MANUAL DE PRÁCTICAS DE LABORATORIO DE LA MATERIA DE SISTEMAS DE INFORMACIÓN INTELIGENTES (STRAWBERRY PROLOG)

PARA LA LICENCIATURA EN CIENCIAS DE LA INFORMÁTICA.

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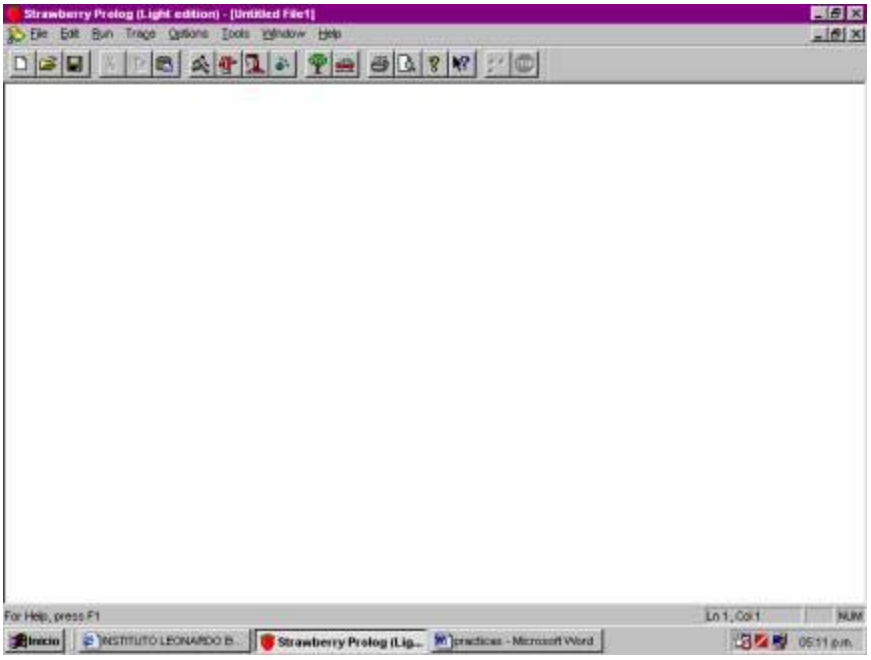
INDICE

PRACTICA NO. 0 DE PROLOG

1. Identifique las partes de la pantalla del compilador de Prolog.



a) *Barra de título.*
b) *Barra de menús.*
c) *Barra de herramientas.*
d) *Barra de estado.*
e) *Botón de minimizar.*
f) *Botón de restaurar.*
g) *Botón de cerrar.*
h) *Botón de control.*
i) *Area de trabajo.*

2. Identifique los nombres de los iconos de la barra de herramientas.

PRACTICA NO. 1 DE PROLOG

```
?-
  window(_, _, win_func(_), "Animations", 200, 100, 500, 300).
win_func(init) :-
  G_Br=0,      % G_Br is a global variable (it begin with G_)
  menu( normal, _, _, menu_brush(_), "&Brush"),
  animate( _, _, fail(_), "res/Dillo.avi", 10, 10),
  animate( _, _, fail(_), "res/Search.avi", 10, 150),
  animate( _, _, fail(_), "res/filecopy.avi", 150, 150).

menu_brush(press) :-
  new_brush(G_Br),
  update_window(_),
  G_Br:= (G_Br+1) mod 5.

new_brush(0) :- window_brush(_, rgb(0, 0, 0), x).
new_brush(1) :- window_brush(_, rgb(255, 0, 255), (/)).
new_brush(2) :- window_brush(_, "res/Wall.bmp").
new_brush(3) :- window_brush(_, rgb(127, 0, 127)).
new_brush(4) :- window_brush(_, _).
```

¿Qué hace el programa?

