Hashtbl.create 16
10: let _ = List.iter (fun (label, value) ->
11:                 Hashtbl.add variable_table label value)
12:                 ["e" , exp 1.0;
13:                 "eof", 0.0;
14:                 "pi" , acos ~-.1.0;
15:                 "nan", nan]
16:
17: let array_table : array_table_t = Hashtbl.create 16
18:
19: let unary_fn_table : unary_fn_table_t = Hashtbl.create 16
20: let _ = List.iter (fun (label, value) ->
21:                 Hashtbl.add unary_fn_table label value)
22:                 ["+" , (~+.);
23:                 "-" , (~-.);
24:                 "abs" , abs_float;
25:                 "acos" , acos;
26:                 "asin" , asin;
27:                 "atan" , atan;
28:                 "ceil" , ceil;
29:                 "cos" , cos;
30:                 "exp" , exp;
31:                 "floor" , floor;
32:                 "log" , log;
33:                 "log10" , log10;
34:                 "log2" , (fun x -> log x /. log 2.0);
35:                 "round" , (fun x -> floor (x +. 0.5));
36:                 "sin" , sin;
37:                 "sqrt" , sqrt;
38:                 "tan" , tan]
39:
40: let binary_fn_table : binary_fn_table_t = Hashtbl.create 16
41: let _ = List.iter (fun (label, value) ->
42:                 Hashtbl.add binary_fn_table label value)
43:                 ["+", (+.);
44:                 "-", (-.);
45:                 "*", (*.);
46:                 "/", (/.);
47:                 "%", mod_float;
48:                 "^", ( ** )]
49:
```

```

50:
51: let label_table : label_table_t = Hashtbl.create 16
52:
53: let rec init_label_table program =
54:   let rec init program = match program with
55:     | [] -> ()
56:     | (_, Some label, _)::rest ->
57:       (Hashtbl.add label_table label program; init rest)
58:     | _::rest -> init rest
59:   in (Hashtbl.reset label_table; init program)
60:
61: let dump_label_table () =
62:   let dump key value = match value with
63:     | [] -> ()
64:     | (line, _, _)::_ ->
65:       Printf.fprintf stderr
66:         "label_table: \"%s\" -> line %d\n%!" key line
67:   in Hashtbl.iter dump label_table
68:

```

```
1: (* Generated: Tue Nov 26 14:09:51 PST 2019 *)
2: val quote : string -> string
3: val join : string -> string -> string -> string list -> string
4: val string_of_option : ('a -> string) -> 'a option -> string
5: val string_of_ctor : string -> string list -> string
6: val string_of_list : ('a -> string) -> 'a list -> string
7: val string_of_printable : Absyn.printable -> string
8: val string_of_memref : Absyn.memref -> string
9: val string_of_expr : Absyn.expr -> string
10: val string_of_stmt : Absyn.stmt -> string
11: val dump_progline : int * string option * Absyn.stmt option -> unit
12: val dump_program : Absyn.program -> unit
```

