Corrigé de la série de TP N°1 – Exercices supplémentaires sur les matrices

Exercice N°1

```
program exo1;
var
A,B,C: array [1..100,1..100] of real;
N,M,i,j : integer;
begin
  writeln ('Donner les dimensions de la matrice A et B :');
  read(N,M);

  writeln ('Donner les composantes de la matrice A :');
  for i := 1 to N do
   for j := 1 to M do
    read (A[i,j]);

  writeln ('Donner les composantes de la matrice B :');
  for i := 1 to N do
   for j := 1 to M do
    read (B[i,j]);

   for i := 1 to N do
   for j := 1 to M do
    C[i,j] := A[i,j] + B[i,j];

   for i := 1 to N do
   begin
   for j := 1 to M do
    write ( C[i,j] :8:0);
   writeln();
   end;

end.
```

Exercice N°2

Question 1 :

```
program exo1;
var
A: array [1..100,1..100] of real;
N,M,i,j : integer;
S,moyenne : real;
begin
  writeln ('Donner les dimensions de la matrice A :');
  read(N,M);

  writeln ('Donner les composantes de la matrice A :');
  for i := 1 to N do
   for j := 1 to M do
    read (A[i,j]);

  S:= 0;
  for i := 1 to N do
   for j := 1 to M do
    S:= S + A[i,j];

  moyenne := S / (n*m);

  writeln ('La somme = ', s:8:0);
  writeln('la moyenne = ',moyenne:8:0);

end.
```

Question 2:

```
program exo2_2;
var
A: array [1..100,1..100] of real;
N,M,i,j : integer;
S,p : real;
begin
  writeln ('Donner les dimensions de la matrice A:');
  read(N,M);

  writeln ('Donner les composantes de la matrice A :');
  for i := 1 to N do
   for j := 1 to M do
    read (A[i,j]);

   writeln('---------------------');
  for i := 1 to N do
  begin
  S:=0;
   for j := 1 to M do
    S:= S + A[i,j];

  writeln ('la somme de la ligne numero ',i, 'est :',s:8:0 );
    end;
 writeln('---------------------');
  for i := 1 to M do
  begin
  p:= 1;
   for j := 1 to N do
            P:= P * A[j,i];
 writeln ('le produit de la colonne numero ',i, 'est :',p:8:0 );
 end;
end.
```

Exercice N°3

```
program exo3;
var
A,B,result: array [1..100,1..100] of real;
N,M,L,i,j,k : integer;

begin
  writeln ('Donner les dimensions de la matrice A et B:');
  read(N,M,L);

  writeln ('Donner les composantes de la matrice A :');
  for i := 1 to N do
   for j := 1 to M do
    read (A[i,j]);


  writeln ('Donner les composantes de la matrice B :');
  for i := 1 to M do
   for j := 1 to L do
    read (B[i,j]);

  for i:=1 to N do
   for j:=1 to L do
   begin
      result[i, j] := 0;
          for k:=1 to M do
            result[i,j] :=  result[i,j]+ A[i,k]*B[k,j];
   end;
   writeln ('-----------');
 for i:=1 to N do
   for j:=1 to L do
    write (result[i, j]:8:0);
end.
```

Exercice N°4

```
program exo4;
var
A: array [1..100,1..100] of real;
N,M,i,j,x,posi,posj : integer;
test: boolean;
begin
  writeln ('Donner les dimensions de la matrice A:');
  read(N,M);

  writeln ('Donner les composantes de la matrice A :');
  for i := 1 to N do
   for j := 1 to M do
    read (A[i,j]);

  writeln ('Donner la valeur recherchée X :');
  read (x);
  test := false;

  for i := 1 to N do
   for j := 1 to M do
    if ( A[i,j] = X) then
   begin
   test := true;
   posi := i;
   posj := j;
   end;

   if (test = true) then
      writeln ('X se trouve dans la position (ligne : ',posi,' colonne :',posj , ')')
      else
      writeln ('X n appartient pas a la matice 1');
end.
```

Exercice N°5

```
program exo5;
var
A: array [1..100,1..100] of real;
N,M,i,j, posi,posj: integer;
max : real;
begin
  writeln ('Donner les dimensions de la matrice A:');
  read(N,M);

  writeln ('Donner les composantes de la matrice A :');
  for i := 1 to N do
   for j := 1 to M do
    read (A[i,j]);

  max := A[1,1];
  posi := 1; posj :=1;

  for i := 1 to N do
   for j := 1 to M do
    if ( A[i,j] > max) then
   begin
   max := A[i,j];
   posi := i;
   posj := j;
   end;

    writeln ('Le max = ',max:8:0,' il se trouve dans la position (ligne : ',posi,' colonne :',posj , ')')
end.
```