PRACTICA NO. 2 DE PROLOG

```
?-
  window( _, _, win_func(_), "Arc", 100, 0, 600, 600).

win_func(paint) :-
  for(I,3,300,3),
  wait(0.2),
  pen(3, rgb(random(256),random(256),random(256))),
  draw_arc(200-I, 200-I, 200+I, 200+I,0,0,0,0),
  draw_arc(200-I, 400-I, 200+I, 400+I,0,0,0,0),
  draw_arc(400-I, 200-I, 400+I, 200+I,0,0,0,0),
  draw_arc(400-I, 400-I, 400+I, 400+I,0,0,0,0),
  fail.
```

¿Qué hace el programa?

PRACTICA NO. 3 DE PROLOG

```
?-
  window( _, _, win_func(_), "Check Box", 200, 100, 400, 200).

win_func(init) :-
    check_box( _, _, check_func, "Check Box 1", 20, 20, 180, 20),
    check_box( _, _, check_func, "Check Box 2", 20, 40, 180, 20).

check_func(press) :-
  set_check_box_value(_,1-get_check_box_value(_)).
```

¿Qué hace el programa?

PRACTICA NO. 4 DE PROLOG

```
?-
  window( G_W, _, win_func(_), "Child Windows", 200, 100, 400, 200).

win_func(init) :-
  menu( normal, _, _, menu_func(_), "&Close the Active"),
  button( _, _, fail(_), "Will be closed", 20, 20, 180, 20),
  button( _, _, but_func(_), "Close", 20, 80, 80, 20).

but_func(press) :-
  X is first_child(G_W), % try with previous_child(_)
  write(X), nl,
  close_window(X).

menu_func(press) :-
  X is active_child(G_W),
  write(X), nl,
  close_window(X).
```

¿Qué hace el programa?

PRACTICA NO. 5 DE PROLOG

```
?-
  window( G_W, _, dll_func(_), "DLL", 200, 100, 400, 200).

dll_func(init) :-
  button( _, _, but_func(_), "Close", 20, 20, 80, 20).

but_func(press) :-
  User32 is open_DLL("user32"),
  X is get_handle(_),
  User32."SendMessageA"(X,0x10,0,0), % WM_CLOSE=0x10
  write(X),
  close(User32).
```

¿Qué hace el programa?

PRACTICA NO. 6 DE PROLOG

```
?-
  window(G_W, _, win_func(_), "Edit.spj - You can change this string!", 200, 100,
500, 400).
win_func(init) :-
  G_Br=0,      % G_Br, G_W, G_E1 and G_E2 are global variables (they begin with
G_)
  menu( normal, _, _, menu_change(_), "&Change"),
  menu( normal, _, _, menu_brush(_), "&Brush"),
  window_brush(_, rgb(0, 0, 255)),      % blue
  edit( G_E1, _, edit_func(_), "First", 10, 10, 100, 50),
  edit( G_E2, _, edit_func(_), "Second", 150, 150, 300, 40).
edit_func(init) :-
  color_text(_, rgb(255, 0, 0)),         % red
  color_text_back(_, rgb(255, 255, 0)). % yellow
```

```
menu_change(press) :-
  X is get_text(G_W),
  Y is get_text(G_E1),
  Z is get_text(G_E2),
  set_text(Y, G_W),
  set_text(Z, G_E1),
  set_text(X, G_E2).

menu_brush(press) :-
  new_brush(G_Br),
  update_window(_),
  G_Br:= (G_Br+1) mod 10.

new_brush(0) :- window_brush(_, rgb(0, 0, 0), x).
new_brush(1) :- window_brush(_, rgb(0, 0, 255), (+)).
new_brush(2) :- window_brush(_, rgb(0, 255, 0), h).
new_brush(3) :- window_brush(_, rgb(255, 0, 0), v).
new_brush(4) :- window_brush(_, rgb(255, 0, 255), (/)).
new_brush(5) :- window_brush(_, rgb(127, 0, 127), (\)).
new_brush(6) :- window_brush(_, "res\\Wall.bmp").
new_brush(7) :- window_brush(_, "res\\Strawberry.bmp").
new_brush(8) :- window_brush(_, "res\\SP.bmp").
new_brush(9) :- window_brush(_, rgb(127, 0, 127)).
```

¿Qué hace el programa?

