Memoria de la Práctica de Procesadores de Lenguajes: Analizador Sintáctico

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${\rm Grupo}~82$

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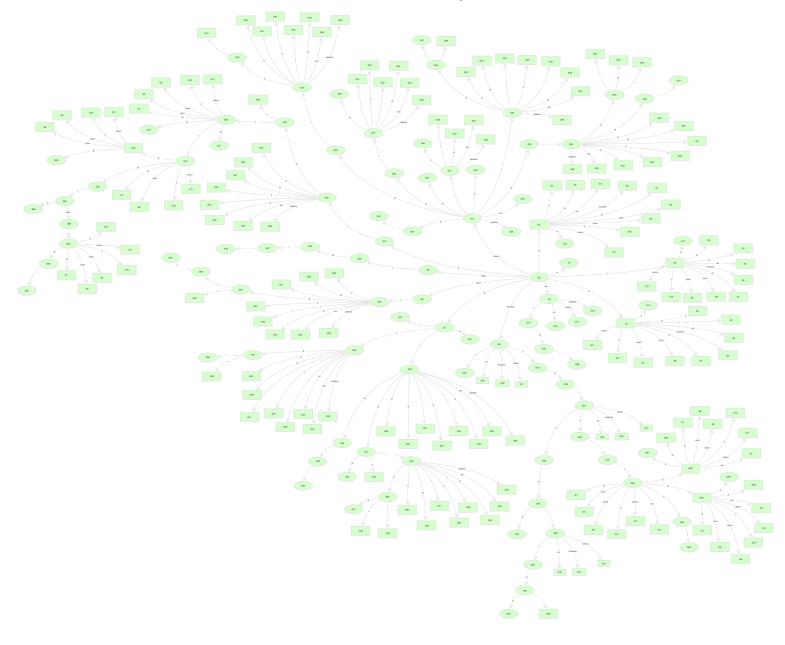
1 Diseño del Analizador Sintáctico

1.1 Gramática

```
Terminales = \{ ; \{ \} id ent cadena ( ) + < ! = | = var int \}
boolean string print input, return function if else }
NoTerminales = \{ PDTFT1AKCSLMQS1GXEURVS2 \}
Axioma = P
Producciones = \{
     P \rightarrow D P
      P \rightarrow F P
      P \rightarrow S P
      D \rightarrow var T id ;
      T \rightarrow int
      T \rightarrow string
      T \rightarrow boolean
      F \rightarrow function T1 id (A) \{C\}
      T1 \rightarrow \lambda
      T1 \rightarrow T
     A \rightarrow T id K
      A \rightarrow \lambda
     K \rightarrow \lambda
     K \rightarrow T id K
      C \rightarrow D C
      C \rightarrow S C
      C \rightarrow \lambda
      S \rightarrow id L E;
      S \rightarrow id (M);
      S \rightarrow print (E);
      S \rightarrow input \ (id);
      S \rightarrow if (E) S1
      S \rightarrow return X;
      L \rightarrow |=
      L \rightarrow =
     M \rightarrow E Q
     M \rightarrow \lambda
      Q \rightarrow \lambda
      Q \rightarrow E Q
      S1 \rightarrow \{S2\}G
      S1 \rightarrow S
      G \rightarrow else \{ S2 \}
      G \rightarrow \lambda
     X \rightarrow E
     X \rightarrow \lambda
     E \rightarrow E < U
      E \rightarrow U
      U \rightarrow U + R
      U \rightarrow R
```

```
egin{array}{ll} R & 
ightarrow & ! & V \ R & 
ightarrow & V \ V & 
ightarrow & (E) \ V & 
ightarrow & id \ V & 
ightarrow & id \ (M) \ V & 
ightarrow & ent \ V & 
ightarrow & cadena \ S2 & 
ightarrow & S2 \ S2 & 
ightarrow & S2 \ P & 
ightarrow & \lambda \ \end{array}
```