```
1: (* $Id: dumper.ml,v 1.15 2019-01-25 17:43:51-08 - - $ *)
2:
3: let quote string =
4:   let regex = Str.regexp "\""
5:   and subst _ = "\\\""
6:   in "\"" ^ Str.global_substitute regex subst string ^ "\""
7:
8: let join start sep stop list =
9:   let rec join' list' = match list' with
10:    | [] -> stop
11:    | [unit] -> unit ^ stop
12:    | head::tail -> head ^ sep ^ " " ^ join' tail
13:   in match list with
14:    | [] -> start ^ stop
15:    | _::_ -> start ^ join' list
16:
17: let string_of_option str_fn item = match item with
18:   | None -> "None"
19:   | Some thing -> "Some (" ^ str_fn thing ^ ")"
20:
21: let string_of_ctor ctor args =
22:   join (ctor ^ " (") ", " " " " args
23:
24: let string_of_list str_fn list =
25:   join "[" " " ";" " "]" (List.map str_fn list)
26:
27: let rec string_of_printable printable = match printable with
28:   | Absyn.Printexpr expr ->
29:     string_of_ctor "Printexpr" [string_of_expr expr]
30:   | Absyn.String string ->
31:     string_of_ctor "String" [quote string]
32:
33: and string_of_memref memref = match memref with
34:   | Absyn.Arrayref (ident, expr) ->
35:     string_of_ctor "Arrayref" [quote ident; string_of_expr expr]
36:   | Absyn.Variable ident -> string_of_ctor "Variable" [quote ident]
37:
38: and string_of_expr expr = match expr with
39:   | Absyn.Number number ->
40:     string_of_ctor "Number" [string_of_float number]
41:   | Absyn.Memref memref ->
42:     string_of_ctor "Memref" [string_of_memref memref]
43:   | Absyn.Unary (oper, expr) ->
44:     string_of_ctor "Unary" [quote oper; string_of_expr expr]
45:   | Absyn.Binary (oper, expr1, expr2) ->
46:     string_of_ctor "Binary"
47:       [quote oper; string_of_expr expr1; string_of_expr expr2]
48:
```



```
49:
50: let string_of_stmt (stmt: Absyn.stmt) = match stmt with
51:   | Absyn.Dim (ident, expr) ->
52:     string_of_ctor "Dim"
53:       [quote ident ^ ", " ^ string_of_expr expr]
54:   | Absyn.Let (memref, expr) ->
55:     string_of_ctor "Let"
56:       [string_of_memref memref; string_of_expr expr]
57:   | Absyn.Goto label ->
58:     string_of_ctor "Goto" [quote label]
59:   | Absyn.If (expr, label) ->
60:     string_of_ctor "If" [string_of_expr expr; quote label]
61:   | Absyn.Print printable'list ->
62:     string_of_ctor "Print"
63:       [string_of_list string_of_printable printable'list]
64:   | Absyn.Input memref'list ->
65:     string_of_ctor "Input"
66:       [string_of_list string_of_memref memref'list]
67:
68: let dump_procline (linenr, label'option, stmt'option) =
69:   Printf.fprintf stderr "%d %s: %s\n%!" linenr
70:     (string_of_option quote label'option)
71:     (string_of_option string_of_stmt stmt'option)
72:
73: let dump_program (program : Absyn.program) =
74:   List.iter dump_procline program
75:
```

11/26/19
14:09:51

12-wm/Assignments/Previous-winter-2019/asg2-ocaml-interp/code-interp
interp.mli

1/1

```
1: (* $Id: interp.mli,v 1.5 2019-01-24 17:08:37-08 - - $ *)
2:
3: (*
4:  * Interpreter for Silly Basic
5:  *)
6:
7: val want_dump : bool ref
8:
9: val interpret_program : Absyn.program -> unit
10:
```