PRACTICA NO. 7 DE PROLOG

```
?-
  pen(3, rgb(0,0,0)),
  brush(rgb(0,0,255)),
  window( _, _, win_func(_), "Fill Polygon", 100, 100, 308, 328).

win_func(paint) :-
  fill_polygon(150,30, 200,250, 70,110, 230,110, 100,250).
```

¿Qué hace el programa?

PRACTICA NO. 8 DE PROLOG

```
-
  window(_, _, win_func(_), "Fonts", 200, 100, 400, 300).

win_func(paint) :-
  color_text(_, rgb(255, 0, 0)),   % red
  font(15,50,"Times New Roman"),
  text_out(10, 10, "Strawberry Prolog"),
  color_text(_, rgb(0, 0, 255)),   % blue
  font(20,50,"Courier"),
  text_out(50, 100, "is the most"),
  font(35,50,"Times New Roman"),
  color_text(_, rgb(0, 255, 255)),
  text_out(90, 200, "c"),
  color_text(_,rgb(255, 0, 255)),
  text_out(_,_,"o"),
  color_text(_,rgb(0, 0, 0)),
  text_out(_,_,"l"),
  color_text(_,rgb(255, 255, 0)),
  text_out(_,_,"o"),
  color_text(_,rgb(255, 127, 0)),
  text_out(_,_,"r"),
  color_text(_,rgb(0, 127, 0)),
  text_out(_,_,"f"),
  color_text(_,rgb(255, 0, 0)),
  text_out(_,_,"u"),
  color_text(_,rgb(0, 0, 255)),
  text_out(_,_,"l").
```

¿Qué hace el programa?

PRACTICA NO. 9 DE PROLOG

```
?-
  window( _, _, win_func(_), "Group Box", 200, 100, 400, 200).
```

```
win_func(init) :-
   group_box( _, _, fail, "This is a Group Box", 90, 10, 200, 80),
% You can replace this box
% It is placed only for beauty
   radio_button( G_R1, _, radio_func, "Radio Button 1", 100, 40, 180, 20),
   radio_button( G_R2, _, radio_func, "Radio Button 2", 100, 60, 180, 20).

check_func(press) :-
  set_check_box_value(_,1-get_check_box_value(_)).

radio_func(press) :-
  get_check_box_value(_)=:=0,
  set_check_box_value(G_R1,0),
  set_check_box_value(G_R2,0),
  set_check_box_value(_,1).
```

¿Qué hace el programa?

