

Partie écrite

Question 1

(1)

```
procedure Primitive_Poly(lbA,lbPrim:TListBox);
//La procédure donne la primitive à terme constant 0.
var dA,i:integer;
    x:extended;
begin
  lbPrim.Clear;
  lbPrim.Items[0]:='0';
  dA:=lbA.Items.Count-1;
  for i:=0 to dA do begin
    x:=StrToFloat(lbA.Items[i]);
    lbPrim.Items[i+1]:=FloatToStr(x/(i+1));
  end;
end;
```

(2)

```
function Horner_Poly(lbA:TListBox;x:extended):extended;
var dA,i:integer;
begin
  dA:=lbA.Items.Count-1;
  result:=0;
  for i:=dA downto 0 do result:=result*x+StrToFloat(lbA.Items[i]);
end;
```

(3) Les coefficients des polynômes sont stockés dans une liste de type TListBox suivant les puissances croissantes de la variable. Le degré du polynôme est le nombre d'éléments de la liste, moins 1.

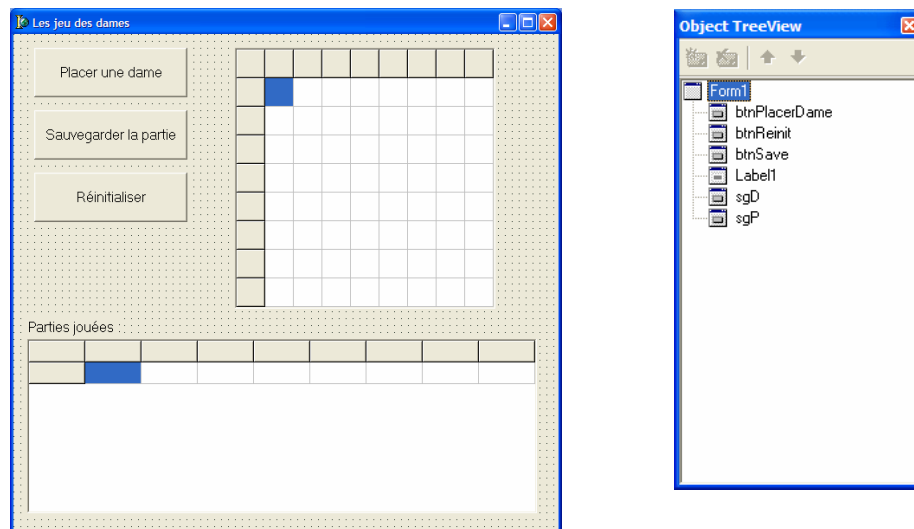
Question 2

(1) $u(7,17) = 17 + u(7,2) = 17 + 7 + u(1,2) = 24 + 1 = 25$

(2) $u(24,18) = 24 + u(6,18) = 24 + 18 + u(6,3) = 42 + 6 + u(0,3) = 48 + 1 = 49$

Partie pratique

(1)



(2)

```

procedure TForm1.Preparation(Sender: TObject);
var i:integer;
begin
  randomize; //1 pt
  for i:=1 to 8 do begin
    sgD.Cells[i,0]:=chr(ord('A')+i-1); //2 pts
    sgD.Cells[0,9-i]:=inttostr(i); //2 pts
    sgP.Cells[i,0]:='Dame '+inttostr(i); //2 pts
  end;
  sgP.Cells[0,1]:='Partie 1' //1 pt
end;

```

(3)

```

function full(sgD:TStringGrid):boolean; //4 pts
var i,j:integer;
begin
  result:=true;
  for i:=1 to 8 do
    for j:=1 to 8 do
      if sgD.Cells[i,j]='' then result:=false;
end;

