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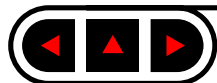
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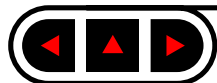
Availability

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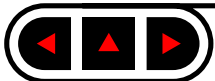
Marcin Woliński

**Pretprin — a L^AT_EX 2_ε package
for pretty-printing
formal languages**



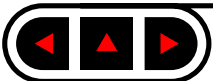
Unofficial motivation

Is it possible to implement any “real” algorithm in $\text{T}_{\text{E}}\text{X}$'s macro language?



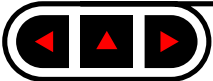
Pascal pretty-printing

```
var A: array [1 .. m, 1 .. p] of real; (1)  
  B: array [1 .. p, 1 .. n] of real;  
  C: array [1 .. m, 1 .. n] of real;  
  i: 1 .. m; j: 1 .. n; k: 1 .. p; s: real;  
begin    { assignment of initial values to A and B }  
for i := 1 to m do  
  for j := 1 to n do  
    begin s := 0;  
    for k := 1 to p do s := s + A[i, k] * B[k, j];  
    C[i, j] := s  
    end  
end.  
end.
```



Pascal pretty-printing

```
var a, b, c, d, e, f: integer; (2)  
procedure Multiply(x, y: integer; var z: integer);  
  var c, d: integer;  
  begin z := 0; c := a; d := b; e := 0;  
  while d ≠ 0 do  
    begin if odd(d) then e := e + c;  
    c := 2 * c; d := d div 2  
    end  
  end;  
begin    { main program }  
a := 5; b := 7; d := 10; Multiply  
end.
```



Pretty-printed metamorphosis grammar

SZDRZ(p, r, MNO, o)

= **SPOJLEWY**(nr) –ALT($nr, 1.2.3$) **FRZ**($p, r1, l1, o1$) **PRZEC** (szdrz1)

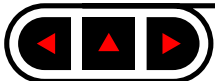
SPOJPRAWY(nr) **FRZ**($p, r2, l2, o2$)

–UZGR($r1, r2, r$) –MIN($o1, o2, o$)

= **FRZ**($p, r1, l1, o1$) **PRZEC** **KSPOJ**(wz) (szdrz2)

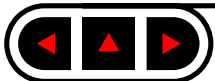
–ALT($wz, (A.TAK\dot{Z}E).(JAK.R\acute{O}WNIE\dot{Z}).(JAK.TE\dot{Z})$)

FRZ($p, r2, l2, o2$) –UZGR($r1, r2, r$) –MIN($o1, o2, o$) .



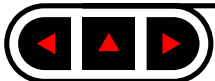
A pretty-printed (?) term

loves(*John*, and(*Mary*, and(*Tom*, *Jerry*)))



Official motivation

To provide an easy to use $\text{T}_{\text{E}}\text{X}$ -only method to pretty-print pieces of Pascal and other languages to be used in computer science books.

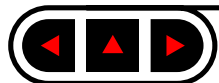


Pretprin user's guide

```
\documentclass{article}  
\usepackage[pascal]{pretprin}
```

```
\begin{document}
```

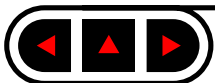
...



Pretprin user's guide

Consider `\pascal{qs_tab}` being
`\pascal{array [1..N] of quasi_sth}...`

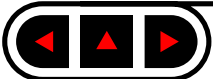
Consider *qs_tab* being **array** [1 .. *N*] **of** *quasi_sth*...



Pretprin user's guide

```
\begin{Pascal}  
begin q:=0;r:=x;while r>=y do begin  
(* \pascal{q*y+r=x}, \pascal{r>=y} *)  
r:=r-y;q:=q+1end end  
\end{Pascal}
```

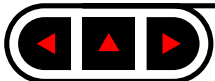
begin $q := 0; r := x;$ (3)
while $r \geq y$ **do**
 begin $\{q * y + r = x, r \geq y\}$
 $r := r - y; q := q + 1$
 end
end



Pretprin user's guide

```
\begin{Pascal*}  
begin q:=0;r:=x;while r>=y do begin  
(* \pascal{q*y+r=x}, \pascal{r>=y} *)  
r:=r-y;q:=q+1end end  
\end{Pascal*}
```

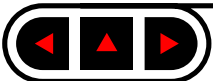
```
begin  $q := 0; r := x;$   
while  $r \geq y$  do  
  begin     $\{q * y + r = x, r \geq y\}$   
     $r := r - y; q := q + 1$   
  end  
end
```



Pretprin user's guide

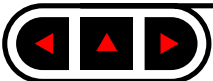
Pretprin's formatting modules:

language	displayed	inline
Pascal	Pascal	<code>\pascal</code>
Prolog	Prolog	<code>\prolog</code>
metamorphosis grammar	reguly	<code>\jedn</code>



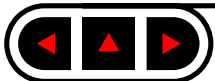
Pretprin's (unique) features

- Parsing techniques are used for pretty-printing. This gives best possible formatting.
- Pretprin is just a macro package with no preprocessors or other tools external to $\text{T}_{\text{E}}\text{X}$.
- Pretprin formats Pascal just the way Knuth's WEAVE does.
- Due to modularity it is relatively easy to add formatting modules for new languages.
- Pretprin is in fact a framework for building formatting modules.
- Environments defined by Pretprin can be seen as new $\text{T}_{\text{E}}\text{X}$ modes: “Pascal mode”, “Prolog mode”, etc.
- Commands for prettyprinting inline fragments provide for consistent look.



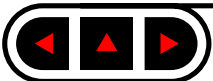
Possible problems with Pretprin

- Using the package slows down processing noticeably.
- Larger pieces of formal text may need large amounts of T_EX memory.



TODOs & extensions

- English documentation is still missing.
- More formatting modules (C/C++, functional languages, SQL, ...).
- Special control codes allowing hand tuning of the output (similar to those used by WEAVE).

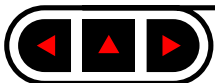


Availability

Pretprin's WWW page is

<http://melkor.mimuw.edu.pl/~wolinski/pretprin.html>

After adding english documentation Pretprin will be uploaded to CTAN.





The End