PRACTICA NO. 10 DE PROLOG

```
?-
  G_F1=0,
  G_F2=0,
  (yes_no("List Demo","Do you want colors",?)->
    G_F1:=1
  ),
  (yes_no("List Demo","Do you want incons",?)->
    G_F2:=1
  ),
  window( _, _, win_func(_), "List Demo", 100, 50, 370, 420).

win_func(init) :-
  button( _, _, but_clean(_), "Clean", 180, 20, 80, 20),
  button( _, _, but_selected(_), "Selected", 180, 50, 80, 20),
  static( G_S1, _, fail(_), "no", 180, 75, 80, 20),
  static( G_S2, _, fail(_), "", 10, 360, 80, 20),
  static( _, _, fail(_), "At:", 180, 110, 40, 25),
  edit( G_At, _, fail(_), "1", 220, 110, 40, 25), % number or end
  static( _, _, fail(_), "Col:", 260, 110, 40, 25),
```

```
  edit( G_Col, _, fail(_), "1", 300, 110, 40, 25),
  static( _, _, fail(_), "Icon:", 180, 140, 40, 25),
  edit( G_Icon, _, fail(_), "0", 220, 140, 40, 25),
  static( _, _, fail(_), "Text:", 180, 170, 40, 25),
  edit( G_Text, _, fail(_), "new", 220, 170, 120, 25),
  button( _, _, but_insert(_), "Insert", 180, 200, 80, 20),
  button( _, _, but_delete(_), "Delete", 270, 200, 80, 20),
  button( _, _, but_column(_), "Column", 180, 225, 80, 20),
  button( _, _, but_label(_), "Set Label", 270, 225, 80, 20),
  check_box( CB1, _, check_func1, "single selection", 170, 255, 160, 20),
  set_check_box_value( CB1,1),
  check_box( _, _, check_func2, "in place edit", 170, 275, 160, 20),
  check_box( _, _, check_func3, "column header", 170, 295, 160, 20),
  group_box( _, _, fail, "type", 165, 315, 190, 65),
  radio_button( G_R1, _, radio_func, "Icon", 170, 335, 85, 20),
  radio_button( G_R2, _, radio_func, "Report", 170, 355, 85, 20),
  radio_button( G_R3, _, radio_func, "Small", 255, 335, 85, 20),
  radio_button( G_R4, _, radio_func, "List", 255, 355, 85, 20),
  set_check_box_value(G_R2,1),
  list_box( G_List, _, list_func, "Name", 10, 10, 150, 350),
  (G_F1=1->
    color_text(G_List,rgb(255,0,0)),
    color_text_back(G_List,rgb(225,255,225))
  ),
  (G_F2=1->
    set_list_icons(G_List, s, "res/method16.ico", "res/property16.ico",
"res/object16.ico"),
    set_list_icons(G_List, b, "res/method32.ico", "res/property32.ico",
"res/object32.ico")
  ),
  insert_list_item(G_List, end, "second", 1),
  insert_list_item(G_List, end, "third", 2),
  insert_list_item(G_List, 0, "first", 0),
  insert_list_item(G_List, end, "last (no icon)", 4),
  how_much.

list_func(edit(Item,Text)):-
  yes_no("List Demo","Are you sure that you want to change this text.",?),
  set_list_label(G_List, Item, 0, Text).

how_much:-
  set_text(get_list_length(G_List)+" elements",G_S2).

but_clean(press):-
  clean_the_list(G_List),
```

```
  how_much.

but_selected(press):-
  set_text("no",G_S1),
  Sel is get_list_selected(G_List),
  set_text("first is "+Sel,G_S1),
  set_text(print(Sel),G_At),
  set_text(get_list_text(G_List, Sel),G_Text).

but_delete(press):-
  delete_list_item(G_List, scan(get_text(G_At))),
  how_much.

but_insert(press):-
  insert_list_item(G_List, scan(get_text(G_At)), get_text(G_Text),
scan(get_text(G_Icon))),
  how_much.

but_column(press):-
  add_list_column(G_List, scan(get_text(G_Col)), get_text(G_Text), 30).

but_label(press):-
  set_list_label(G_List, scan(get_text(G_At)), scan(get_text(G_Col)),
get_text(G_Text)).

check_func1(press) :-
  change_style(G_List, 4, 0, 0),
  set_check_box_value(_,1-get_check_box_value(_)).
check_func2(press) :-
  change_style(G_List, 0x200, 0, 0),
  set_check_box_value(_,1-get_check_box_value(_)).
check_func3(press) :-
  change_style(G_List, 0x4000, 0, 0),
  set_check_box_value(_,1-get_check_box_value(_)).

radio_func(press):-
  set_check_box_value(G_R1,0),
  set_check_box_value(G_R2,0),
  set_check_box_value(G_R3,0),
  set_check_box_value(G_R4,0),
  set_check_box_value(_,1),
  Label is get_text(_),
  label(Label,N),
  change_style(G_List, 0, 3, N).
```

```
label("Icon",0).
label("Report",1).
label("Small",2).
label("List",3).
```

¿Qué hace el programa?

PRACTICA NO. 11 DE PROLOG

```
?-
  window(_, _, win_func(_), "Window", 200, 100, 400, 200).

win_func(init) :-
  menu(normal, _, _, menu_window(_), "&New window"),
  menu(normal, _, _, menu_go(_), "&Go-go"),
  menu(normal, _, _, menu_name(_), "&Change the name"),
  menu(normal, _, _, menu_menu(_), "&Extend the menu").
menu_window(press) :-
  position(_,X, Y),
  window( _, 0, win_func(_), "Window", X+20, Y+20, 400, 200).
menu_go(press) :-
  size(_,X, Y),
  size(_,X+1, Y),
  X<600,
  menu_go(press).
menu_name(press) :-
  read(X, "Give a new name to the window", s),
  set_text(X, _).
menu_menu(press) :-
  read(X, "Give a name for a new command", s),
  menu( normal, _, _, menu_go(_), X).
```

¿Qué hace el programa?