1.2 Autómata Reconocedor de Prefijos Viables



1.2.1 Estados del autómata

```
S_0=\{P1 \rightarrow \bullet P, P \rightarrow \bullet DP, P \rightarrow \bullet SP, P \rightarrow \bullet, D \rightarrow \bullet var T id;,
         F \rightarrow \bullet \text{ function } T1 \text{ id}(A)\{C\}, S \rightarrow \bullet \text{ id } L E;, S \rightarrow \bullet \text{ id}(M);
         S \rightarrow \bullet \text{ print}(E); , S \rightarrow \bullet \text{ input}(id); , S \rightarrow \bullet \text{ if}(E) S1,
         S \rightarrow \bullet return X;
S_1 = \{P1 \rightarrow P \bullet \}
S_2 = \{P \rightarrow D \bullet P, P \rightarrow \bullet DP, P \rightarrow \bullet SP, P \rightarrow \bullet , D \rightarrow \bullet var T id;,
         F \rightarrow \bullet function T1 id(A){C}, S \rightarrow \bullet id L E;, S \rightarrow \bullet id(M);
         S \rightarrow \bullet print(E); S \rightarrow \bullet input(id); S \rightarrow \bullet if(E) S1,
         S \rightarrow \bullet return X;
S_3=\{P \rightarrow F \bullet P, P \rightarrow \bullet DP, P \rightarrow \bullet FP, P \rightarrow \bullet SP, P \rightarrow \bullet,
         D \rightarrow \bullet \text{ var } T \text{ id}; F \rightarrow \bullet \text{ function } T1 \text{ id}(A) \{C\},
         S \rightarrow \bullet \text{ id } L E;, S \rightarrow \bullet \text{ id}(M);, S \rightarrow \bullet \text{ print}(E);
         S \rightarrow \bullet \text{ input (id)}; S \rightarrow \bullet \text{ if (E)} S1, S \rightarrow \bullet \text{ return } X;
S_4=\{P \rightarrow S \bullet P, P \rightarrow \bullet DP, P \rightarrow \bullet FP, P \rightarrow \bullet SP, P \rightarrow \bullet,
         D \rightarrow \bullet \text{ var } T \text{ id};, F \rightarrow \bullet \text{ function } T1 \text{ id}(A)\{C\},
         S \rightarrow \bullet id L E;, S \rightarrow \bullet id (M);, S \rightarrow \bullet print (E);,
         S \ \rightarrow \ \bullet \ input(id); \, , \ S \ \rightarrow \ \bullet \ if(E) \ S1 \, , \ S \ \rightarrow \ \bullet \ return \ X; \}
S_5 = \{D \rightarrow var \bullet T id;, T \rightarrow \bullet int, T \rightarrow \bullet string, T \rightarrow \bullet boolean\}
S_6=\{F \rightarrow function \bullet T1 \ id(A)\{C\}, \ T1 \rightarrow \bullet, \ T1 \rightarrow \bullet T,
        T \rightarrow \bullet \text{ int}, T \rightarrow \bullet \text{ string}, T \rightarrow \bullet \text{ boolean}
S_7 = \{S \rightarrow id \bullet L E; , S \rightarrow id \bullet (M); , L \rightarrow |=, L \rightarrow \bullet =\}
S_8 = \{S \rightarrow print \bullet (E); \}
S_9 = \{S \rightarrow input \bullet (id); \}
S_{10} = \{S \rightarrow if \bullet (E) S1\}
S_{11}\!\!=\!\!\{S \ \rightarrow\! \texttt{return} \ \bullet X; \,, \ X \ \rightarrow \ \bullet, \ X \ \rightarrow \ \bullet \ E, \ E \ \rightarrow \ \bullet \ E < U, \ E \ \rightarrow \ \bullet \ U,
         U \rightarrow \bullet U + R, U \rightarrow \bullet R, R \rightarrow \bullet ! V, R \rightarrow \bullet V, V \rightarrow \bullet (E),
         V \rightarrow \bullet \text{ id}, V \rightarrow \bullet \text{ id}(M), V \rightarrow \bullet \text{ ent}, V \rightarrow \bullet \text{ cadena}
S_{12} = \{P \rightarrow DP \bullet\}
S_{13} = \{P \rightarrow FP \bullet\}
S_{14} = \{P \rightarrow SP \bullet \}
S_{15}=\{D \rightarrow var \ T \bullet id;\}
S_{16} = \{T \rightarrow int \bullet \}
S_{17} = \{T \rightarrow string \bullet \}
S_{18} = \{T \rightarrow boolean \bullet \}
S_{19} = \{F \rightarrow function \ T1 \bullet id(A)\{C\}\}\
S_{20} {=} \{T1 \ \rightarrow T \ \bullet \}
S_{21} = \{L \rightarrow = \bullet\}
