# Acting Out ADTs

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# Example of Use of ADTs

**Situation:**

**Read a specially structured line of characters from the (only) input file.**

**And later ...**

**Dig out the i^th^ character from the line**

```
package Specially_Structured_Lines is
            type LINE is private;
            function make_line(s:STRING) return LINE;
            procedure insert_char(l:in out LINE,c:CHAR);
            function get_char(l:LINE,i:INTEGER) return CHAR;
            function length(l:LINE) return INTEGER;
            function index_of_end_of_word(i:INTEGER,l:LINE)
                 return INTEGER;
            function no_of_words(l:LINE) return INTEGER;
            function index_of_punct_symbol(i:INTEGER,l:LINE)
                 return INTEGER;
            function no_of_punct_symbols(l:LINE)
                 return INTEGER;
end;
```

```
with Specially_Structured_Lines, stdio;
package Input_File is
        procedure open;
        function read_line return LINE;
        function is_at_eof return BOOL;
        procedure close;
end Input_File;
```

```
with Specially_Structured_Lines, Input_File;
procedure main is
        k,l:LINE
        c: CHAR;
begin
        open;
        while (not is_at_eof) loop
            l:=read_line;
            for i from 1 to length(l) loop
                c:=get_char(l,i)
            end;
        end;
        close;
end main;
```

# Processes

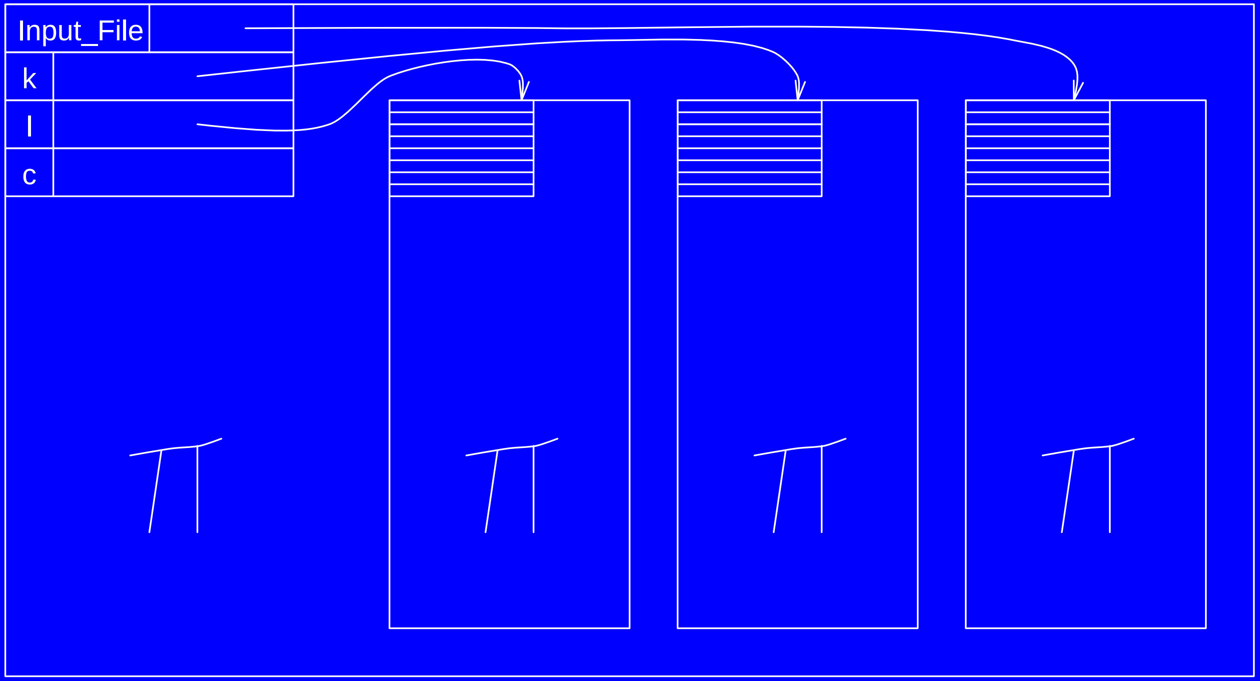
Main

I:LINE

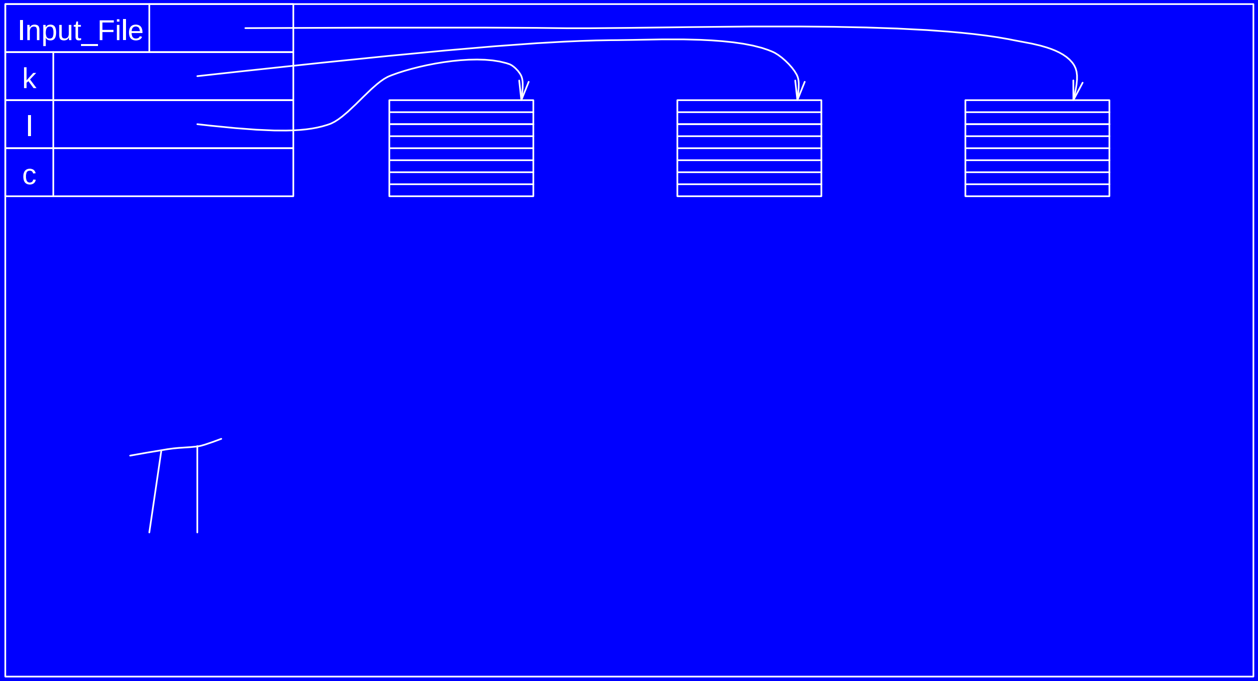
File Input_

# User's View

## Supported by compiler:



# Object Code View



```
procedure main is
        k,l:definition[LINE]
        c: CHAR;
begin
        open;
        while (not body[is_at_eof]) loop
            l:=body[read_line];
            -- body[read_line] contains
                -- body[insert_char]
            for i from 1 to body[length(l)] loop
                c:=body[get_char](l,i)
            end;
        end;
        close;
end main;
```