PRACTICA NO. 12 DE PROLOG

```
?-
  window( _, _, win_func(_), "Radio Buttons", 200, 100, 400, 200).

win_func(init) :-
    radio_button( _, _, check_func, "Check Button 1", 20, 20, 180, 20),
    radio_button( _, _, check_func, "Check Button 2", 20, 40, 180, 20),
    radio_button( G_R1, _, radio_func, "Radio Button 1", 200, 20, 180, 20),
    radio_button( G_R2, _, radio_func, "Radio Button 2", 200, 40, 180, 20).

check_func(press) :-
  set_check_box_value(_,1-get_check_box_value(_)).

radio_func(press) :-
  get_check_box_value(_)=:=0,
  set_check_box_value(G_R1,0),
  set_check_box_value(G_R2,0),
  set_check_box_value(_,1).
```

¿Qué hace el programa?

PRACTICA NO. 13 DE PROLOG

```
?-
  G_Color:=rgb(255,0,0), % red
  G_FaceName="Font",
  G_Height=10,
  window(_, _, win_func(_), "Select Font", 200, 100, 400, 200).

win_func(init) :-
  menu( normal, _, _, menu_ChangeFont(_), "Change &Font").

win_func(paint) :-
  color_text(_, G_Color),
  text_out(10, 10, "Strawberry Prolog"),
  text_out(10, 40, G_FaceName+" "+G_Height).

menu_ChangeFont(press):-
```

```
  select_font(_, G_Font, G_Color, G_FaceName, G_Height),
  update_window(_).
```

¿Qué hace el programa?

PRACTICA NO. 14 DE PROLOG

```
?-
  G_X1:=0,
  G_X2:=0,
  window( G_W1, _, speed_func1(_), "Window 1", 200, 100, 400, 200),
  window( G_W2, _, speed_func2(_), "Window 2", 200, 300, 400, 200).

speed_func1(init) :-
  button( _, _, but_func1(_), "Draw", 20, 20, 80, 20).
speed_func2(init) :-
  button( _, _, but_func2(_), "Draw", 20, 20, 80, 20).

but_func1(press) :-
  set_active_window(G_W2),
  brush(rgb(random(256),random(256),random(256))),
  ellipse(G_X1+100,100,G_X1+200,200),
  G_X1:=G_X1+20.

but_func2(press) :-
  set_active_window(G_W1),
  brush(rgb(random(256),random(256),random(256))),
  ellipse(G_X2+100,100,G_X2+200,200),
  G_X2:=G_X2+20.
```

¿Qué hace el programa?

PRACTICA NO. 15 DE PROLOG

```
?-
  window( _, _, speed_func(_), "Speed Test", 200, 100, 400, 200).

speed_func(init) :-
    button( _, _, but_func(_), "Start", 20, 20, 80, 20).

but_func(press) :-
  cursor(w),
  chronometer(_),
  wait,
  chronometer(T),
  beep,
  Str is "1,400,000 steps was done for " + (T/1000)
   + " seconds, i.e. " + (1398102000//T)
   + " steps per second.",
  message("End of Test", Str, i).

wait :-
  p(_),p(_),p(_),p(_),p(_),
  p(_),p(_),p(_),p(_),p(_),
  fail.
wait.

p(a).
p(b).
p(c).
p(d).
```

¿Qué hace el programa?