S_{22} = \{S \rightarrow id \ (\bullet M); , M \rightarrow \bullet E Q, M \rightarrow \bullet, E \rightarrow \bullet E < U, E \rightarrow \bullet U,
         U \rightarrow \bullet U + R, U \rightarrow \bullet R, R \rightarrow \bullet ! V, R \rightarrow \bullet V, V \rightarrow \bullet (E),
         V \rightarrow \bullet \text{ id}, V \rightarrow \bullet \text{ id}(M), V \rightarrow \bullet \text{ ent}, V \rightarrow \bullet \text{ cadena}
S_{23} = \{L \rightarrow |= \bullet\}
S_{24} = \{S \rightarrow print \ (\bullet E); , E \rightarrow \bullet E < U, E \rightarrow \bullet U, U \rightarrow \bullet U + R,
         U \rightarrow \bullet R, R \rightarrow \bullet ! V, R \rightarrow \bullet V, V \rightarrow \bullet (E), V \rightarrow \bullet id,
         V \rightarrow \bullet id(M), V \rightarrow \bullet ent, V \rightarrow \bullet cadena
S_{25} = \{S \rightarrow input \ ( \bullet id ) \}
S_{26} = \{S \rightarrow if \ (\bullet E) \ S1, \ E \rightarrow \bullet E < U, \ E \rightarrow \bullet U, \ U \rightarrow \bullet U + R,
         U \ \rightarrow \ \bullet \ R, \ R \ \rightarrow \ \bullet \ ! \ V, \ R \ \rightarrow \ \bullet \ V, \ V \ \rightarrow \ \bullet \ (E) \,, \ V \ \rightarrow \ \bullet \ id \,,
         V \rightarrow \bullet id(M), V \rightarrow \bullet ent, V \rightarrow \bullet cadena)
S_{27} = \{S \rightarrow return \ X \bullet ; \}
S_{28} = \{X \rightarrow E \bullet, E \rightarrow E \bullet < U\}
S_{29} = \{E \rightarrow U \bullet, U \rightarrow U \bullet + R\}
S_{30} = \{U \rightarrow R \bullet \}
S_{31} = \{R \rightarrow ! \bullet V, V \rightarrow \bullet (E), V \rightarrow \bullet id, V \rightarrow \bullet id(M),
        V \rightarrow \bullet \text{ ent}, V \rightarrow \bullet \text{ cadena}
S_{32} = \{R \rightarrow V \bullet \}
S_{33}=\{V \rightarrow (\bullet E), E \rightarrow \bullet E < U, E \rightarrow \bullet U, U \rightarrow \bullet U + R,
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U \rightarrow \bullet R, R \rightarrow \bullet ! V, R \rightarrow \bullet V, V \rightarrow \bullet (E), V \rightarrow \bullet id,
         V \rightarrow \bullet id(M), V \rightarrow \bullet ent, V \rightarrow \bullet cadena
S_{34} = \{V \rightarrow id \bullet, V \rightarrow id \bullet (M)\}
S_{35} = \{V \rightarrow ent \bullet \}
S_{36} = \{V \rightarrow cadena \bullet \}
S_{37}=\{D \rightarrow var \ T \ id \bullet;\}
S_{38} = \{F \rightarrow function T1 id \bullet (A)\{C\}\}\
S_{39}=\{S \rightarrow id L \bullet E, E \rightarrow \bullet E < U, E \rightarrow \bullet U, U \rightarrow \bullet U + R,
         U \rightarrow \bullet R, R \rightarrow \bullet ! V, R \rightarrow \bullet V, V \rightarrow \bullet (E), V \rightarrow \bullet id,
         V \rightarrow \bullet id(M), V \rightarrow \bullet ent, V \rightarrow \bullet cadena
S_{40} = \{S \rightarrow id (M \bullet); \}
S_{41}=\{M \rightarrow E \bullet Q, E \rightarrow E \bullet < U, Q \rightarrow \bullet, Q \rightarrow \bullet, EQ\}
S_{42} = \{S \rightarrow print(E \bullet);, E \rightarrow E \bullet < U\}
S_{43} = \{S \rightarrow input(id \bullet);\}
S_{44} = \{S \rightarrow if(E \bullet) S1, E \rightarrow E \bullet < U\}
S_{45} = \{S \rightarrow return X; \bullet \}
S_{46}=\{E \rightarrow E < \bullet U, U \rightarrow \bullet R, U \rightarrow \bullet U + R, R \rightarrow \bullet ! V, R \rightarrow \bullet V\}
         V \rightarrow \bullet (E), V \rightarrow \bullet id, V \rightarrow \bullet id (M), V \rightarrow \bullet ent, V \rightarrow \bullet cadena}
S_{47}=\{U \rightarrow U + \bullet R, R \rightarrow \bullet ! V, V \rightarrow \bullet (E), V \rightarrow \bullet id(M),