```
1: (* $Id: interp.ml,v 1.7 2019-01-29 17:26:15-08 - - $ *)
2:
3: open Absyn
4:
5: exception Unimplemented of string
6: let unimpl reason = raise (Unimplemented reason)
7:
8: let want_dump = ref false
9:
10: let rec eval_expr (expr : Absyn.expr) : float = match expr with
11:   | Number number -> number
12:   | Memref memref -> unimpl "eval_expr Memref"
13:   | Unary (oper, expr) -> unimpl "eval_expr Unary"
14:   | Binary (oper, expr1, expr2) -> unimpl "eval_expr Binary"
15:
16: let interp_print (print_list : Absyn.printable list) =
17:   let print_item item =
18:     (print_string " ";
19:      match item with
20:      | String string ->
21:        let regex = Str.regexp "\\(.*\\)"
22:        in print_string (Str.replace_first regex "\\1" string)
23:      | Printexpr expr ->
24:        print_float (eval_expr expr))
25:   in (List.iter print_item print_list; print_newline ())
26:
27: let interp_input (memref_list : Absyn.memref list) =
28:   let input_number memref =
29:     try let number = Etc.read_number ()
30:       in (print_float number; print_newline ())
31:     with End_of_file ->
32:       (print_string "End_of_file"; print_newline ())
33:   in List.iter input_number memref_list
34:
35: let interp_stmt (stmt : Absyn.stmt) = match stmt with
36:   | Dim (ident, expr) -> unimpl "Dim (ident, expr)"
37:   | Let (memref, expr) -> unimpl "Let (memref, expr)"
38:   | Goto label -> unimpl "Goto label"
39:   | If (expr, label) -> unimpl "If (expr, label)"
40:   | Print print_list -> interp_print print_list
41:   | Input memref_list -> interp_input memref_list
42:
43: let rec interpret (program : Absyn.program) = match program with
44:   | [] -> ()
45:   | firstline::otherlines -> match firstline with
46:     | _, _, None -> interpret otherlines
47:     | _, _, Some stmt -> (interp_stmt stmt; interpret otherlines)
48:
49: let interpret_program program =
50:   (Tables.init_label_table program;
51:    if !want_dump then Tables.dump_label_table ();
52:    if !want_dump then Dumper.dump_program program;
53:    interpret program)
54:
```

```
1: (* $Id: main.ml,v 1.1 2019-01-24 15:47:38-08 - - $ *)
2:
3: (*
4: * Main program reads a file and prints to stdout.
5: *)
6:
7: let interpret_source filename =
8:   try (let sourcefile =
9:         if filename = "-"
10:        then stdin
11:        else open_in filename in
12:        let lexbuf = Lexing.from_channel sourcefile in
13:        let abstract_syntax = Parser.program Scanner.token lexbuf in
14:        Interp.interpret_program abstract_syntax)
15:   with Sys_error (string) -> Etc.die [string]
16:
17: let _ = if !Sys.interactive
18:         then ()
19:         else match Array.length Sys.argv with
20:              | 1 -> interpret_source "-"
21:              | 2 -> interpret_source Sys.argv.(1)
22:              | _ -> Etc.usage_exit ["[filename.sb]"]
23:
```

```
1: /* $Id: parser.mly,v 1.2 2019-01-25 16:49:38-08 - - $ */
2:
3: %{
4:
5: let linenr () = (symbol_start_pos ()).Lexing.pos_lnum
6:
7: let syntax () = Etc.syntax_error (symbol_start_pos ()) ["syntax error"]
8:
9: %}
10:
11: %token <string> RELOP EQUAL ADDOP MULOP POWOP
12: %token <string> IDENT NUMBER STRING
13: %token COLON COMMA LPAR RPAR LSUB RSUB EOL EOF
14: %token DIM LET GOTO IF PRINT INPUT
15:
16: %type <Absyn.program> program
17:
18: %start program
19:
20: %%
21:
22: program      : stmt_list EOF                {List.rev $1}
23:
24: stmt_list    : stmt_list stmt EOL           {$2::$1}
25:               | stmt_list error EOL         {syntax (); $1}
26:               |                             {[]}
27:
28: stmt         : label action                 {(linenr (), Some $1, Some $2)}
29:               | action                      {(linenr (), None, Some $1)}
30:               | label                       {(linenr (), Some $1, None)}
31:               |                             {(linenr (), None, None)}
32:
33: label        : IDENT COLON                  {$1}
34:
35: action       : DIM IDENT LSUB expr RSUB     {Absyn.Dim ($2, $4)}
36:               | LET memref EQUAL expr       {Absyn.Let ($2, $4)}
37:               | GOTO IDENT                  {Absyn.Goto $2}
38:               | IF relexpr GOTO IDENT       {Absyn.If ($2, $4)}
39:               | PRINT print_list            {Absyn.Print $2}
40:               | PRINT                       {Absyn.Print ([]) }
41:               | INPUT input_list            {Absyn.Input $2}
42:
43: print_list   : print COMMA print_list      {$1::$3}
44:               | print                       {[ $1 ]}
45:
46: print        : expr                        {Absyn.Printexpr $1}
47:               | STRING                     {Absyn.String $1}
48:
49: input_list   : memref COMMA input_list     {$1::$3}
50:               | memref                      {[ $1 ]}
51:
```