PRACTICA NO. 16 DE PROLOG

```
% The goal creates a window and waits to get and process messages.
?-
   pen(3, rgb(255, 0, 0)),   % red
   brush(rgb(255, 255, 0)),  % yellow
   window( _, _, sun_func(_), "Sun shine", 200, 100, 400, 440).
```

```
% This predicate starts working at messages
sun_func(close) :-
   not( yes_no("","Did you finish your sun bath?", !)).

% Message 'paint' is sent when the window has to be paint.
sun_func(paint) :-
   ellipse(30, 30, 370, 370),
   line(200,150,200,250),
   line(120,100,160,120),
   line(240,120,280,100),
   ellipse(150, 300, 250, 320),
   beep,
   fail.
```

¿Qué hace el programa?

PRACTICA NO. 17 DE PROLOG

```
?-
  window( _, _, win_func(_), "Timer", 200, 100, 400, 200).

win_func(init) :-
    G_Timer is set_timer(_, 0.5, time_func),
    button( _, _, but_func(_), "Stop", 20, 20, 80, 20).

win_func(close) :-
  kill_timer(_, G_Timer).
% fail.

but_func(press) :-
  kill_timer(parent(_), G_Timer).

time_func(end) :-
  write( (*) ), % * is in brackets because it is an operator
  beep.
```

¿Qué hace el programa?