         V \rightarrow \bullet \text{ ent}, V \rightarrow \bullet \text{ cadena}
S_{48} = \{R \rightarrow ! V \bullet \}
S_{49} = \{V \rightarrow (E \bullet), E \rightarrow E \bullet < U\}
S_{50} = \{ V \rightarrow id \ ( \bullet \ M ) \ , \ M \rightarrow \bullet \ E \ Q, \ M \rightarrow \bullet \ , \ E \rightarrow \bullet \ E < U, \ E \rightarrow \bullet \ U,
         U \rightarrow \bullet U + R, U \rightarrow \bullet R, R \rightarrow \bullet ! V, R \rightarrow \bullet V, V \rightarrow \bullet (E),
         V \rightarrow \bullet \text{ id}, V \rightarrow \bullet \text{ id}(M), V \rightarrow \bullet \text{ ent}, V \rightarrow \bullet \text{ cadena}
S_{51}=\{F \rightarrow function \ T1 \ id (\bullet \ A)\{C\}, \ A \rightarrow \bullet \ T \ id \ K, \ A \rightarrow \bullet, \ T \rightarrow \bullet \ int,
         T \rightarrow \bullet \text{ string}, T \rightarrow \bullet \text{ boolean}
S_{52} = \{S \rightarrow id \ L \ E \bullet ; , E \rightarrow E \bullet < U\}
S_{53} = \{S \rightarrow id(M) \bullet ; \}
S_{54}=\{M \rightarrow E Q \bullet \}
S_{55}=\{Q \rightarrow , \bullet E Q, E \rightarrow \bullet E < U, E \rightarrow \bullet U, \}
         U \rightarrow \bullet U + R, U \rightarrow \bullet R, R \rightarrow \bullet ! V, R \rightarrow \bullet V, V \rightarrow \bullet (E),
         V \rightarrow \bullet \text{ id}, V \rightarrow \bullet \text{ id}(M), V \rightarrow \bullet \text{ ent}, V \rightarrow \bullet \text{ cadena}
S_{56} = \{S \rightarrow print(E) \bullet ;\}
S_{57} = \{S \rightarrow input(id) \bullet ;\}
S_{58} \hspace{-0.05cm} = \hspace{-0.05cm} \{S \rightarrow i\, f\, (E) \mid \bullet \ S1 \,, \ S1 \rightarrow \bullet \ \{S2\}G, \ S1 \rightarrow \bullet \ S, \ S \rightarrow \bullet \ i\, d \ L \ E; \,,
         S \rightarrow \bullet id(M);, S \rightarrow \bullet print(E);, S \rightarrow \bullet input(id);,
         S \ \rightarrow \ \bullet \ if (E) S1 \, , \ S \ \rightarrow \ \bullet \ return \ X \ ; \}
S_{59} = \{E \rightarrow E < U \bullet, U \rightarrow U \bullet + R\}
S_{60} = \{U \rightarrow U + R \bullet \}
S_{61} {=} \{ V \rightarrow (E) \quad \bullet \, \}
S_{62} = \{V \rightarrow id (M \bullet)\}
S_{63}=\{M \rightarrow E \bullet Q, E \rightarrow E \bullet < U, Q \rightarrow \bullet, Q \rightarrow \bullet, EQ\}
S_{64} = \{F \rightarrow function T1 id(A \bullet)\{C\}\}
S_{65}=\{A \rightarrow T \bullet id K\}
S_{66} = \{S \rightarrow id \ L \ E \ ; \bullet \}
S_{67} = \{S \rightarrow id (M); \bullet \}
S_{68}=\{Q \rightarrow E \bullet Q, E \rightarrow E \bullet C, Q \rightarrow \bullet, Q \rightarrow \bullet, EQ\}
S_{69} = \{S \rightarrow print(E); \bullet \}
S_{70} = \{S \rightarrow input(id); \bullet\}
S_{71}=\{S \rightarrow if(E) S1 \bullet \}
S_{72} = \{S1 \rightarrow \{\bullet \ S2\}G, \ S2 \rightarrow \bullet \ S \ S2, \ S2 \rightarrow \bullet \ S, \ S \rightarrow \bullet \ id \ L \ E;, \}
         S \ \rightarrow \ \bullet \ id \, (M) \, ; \, , \ S \ \rightarrow \ \bullet \ print \, (E) \, ; \, , \ S \ \rightarrow \ \bullet \ input \, (id \,) \, ; \, ,
         S \rightarrow \bullet \text{ if } (E)S1, S \rightarrow \bullet \text{ return } X ; 
S_{73} = \{S1 \rightarrow S \bullet \}
S_{74}=\{S2 \rightarrow S \bullet S2 , S2 \rightarrow S \bullet , S2 \rightarrow \bullet S S2, S2 \rightarrow \bullet S,
         \dot{S} \rightarrow ullet id \ L \ E \ ; , \ S \rightarrow ullet id \ (\ M \ ) \ ; , \ S \rightarrow ullet print \ (\ E \ ) \ ; ,
         S \rightarrow \bullet \text{ input (id)};, S \rightarrow \bullet \text{ if (E)} S1, S \rightarrow \bullet \text{ return } X;
```