```
52:
53: memref      : IDENT                {Absyn.Variable $1}
54:             | IDENT LSUB expr RSUB {Absyn.Arrayref ($1, $3)}
55:
56: relexpr      : expr RELOP expr      {Absyn.Binary ($2, $1, $3)}
57:             | expr EQUAL expr       {Absyn.Binary ($2, $1, $3)}
58:
59: expr         : expr ADDOP term       {Absyn.Binary ($2, $1, $3)}
60:             | term                  {$1}
61:
62: term         : term MULOP factor     {Absyn.Binary ($2, $1, $3)}
63:             | factor                {$1}
64:
65: factor       : primary POWOP factor  {Absyn.Binary ($2, $1, $3)}
66:             | primary               {$1}
67:
68: primary      : LPAR expr RPAR        {$2}
69:             | ADDOP primary          {Absyn.Unary ($1, $2)}
70:             | NUMBER                 {Absyn.Number (float_of_string $1)}
71:             | memref                 {Absyn.Memref $1}
72:             | IDENT LPAR expr RPAR   {Absyn.Unary ($1, $3)}
73:
```

```
1: (* $Id: scanner.mll,v 1.2 2019-11-26 14:09:51-08 - - $ *)
2:
3: {
4:
5: let lexerror lexbuf =
6:   Etc.syntax_error (Lexing.lexeme_start_p lexbuf)
7:     ["invalid character \" ^ (Lexing.lexeme lexbuf) ^ \""]
8:
9: let newline lexbuf =
10:   let incr pos =
11:     {pos with Lexing.pos_lnum = pos.Lexing.pos_lnum + 1;
12:       Lexing.pos_bol = pos.Lexing.pos_cnum}
13:   in (lexbuf.Lexing.lex_start_p <- incr lexbuf.Lexing.lex_start_p;
14:       lexbuf.Lexing.lex_curr_p <- incr lexbuf.Lexing.lex_curr_p)
15:
16: let lexeme = Lexing.lexeme
17:
18: }
19:
20: let letter      = ['a'-'z' 'A'-'Z' '_' ]
21: let digit       = ['0'-'9' ]
22: let fraction    = (digit+ '.'? digit* | '.' digit+)
23: let exponent    = (['E' 'e'] ['+' '-']? digit+)
24:
25: let comment     = ('#' [^'\n']* )
26: let ident       = (letter (letter | digit)*)
27: let number      = (fraction exponent?)
28: let string      = ('"' [^'\n' '"' ]* '"')
29:
```

```

30:
31: rule token      = parse
32:   eof           { Parser.EOF }
33:   [' ' '\t']    { token lexbuf }
34:   comment       { token lexbuf }
35:   "\n"          { newline lexbuf; Parser.EOL }
36:   ":"           { Parser.COLON }
37:   ","           { Parser.COMMA }
38:   "("           { Parser.LPAR }
39:   ")"           { Parser.RPAR }
40:   "["           { Parser.LSUB }
41:   "]"           { Parser.RSUB }
42:   "="           { Parser.EQUAL (lexeme lexbuf) }
43:   "!="          { Parser.RELOP (lexeme lexbuf) }
44:   "<"           { Parser.RELOP (lexeme lexbuf) }
45:   "<="          { Parser.RELOP (lexeme lexbuf) }
46:   ">"           { Parser.RELOP (lexeme lexbuf) }
47:   ">="          { Parser.RELOP (lexeme lexbuf) }
48:   "+"           { Parser.ADDOP (lexeme lexbuf) }
49:   "-"           { Parser.ADDOP (lexeme lexbuf) }
50:   "*"           { Parser.MULOP (lexeme lexbuf) }
51:   "/"           { Parser.MULOP (lexeme lexbuf) }
52:   "%"           { Parser.MULOP (lexeme lexbuf) }
53:   "^"           { Parser.POWOP (lexeme lexbuf) }
54:   "dim"         { Parser.DIM }
55:   "goto"        { Parser.GOTO }
56:   "if"          { Parser.IF }
57:   "input"       { Parser.INPUT }
58:   "let"         { Parser.LET }
59:   "print"       { Parser.PRINT }
60:   number        { Parser.NUMBER (lexeme lexbuf) }
61:   string        { Parser.STRING (lexeme lexbuf) }
62:   ident         { Parser.IDENT (lexeme lexbuf) }
63:   _             { lexerror lexbuf; token lexbuf }
64:

```