PRACTICA NO. 18 DE PROLOG

```
?-
  G_F=0,
  (yes_no("Tree Demo","Do you want incons",?)->
    G_F:=1
  ),
  window( _, _, win_func(_), "Tree Demo", 100, 50, 370, 420).

win_func(init) :-
  button( _, _, but_selected(_), "Selected", 180, 15, 80, 20),
  button( _, _, but_clean(_), "Clean", 270, 15, 80, 20),
  static( G_S1, _, fail(_), "no", 160, 40, 120, 20),
  static( G_S2, _, fail(_), "", 10, 360, 80, 20),
  static( _, _, fail(_), "Parent:", 160, 65, 60, 25),
  edit( G_Parent, _, fail(_), "", 220, 65, 120, 25),
  static( _, _, fail(_), "Child:", 160, 95, 60, 25),
  edit( G_Child, _, fail(_), "", 220, 95, 120, 25),
  static( _, _, fail(_), "Brother:", 160, 125, 60, 25),
  edit( G_Brother, _, fail(_), "", 220, 125, 120, 25),
  static( _, _, fail(_), "Icon:", 180, 155, 40, 25),
  edit( G_Icon, _, fail(_), "0", 220, 155, 30, 25),
  static( _, _, fail(_), "Icon Sel:", 250, 155, 60, 25),
  edit( G_Icon2, _, fail(_), "1", 310, 155, 30, 25),
  static( _, _, fail(_), "Text:", 180, 185, 40, 25),
  edit( G_Text, _, fail(_), "new", 220, 185, 120, 25),
  button( _, _, but_insert(_), "Insert", 180, 215, 80, 20),
  button( _, _, but_delete(_), "Delete", 270, 215, 80, 20),
  group_box( _, _, fail, "where", 165, 235, 190, 40),
  radio_button( G_R1, _, radio_func, "root", 170, 255, 85, 17),
  radio_button( G_R2, _, radio_func, "first", 255, 255, 85, 17),
  set_check_box_value(G_R1,1),
  set_check_box_value(G_R2,1),
  check_box( Ch1, _, check_func1, "buttons", 170, 280, 120, 20),
  check_box( Ch2, _, check_func2, "lines", 170, 300, 145, 20),
  check_box( Ch3, _, check_func3, "root lines", 170, 320, 120, 20),
  check_box( _, _, check_func4, "in place edit", 170, 340, 120, 20),
  set_check_box_value(Ch1,1),
  set_check_box_value(Ch2,1),
  set_check_box_value(Ch3,1),
  tree_box( G_Tree, _, tree_func, _, 10, 10, 150, 350),
```

```
  (G_F=1->
    set_tree_icons(G_Tree, "res/method16.ico", "res/property16.ico",
"res/object16.ico")
  ),
  insert_tree_item(G_Tree, Billy, root, first, "Billy", 0, 1),
  insert_tree_item(G_Tree, Daughter, Billy, first, "daughter", 0, 1),
  insert_tree_item(G_Tree, Son, Billy, first, "son", 0, 1),
  insert_tree_item(G_Tree, Tim, root, first, "Tim", 2, 2),
  insert_tree_item(G_Tree, Merry, root, Tim, "Merry", 0, 1),
  insert_tree_item(G_Tree, _, Merry, first, "son", 2, 2),
  insert_tree_item(G_Tree, _, root, sorted, "Ann", 2, 2),
  insert_tree_item(G_Tree, _, Son, last, "grandson", 2, 2),
  insert_tree_item(G_Tree, _, Son, sorted, "granddaughter", 2, 2),
  insert_tree_item(G_Tree, _, Daughter, first, "granddaughter", 2, 2),
  how_much.

tree_func(edit(Item,Text)):-
  yes_no("Tree Demo","Are you sure that you want to change this text.",?),
  set_tree_item(G_Tree, Item, Text, _, _).

how_much:-
  set_text(get_tree_length(G_Tree)+" elements",G_S2).

but_clean(press):-
  clean_the_tree(G_Tree),
  how_much.

but_selected(press):-
  set_text("no",G_S1),
  Sel is get_tree_selected(G_Tree),
  set_text("h: "+Sel,G_S1),
  Parent is tree_parent(G_Tree, Sel),
  (Parent=root->
    set_text("root",G_Parent)
  else
    get_tree_item(G_Tree, Parent, TextParent,_,_),
    set_text(print(TextParent),G_Parent)
  ),
  (Child is tree_child(G_Tree, Sel)->
    get_tree_item(G_Tree, Child, TextChild,_,_),
    set_text(print(TextChild),G_Child)
  else
    set_text("no",G_Child)
  ),
  (Brother is tree_next_brother(G_Tree, Sel)->
```

```
    get_tree_item(G_Tree, Brother, TextBrother,_,_),
    set_text(print(TextBrother),G_Brother)
  else
    set_text("no",G_Brother)
  ),
  get_tree_item(G_Tree, Sel, Text,Icon1,Icon2),
  set_text(print(Icon1),G_Icon),
  set_text(print(Icon2),G_Icon2),
  set_text(Text,G_Text).

but_delete(press):-
  delete_tree_item(G_Tree, get_tree_selected(G_Tree)),
  how_much.

but_insert(press):-
  (get_check_box_value(G_R1)=:=1->
    Parent=root,
    (get_check_box_value(G_R2)=:=1->
      AfterChild=first
    else
      AfterChild is get_tree_selected(G_Tree)
    )
  else
    (get_check_box_value(G_R2)=:=1->
      Parent is get_tree_selected(G_Tree),
      AfterChild=first
    else
      AfterChild is get_tree_selected(G_Tree),
      Parent is tree_parent(G_Tree, AfterChild)
    )
  ),
  insert_tree_item(G_Tree, _, Parent, AfterChild, get_text(G_Text),
scan(get_text(G_Icon)), scan(get_text(G_Icon2))),
  how_much.

radio_func(press) :-
  set_check_box_value(_,1-get_check_box_value(_)).
check_func1(press) :-
  change_style(G_Tree, 1, 0, 0),
  set_check_box_value(_,1-get_check_box_value(_)).
check_func2(press) :-
  change_style(G_Tree, 2, 0, 0),
  set_check_box_value(_,1-get_check_box_value(_)).
check_func3(press) :-
  change_style(G_Tree, 4, 0, 0),
```

```
  set_check_box_value(_,1-get_check_box_value(_)).
check_func4(press) :-
  change_style(G_Tree, 8, 0, 0),
  set_check_box_value(_,1-get_check_box_value(_)).
```

¿Qué hace el programa?