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S_{75} = \{F \rightarrow function T1 id (K) \bullet \{C\}\}\
S_{76}=\{A \rightarrow T \text{ id } \bullet K , K \rightarrow \bullet, K \rightarrow \bullet , T \text{ id } K\}
S_{77} {=} \{Q \rightarrow , \ E \ Q \bullet \}
S_{78} = \{S1 \rightarrow \{S2 \bullet \} G\}
S_{79} = \{S2 \rightarrow S \bullet S2, S2 \rightarrow S \bullet, S2 \rightarrow \bullet S S2, S \rightarrow \bullet id L E;,
           S \rightarrow \bullet id(M); , S \rightarrow \bullet print(E); S \rightarrow \bullet if(E)S1; ,
           S \ \rightarrow \ \bullet \ input(id); \, , \ S \ \rightarrow \ return \ X; \}
S_{80} = \{F \rightarrow function T1 id (K) \{ \bullet C \}, C \rightarrow \bullet D C, C \rightarrow \bullet \}
           \mathrm{D} \ \rightarrow \ \bullet \ \mathrm{var} \ \mathrm{T} \ \mathrm{id} \ \ ; \, , \ \mathrm{S} \ \rightarrow \ \bullet \ \mathrm{id} \ \mathrm{L} \ \mathrm{E} \ \ , \ \mathrm{S} \ \rightarrow \ \bullet \ \mathrm{id} \ \ (\mathrm{M}) \, ; \, ,
           S \rightarrow \bullet \text{ print } (E);, S \rightarrow \bullet \text{ input (id)};, S \rightarrow \bullet \text{ if } (E) S1,
           S \rightarrow \bullet return X ; 
S_{81} = \{A \rightarrow T \text{ id } K \bullet \}
S_{82} = \{K \rightarrow, \bullet T \text{ id } K, T \rightarrow \bullet \text{ int }, T \rightarrow \bullet \text{ string }, T \rightarrow \bullet \text{ boolean}\}
S_{83} = \{S1 \rightarrow \{S2\} \bullet G , G \rightarrow \bullet \text{ else } \{S2\} , G \rightarrow \bullet \}
S_{84} = \{F \rightarrow function T1 id (K) \{C \bullet \}\}
S_{85}=\{C \rightarrow D \bullet C, C \rightarrow \bullet D C, C \rightarrow \bullet S C, C \rightarrow \bullet, D \rightarrow \bullet \text{ var T id } ;,
           S \rightarrow \bullet \text{ id } L E ;, S \rightarrow \bullet \text{ id } (M) ;, S \rightarrow \bullet \text{ print } (E) ;,
           S \rightarrow • input ( id ) ;, S \rightarrow • if ( E ) S1, S \rightarrow • return X ;}
S_{86}=\{C \rightarrow S \bullet C, C \rightarrow \bullet D C, C \rightarrow \bullet S C, C \rightarrow \bullet, D \rightarrow \bullet \text{ var T id } ;,
           S \rightarrow \bullet \text{ id } L E ;, S \rightarrow \bullet \text{ id } (M) ;, S \rightarrow \bullet \text{ print } (E) ;, S \rightarrow \bullet \text{ input } (\text{ id }) ;, S \rightarrow \bullet \text{ if } (E) S1, S \rightarrow \bullet \text{ return } X ;}
S_{87} = \{K \rightarrow , T \bullet id K\}
S_{88} = \{S1 \rightarrow \{S2\} G \bullet \}
S_{89} = \{G \rightarrow else \bullet \{S2\}\}\
S_{90} = \{F \rightarrow function T1 id (K) \{C\} \bullet \}
\begin{array}{l} S_{91} = \{K \rightarrow, \ T \ \text{id} \ \bullet K, \ K \rightarrow \bullet \ , \ K \rightarrow \bullet \ , \ T \ \text{id} \ K\} \\ S_{92} = \{G \rightarrow else \ \{ \bullet S2 \}, \ S2 \rightarrow \bullet \ S \ S2, \ S2 \rightarrow \bullet \ S, \ S \rightarrow \bullet \ \text{id} \ L \ E \ ; , \\ S \rightarrow \bullet \ \text{id} \ (M \ ) \ ; \ , \ S \rightarrow \bullet \ \text{print} \ (E \ ) \ ; , \ S \rightarrow \bullet \ \text{input(id)}; \,, \end{array}
           S \rightarrow \bullet \text{ if (E)} S1, S \rightarrow \bullet \text{ return } X ;}
S_{93} = \{K \rightarrow , T \text{ id } K \bullet \}
S_{94} = \{G \rightarrow else \{ S2 \bullet \} \}
S_{95} = \{G \rightarrow else \{ S2 \} \bullet \}
S_{96} = \{C \rightarrow D C \bullet \}
S_{97} = \{C \rightarrow S \ C \bullet \}
S_{98} = \{D \rightarrow var \ T \ id ; \bullet \}
S_{99} = \{S2 \rightarrow S \ S2 \bullet \}
```

1.3 Conflictos

Como podemos observar en la tabla de decisión no hay ningún conflicto. Los posibles conflictos son:

Reducción-Reducción

Podríamos ver como en los posibles estados con este conflicto, en nuestro caso ninguno, se verifica que

 $\forall \{A \to \alpha \bullet, B \to \beta \bullet\} \subset S_x \Rightarrow \text{Follow}(A) \cap \text{Follow}(B) = \emptyset \text{ (Esto lo podemos observar al no tener dos entradas de reducción en la misma celda de cada fila de <math>S_x$)

Reducción-Desplazamiento

Podemos ver como en los posibles estados con este conflicto, S_0 , S_2 , S_3 , S_4 , S_6 , S_{11} , S_{22} , S_{28} , S_{29} , S_{34} , S_{41} , S_{50} , S_{51} , S_{59} , S_{63} , S_{68} , S_{76} , S_{79} , S_{80} , S_{83} , S_{85} , S_{86} , S_{91} , se verifica que

 $\forall \{A \to \alpha \bullet b \gamma, C \to \beta \bullet\} \subset S_x \Rightarrow b \notin Follow(C)$ (Esto lo podemos observar al no tener una entrada de desplazamiento y otra de reducción en la misma celda de

2 Anexo de Pruebas

Prueba 1 Correcta