```
1: # $Id: Makefile,v 1.11 2019-02-14 16:13:28-08 - - $
2:
3: #
4: # General useful macros
5: #
6:
7: MKFILE      = Makefile
8: MAKEFLAGS += --no-builtin-rules
9: DEPSFILE    = ${MKFILE}.deps
10: NOINCLUDE   = ci clean spotless
11: NEEDINCL    = ${filter ${NOINCLUDE}, ${MAKECMDGOALS}}
12: GMAKE       = ${MAKE} --no-print-directory
13:
14: #
15: # File macros
16: #
17:
18: EXECBIN      = sbinterp
19: OBJCMO       = etc.cmo parser.cmo scanner.cmo tables.cmo \
20:               dumper.cmo interp.cmo main.cmo
21: OBJCMI       = ${OBJCMO:.cmo=.cmi} absyn.cmi
22: OBJBIN       = ${OBJCMO:.cmo=.o}
23: MLSOURCE     = absyn.mli etc.mli etc.ml tables.mli tables.ml \
24:               dumper.mli dumper.ml interp.mli interp.ml main.ml
25: GENSOURCE    = dumper.mli tables.mli parser.mli parser.ml scanner.ml
26: GENFILES     = ${GENSOURCE} parser.output ${DEPSFILE}
27: OTHERFILES   = ${MKFILE} ${DEPSFILE} using .ocamlinit
28: ALLSOURCES   = ${MLSOURCE} parser.mly scanner.mli ${OTHERFILES}
29: LISTING      = Listing.ps
30:
31: #
32: # General targets
33: #
34:
35: all : ${EXECBIN}
36:
37: ${EXECBIN} : ${OBJCMO}
38:             ocamlc str.cma ${OBJCMO} -o ${EXECBIN}
39:
40: %.cmi : %.mli
41:             ocamlc -c $<
42:
43: %.cmo : %.ml
44:             ocamlc -c $<
45:
46: %.ml : %.mli
47:             ocamllex $<
48:
49: %.mli %.ml : %.mly
50:             ocamlyacc -v $<
51:
```

```

52:
53: MAKEMLI      = (echo "(* Generated: $$ (date) *)"; ocamlc -i $<) >$@
54:
55: tables.mli : tables.ml absyn.cmi
56:     ${call MAKEMLI}
57:
58: dumper.mli : dumper.ml absyn.cmi
59:     ${call MAKEMLI}
60:
61: #
62: # Misc targets
63: #
64:
65: clean :
66:     - rm ${OBJCMI} ${OBJCMO} ${OBJBIN} ${GENSOURCE}
67:
68: spotless : clean
69:     - rm ${EXECBIN} ${GENFILES} ${LISTING} ${LISTING:.ps=.pdf}
70:
71: ci : ${ALLSOURCES}
72:     - checksource ${ALLSOURCES}
73:     cid + ${ALLSOURCES}
74:
75: deps : ${MLSOURCE} ${GENSOURCE}
76:     @ echo "# Generated: $$ (date)" >${DEPSFILE}
77:     ocamldep ${MLSOURCE} ${GENSOURCE} >>${DEPSFILE}
78:
79: ${DEPSFILE} : tables.mli
80:     @touch ${DEPSFILE}
81:     ${GMAKE} deps
82:
83: lis : ${ALLSOURCES}
84:     mkpspdf ${LISTING} ${ALLSOURCES}
85:
86: again :
87:     ${GMAKE} spotless
88:     ${GMAKE} deps
89:     ${GMAKE} ci
90:     ${GMAKE} all
91:     ${GMAKE} lis
92:
93: ifeq "${NEEDINCL}" ""
94: include ${DEPSFILE}
95: endif
96:

```