PRACTICA NO. 19 DE PROLOG

```
?-
   window( _, _, win_func(_), "Bitmaps and Icons", 100, 100, 375, 400).

win_func(init):-
         bitmap(_, _, fail(_), default, 50, 50),
     bitmap(_, _, fail(_), default, 250, 50),
     bitmap(_, _, fail(_), default, 100, 100),
     bitmap(_, _, fail(_), default, 200, 100),
     bitmap(_, _, fail(_), default, 50, 150),
     bitmap(_, _, fail(_), default, 150, 150),
     bitmap(_, _, fail(_), default, 250, 150),
     bitmap(_, _, fail(_), default, 100, 200),
     bitmap(_, _, fail(_), default, 200, 200),
     bitmap(_, _, fail(_), default, 150, 250),
     icon(_, _, fail(_), default, 165, 215),
     icon(_, _, fail(_), default, 165, 115),
     icon(_, _, fail(_), default, 110,70),
     icon(_, _, fail(_), default, 220, 70),
     icon(_, _, fail(_), default, 30,112),
     icon(_, _, fail(_), default, 300,110),
     icon(_, _, fail(_), default, 112,170),
     icon(_, _, fail(_), default, 70,115),
     icon(_, _, fail(_), default, 265,115),
     icon(_, _, fail(_), default, 210,170),
     icon(_, _, fail(_), default, 23,76),
     icon(_, _, fail(_), default, 305,72),
     G_Br=0,      % G_Br is a global variable (it begin with G_)
     menu( normal, _, _, menu_brush(_), "&Brush").

menu_brush(press) :-
     new_brush(G_Br),
```

```
    update_window(_),
    G_Br:= (G_Br+1) mod 5.

new_brush(0) :- window_brush(_, rgb(0, 0, 0), x).
new_brush(1) :- window_brush(_, rgb(255, 0, 255), (/)).
new_brush(2) :- window_brush(_, "res/Wall.bmp").
new_brush(3) :- window_brush(_, rgb(127, 0, 127)).
new_brush(4) :- window_brush(_, _).
```

¿Qué hace el programa?

PRACTICA NO. 20 DE PROLOG

```
?-
  window(_, _, win_func(_), "Cursor", 200, 100, 400, 300),
  cursor(?), wait(0.5),
  cursor(s), wait(0.5),
  cursor(c), wait(0.5),
  cursor(t), wait(0.5),
  cursor(o), wait(0.5),
  cursor(x), wait(0.5),
  cursor(n), wait(0.5),
  cursor(d), wait(0.5),
  cursor(u), wait(0.5),
  cursor(!), wait(0.5),
  cursor(v), wait(0.5),
  cursor(w), wait(0.5),
  text_out(10, 50, " End of the Test! ").

win_func(init) :-
  window_brush(_, rgb(255, 255, 0)),   % yellow
  color_text(_, rgb(255, 255, 255)),   % white
  color_text_back(_, rgb(0, 0, 255)).  % blue

win_func(paint) :-
  text_out(10, 10, " Look at the cursor! ").
```

¿Qué hace el programa?

PRACTICA NO. 21 DE PROLOG

```
?-
  window( _, _, win_func(_), "Line", 100, 0, 600, 600).

win_func(paint) :-
  for(I,3,300,3),
  wait(0.2),
  pen(3, rgb(random(256),random(256),random(256))),
  line(200-I, 200-I, 200-I, 200+I, 200+I, 200+I, 200+I, 200-I, 200-I, 200-I),
  line(200-I, 400-I, 200-I, 400+I, 200+I, 400+I, 200+I, 400-I, 200-I, 400-I),
  line(400-I, 200-I, 400-I, 200+I, 400+I, 200+I, 400+I, 200-I, 400-I, 200-I),
  line(400-I, 400-I, 400-I, 400+I, 400+I, 400+I, 400+I, 400-I, 400-I, 400-I),
  fail.
```

¿Qué hace el programa?

PRACTICA NO. 22 DE PROLOG

```
?-
  pen(3,rgb(255,0,0)),
  window_n( _, _, win_func, "Window", 200, 100, 400, 440,
  !, "C:\\WINDOWS\\CURSORS\\Globe.ani", rgb(0,0,0)),
  0 =:= random(2),
  X = [20,120,20+100, 20],
  line(|X).

win_func(init) :- beep.
win_func(paint) :-
  X is 20, Y is 20, W is 100, H is 100,
  line(X, Y, X+W, Y, X+W, Y+H, X, Y+H, X, Y),
  line(20,20, 120, 120).
```

¿Qué hace el programa?