```
1 var int a;
2 var int b;
3 var int c;
4 print ('Introduce el primer operando');
5 input (a);
6 print ('Introduce el segundo operando');
7 input (b);
8 function int suma (int num1, int num2)
9 {
10
   var int res;
11
    res = num1 + num2;
12
    return res;
13 }
14 c = suma (a, b);
15 print (c);
```

A 5 4 5 4 5 4 46 41 39 37 20 21 46 41 39 37 20 21 5 10 5 5 13 14 11 5 4 25 43 41 39 43 41 38 37 18 43 41 39 37 34 23 17 16 16 15 8 25 43 41 39 37 43 41 39 37 28 29 26 44 41 39 37 18 43 41 39 37 20 49 3 3 2 3 3 3 3 1 1 1

Prueba 2 Correcta

```
1 var string texto;
2 function imprime (string msg)
3 {
4
     print ('Mensage introducido:');
5
    print (msg);
6
7
  function pideTexto ()
8
9
    print ('Introduce un texto');
10
     input (texto);
11 }
12 pideTexto();
13 imprime (texto);
```

A 6 4 9 6 13 11 46 41 39 37 20 43 41 39 37 20 17 16 16 8 9 12 46 41 39 37 20 21 17 16 16 8 27 19 43 41 39 37 28 26 19 49 3 3 2 2 1

Prueba 3 Correcta

```
var string s;
var int uno;
var int UNO;
function int Factorial (int n)