```

(4)

```

procedure TForm1.btnPlacerDameClick(Sender: TObject);
var r,c,i,j:integer;
begin
  if full(sgD) then showmessage('Il n''est plus possible de placer une dame !') //1 pt
  else begin
    repeat //3 pts
      r:=1+random(8);
      c:=1+random(8)
    until sgD.Cells[c,r]='';
    sgD.Cells[c,r]:='D';
    for i:=1 to 8 do begin //2 pts
      if sgD.Cells[c,i]='' then sgD.Cells[c,i]:='X';
      if sgD.Cells[i,r]='' then sgD.Cells[i,r]:='X';
    end;
    for i:=1 to 8 do //4 pts
      for j:=1 to 8 do
        begin
          if (i-j=c-r) and (sgD.Cells[i,j]='') then sgD.Cells[i,j]:='X';
          if (i+j=c+r) and (sgD.Cells[i,j]='') then sgD.Cells[i,j]:='X';
        end;
    end;
  end;
end;

```

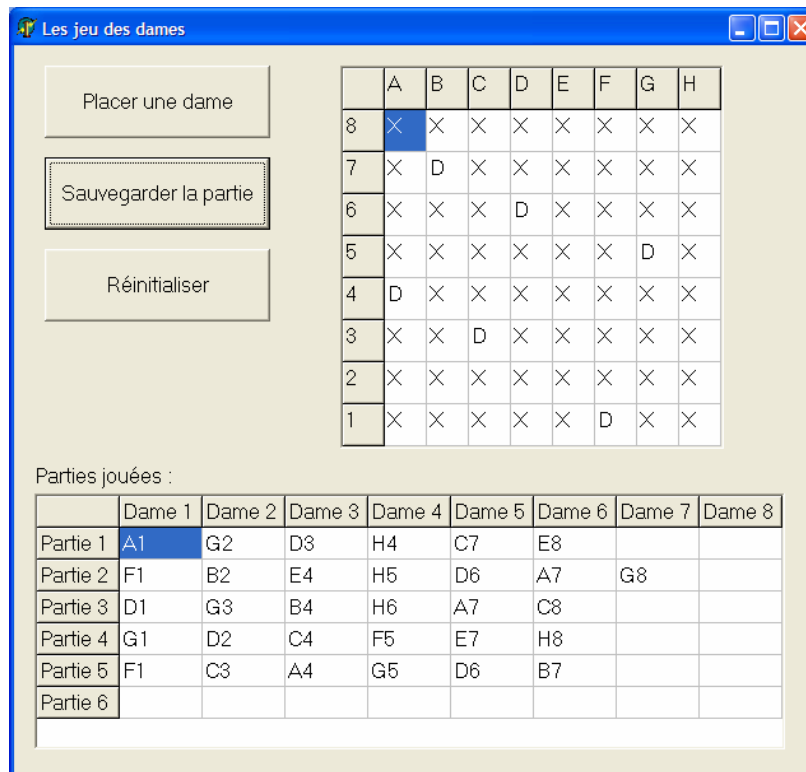
(5)

```
procedure TForm1.btnSaveClick(Sender: TObject);
var i,j,c,r:integer;
begin
  if not(full(sgD)) then showmessage('La partie n'est pas terminée !') //1 pts
  else begin
    r:=sgP.RowCount-1;
    c:=1;
    sgP.RowCount:=sgP.RowCount+1; //3 pts
    sgP.Cells[0,r+1]:='Partie '+inttostr(r+1);
    for j:=8 downto 1 do //6 pts
      for i:=1 to 8 do
        begin
          if sgD.Cells[i,j]='D' then
            begin
              sgP.Cells[c,r]:=sgD.Cells[i,0]+sgD.Cells[0,j];
              c:=c+1
            end;
          end;
        end;
      end;
    end;
  end;
end;
```

(6)

```
procedure TForm1.btnReinitClick(Sender: TObject); //2 pts
var i,j:integer;
begin
  for j:=1 to 8 do
    for i:=1 to 8 do
      sgD.Cells[i,j]:='';
    end;
  end;
```

Après 5 parties on aura par exemple :



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