```

1: # Generated: Tue Nov 26 14:09:51 PST 2019
2: absyn.cmi : \
3:   dumper.cmo : \
4:     absyn.cmi \
5:     dumper.cmi
6: dumper.cmx : \
7:   absyn.cmi \
8:   dumper.cmi
9: dumper.cmi : \
10:   absyn.cmi
11: dumper.cmi : \
12:   absyn.cmi
13: etc.cmo : \
14:   etc.cmi
15: etc.cmx : \
16:   etc.cmi
17: etc.cmi :
18: interp.cmo : \
19:   tables.cmi \
20:   etc.cmi \
21:   dumper.cmi \
22:   absyn.cmi \
23:   interp.cmi
24: interp.cmx : \
25:   tables.cmx \
26:   etc.cmx \
27:   dumper.cmx \
28:   absyn.cmi \
29:   interp.cmi
30: interp.cmi : \
31:   absyn.cmi
32: main.cmo : \
33:   scanner.cmo \
34:   parser.cmi \
35:   interp.cmi \
36:   etc.cmi
37: main.cmx : \
38:   scanner.cmx \
39:   parser.cmx \
40:   interp.cmx \
41:   etc.cmx
42: parser.cmo : \
43:   etc.cmi \
44:   absyn.cmi \
45:   parser.cmi
46: parser.cmx : \
47:   etc.cmx \
48:   absyn.cmi \
49:   parser.cmi
50: parser.cmi : \
51:   absyn.cmi
52: scanner.cmo : \
53:   parser.cmi \
54:   etc.cmi
55: scanner.cmx : \
56:   parser.cmx \
57:   etc.cmx
58: tables.cmo : \

```

```
59:      absyn.cmi \
60:      tables.cmi
61: tables.cmx : \
62:      absyn.cmi \
63:      tables.cmi
64: tables.cmi : \
65:      absyn.cmi
66: tables.cmi : \
67:      absyn.cmi
```

```
1: let rcs = "(* $Id: using,v 1.3 2019-01-24 17:15:07-08 - - $ *)";;
2:
3: print_endline rcs;;
4:
5: #load "str.cma";;
6:
7: #mod_use "absyn.mli";;
8: #mod_use "etc.ml";;
9:
10: #mod_use "parser.ml";;
11: #mod_use "scanner.ml";;
12:
13: #mod_use "tables.ml";;
14: #mod_use "dumper.ml";;
15:
16: #mod_use "interp.ml";;
17: #mod_use "main.ml";;
18:
19: open Interp;;
20: open Main;;
21:
22: want_dump := true;;
23:
```

```
1: let rcs = "(* $Id: .ocamlinit,v 1.6 2019-01-24 18:40:26-08 - - $ *)";;
2:
3: print_endline rcs;;
4:
5: #load "str.cma";;
6:
7: #mod_use "absyn.mli";;
8: #mod_use "etc.ml";;
9:
10: #mod_use "parser.ml";;
11: #mod_use "scanner.ml";;
12:
13: #mod_use "tables.ml";;
14: #mod_use "dumper.ml";;
15:
16: #mod_use "interp.ml";;
17: #mod_use "main.ml";;
18:
19: open Interp;;
20: open Main;;
21:
22: want_dump := true;;
23:
```