{
   if (n < 0) return 1;
   return n + Factorial (n + 1);
}
var int For;
var int functional;</pre>
```

	[] id enterg	entero cadena () +		-= var int book	boolean string print input	return function if else	se \$ P D T F T	A K C S L M O S G X E U B V S
- -	-1-			d5	dp dp	d11 d6 d10	r49 1 2 3	4
S1	_						a e	
S2	d7	_ _ _	_ _ _	d5	6p 8p	_	r49 12 2 3	4
- S3	d7		 - -	d5	_	d11 d6 d10	13 2	
S4	d7		 - -	d5	6p 8p	d11 d6 d10	r49 14 2 3	4
S5	_		_	d16 d18	8 d17	_	15	
98	61			d16 d18	8 d17		20 19	
	_	d22	d21	d23		_		
88	_	d24	_ _ _	_ _ _		_		
6S	_		_ _ _	_		_		
S10	_		_	_	_	_		
S11 r35	d34 d35	d36						
S12						_	r1	
S13							r2	
S14							r3	
S15	d37							
S16	r5							
S17	r6			_				
S18	71			_				
819	829		 - -	 - -		- - -		
S20	r10		_ _ _	_		_		
S21	r25 r25	r25 r25	r25	_	_	_		
S22	d34 d35	d36 d33 r27	d31	 - -		 		
S23	r24 r24	r24 r24	r24	_ _ _	- - -	- - -		
S24	d34 d35	d36 d33	d31	_ _ _				
S25	d43	_ _ _	_ _ _ _	_ _ _	_ _ _	_ _ _		
S26	d34 d35	d36 d33	d31	_ _ _	_ _ _	_ _ _	 	
S27 d45	_	_ _ _ _	_ _ _ _	_ _ _ _	_ _ _ _	_ _ _ _		
S28 r34	_	_ _ _	d46	_ _ _	_ _ _	_		
S29 r37	_ _ _	r37 d47 r37	7 r37	_ _ _	_ _ _	r37	 	
S30 r39	_	_	9 r39	_ _ _		r39	_ _ _ _ _	
S31	d34 d35	d36 d33	_ _ _ _	_ _ _ _	_ _ _ _	_ _ _ _	 	
S32 r41	_	_	1 r41	_ _ _		r41		
S33	d34 d35	d36	d31	_ _ _		_ - -	 	
S34 r43	_	d50 r43 r43 r43	3 r43	_		r43		
S35 r45		r45 r45 r45	5 r45	_ _ _		r45	 	
S36 r46	- - - -		5 r46	_ - _ -		r46		
S37 d98	_ - _ -		- -	_ - _ -	- - - -	_ - - -		
N388								
S39	d34 d35	d36 d33	d31					
S40	_ _ _	d53		_ _ _		_ _ _	_ _ _ _ _ _	
S41	_	r28		_ _ _		d55	 	
S42	_		d46	_ _ _	_ _ _	_ _ _	 	
S43	_ _ _	d57	_ _ _ _	_ _ _	_ _ _	_ _ _		
S44	_			_ _ _		_		
S45	- 1			r23	r23 r23	r23 r23 r23	r23	
S46	d34 d35	-	d31	_ _ _ _	_ _ _ _	_		
S47		d36 d33	d31	_ _ _	_ _ _ _	_ _ _ _		
S48 r40			0 r40	_ _ _		r40		
849			d46					

: { } id entero cad	cadena () + < ! =	= var int boolean string	norint input	return function	if lelse \$	P D T	F T' A K	C S L M O S' G	XEURV	- %
d35	d33 r27 d31			_					63 29 30	- -
		d16 d18 d17		_	_		64			1
S52 d66		_	_	_	_	_	_		_	-
S53 d67				_						-
_ _ _ _	r26	_	_	_	_ _ _ _	_ _ _	_ _ _		_	-
d34 d35	d36 d33 d31			_					68 29 30 32	_
S56 d69				_						_
d70		_ _ _ _	_ _ _	_	_ _ _	_	_ _ _ _	_		_
S58 d72 d7			p 6p 8p	d11	d10	_	_ _ _	73 71		_
S59 r36	r36 d47 r36		r36							
S60 r38	r38 r38 r38		r38							_
S61 r42	r42 r42 r42	_ _ _	142		_ _ _		_ _ _	_ _ _ _ _	_ _ _ _	-
862	d74		_		_		- - -			-
863	r28 d46	_	d55		_	_	_ _ _	54	_	-
864			_		_		_			
S65 d76				-						-
S66 r18 r18	_ _ _ _	118	r18 r18 r	r18 r18	r18 r18		- - -	_ _ _ _	_ _ _	-
S67 r19 r19		r19	r19 r19 r	r19 r19	r19 r19	_	_ _ _	_ _ _ _	_	-
	r28 d46	_ _ _	d55	_	_ - -		- - -	77	_ _ _ _	-
S69 r20 r20		r20	r20 r20 r	_	r20 r20					
S70 r21 r21		r21	r21	21 r21	r21 r21					-
		r22	r22	r22 r22			-			1
_			6P	-			— — —	1		-22
r31		r31	r31	r31 r31	r31 r31					1
r44	144 144		r44	-	_					1
S75 d80				_	_		-			1
S76	113		d82				81			-
		_ _ _ _	- - -	_	 - -		- - -	- - - -		-
S78 d83		_ _ _	_	_	_			_ _ _ _	_ _ _ _	ı-
S79 r48 d7		_ _ _	P 6P 8P	d11	d10		_ _ _		_ _ _ _	66
S80 r17 d7		d5	p 6p 8p	d11	d10	85		84 86		
881		 	_	_	_ _ _	_	_ _ _ _			-
882		d16 d18 d17	_ _ _	_	_ _ _	87	_ _ _	 		_
_		r33	r33 r33 r	r33 r33	r33 d89 r33		_ _ _			_
S84 d90		_	_	_	_ _ _	_ _ _	_ _ _ _	_ _ _ _	_ _ _ _	_
117		d2	dp	d11	d10	_ _ _	_ _ _ _	98 96		_
117		d5	P GP SP	d11	d10	82	_ _ _ _	07 86 1		_
				-						_
	_	r30	r30 r30 r	r30 r30	r30 r30					_
S89 d92	_	_ _ _	_ _ _	_	_ _ _	_ _ _	_ _ _ _	_ _ _ _ _		_
S90 r8		r8	r8 r8 1	r8 r8	r8 r8		_ _ _	_ _ _ _	_ _ _ _	_
S91		_	d82	_	_ _ _			_ _ _ _	_ _ _ _	-
S92 d7		_	p 6p 8p	d11	d10	_ _ _	_ _ _ _		_ _ _ _	94
_		_	_		_	_ _ _	_ _ _	_ _ _ _	_ _ _ _	-
_				_						_
_		r32	r32 r32 r	r32 r32	r32 r32		_ _ _	_ _ _ _	_ _ _ _	-
S96 r15		_	_	_	_	_ _ _	_ _ _ _	_ _ _ _ _	_ _ _ _	_
S97 r16		_	_	_	_ _ _		_ _ _	_ _ _ _ _		_
_	_ _ _ _	r4	r4 r4 1	r4 r4	r4 r4	_ _ _	_ _ _ _	_ _ _ _		_
S99 r47		_ _ _ _	_ _ _	_	_ _ _	_ _ _	_ _ _ _	_ _ _ _		_

```
11 var int While;
12
13 function imprime (string s, string msg, int f)
14
15
     print (s); print (msg); print (f);
16
    return;
17
18 function string cadena (boolean log)
19
   {
20
     if (!log)
21
22
       imprime (s, 'hola', 33);
23
       if (uno < UNO) return s;</pre>
24
     }
25
     else
26
    {
27
       return 'Fin';
     }
28
29 }
30 s = 'El factorial ';
31
32 print (s);
33 print ('Introduce un numero•');
34 input (num);
35 var
36 boolean
37 booleano;
38 if (num < 0)
                  print ('No existe el factorial de un negativo•');
39 imprime (cadena (booleano), 'recursivo es: ', Factorial (num));
```

Error 1

```
var int a;
var b;
a = 3;
b = a;
if (a < b) b = 1;
if (b < a) b = 8;
a = a + b;
print (a);
print (b);</pre>
```

Error Sintactico: Declaracion incorrecta de variable. Linea: 2

Error 2

```
1 var string texto;
2 function pideTexto ()
3 {
4  print ('Introduce un texto');
```

```
input (texto);

function imprime (string msg,)

function
```

Error Sintactico: Declaracion incorrecta de funcion. Linea: 7

Error 3

```
1 var int a;
2 var int b;
3 a = 3;
4 b = a;
5 var boolean c;
6 c = a < b;
7 if (c) {
8 b = 1;
9 } else {
10 c = b < a;
11 if (c) b = 4;
12 a = a + b;
13 print (a);
14 print (b);</pre>
```

Error Sintactico: Sentencia condicional compuesta incorrecta. Linea: 14