

Compte Rendu TP5

Question1

```
getData(VecNbTech, VecJour, VecProfit, VecFab):-
    vecNbTech(VecNbTech),
    vecJour(VecJour),
    vecProfit(VecProfit),
    vecFab(VecFab).
vecNbTech([](5, 7, 2, 6, 9, 3, 7, 5, 3)).
vecJour([](140,130,60,95,70,85,100,30,45)).
vecProfit([](4, 5, 8, 5, 6, 4, 7, 10, 11)).

vecFab(Fab):-
    dim(Fab, [9]),
    Fab #:: 0..1.
```

Test

```
vecNbTech(NbT).
vecJour(J).
vecProfit(Pr).
vecFab(Fab).

[eclipse 15]: getData(VecNbTech, VecJour, VecProfit, VecFab).

VecNbTech = [(5, 7, 2, 6, 9, 3, 7, 5, 3)
VecJour = [(140, 130, 60, 95, 70, 85, 100, 30, 45)
VecProfit = [(4, 5, 8, 5, 6, 4, 7, 10, 11)
VecFab = [][_331{[0, 1]}, _345{[0, 1]}, _359{[0, 1]}, _373{[0, 1]}, _387{[0, 1]}, _401{[0, 1]}, _415{[0, 1]}, _429{[0,
```

Question2

```
vecProduct(V1, V2, VRes):-
    dim(V1,[D]),
    dim(V2,[D]),
    dim(VRes,[D]),
    (foreacharg(Elt1,V1), foreacharg(Elt2,V2), foreacharg(EltRes,VRes) do
        EltRes #= Elt1 * Elt2
    ).

vecSum(Vec,Sum):-(
    foreacharg(Elt,Vec), fromto(0,In,Out,Sum) do
        Out #= In + Elt
    ).

vecDotProduct(V1, V2, S):-
    vecProduct(V1, V2, TmpVec),
    vecSum(TmpVec, S).

sumNbTech(VecFab, SumTech):-
    vecNbTech(VecNbTech),
    vecDotProduct(VecNbTech, VecFab, SumTech).

sumProfit(VecFab, SumProfit):-
    vecProfit(VecProfit),
    vecDotProduct(VecProfit, VecFab, SumProfit).

vecProfitSum(VecFab, SumProfit):-
    vecProfit(VecProfit),
    vecProduct(VecProfit, VecFab, SumProfit).
```

Test

```
vecProduct([](1,2,3),[](4,5,6), Res).
Res = [](4, 10, 18)
vecSum([](4, 10, 18), Sum).
Sum = 32

[eclipse 38]: vecDotProduct([](1,2,3),[](4,5,6), Sum).
Sum = 32
[eclipse 42]: vecDotProduct([](1,2,3),[](4,5,6,7), Sum).
No (0.00s cpu)

[eclipse 47]: sumNbTech([](1,1,1,0,0,0,0,0,0),S).
S = 14
[eclipse 49]: sumProfit([](1,1,1,0,0,0,0,0,0),S).
S = 17
[eclipse 52]: vecProfitSum([](1,1,1,0,0,0,0,0,0),S).
S = [](4, 5, 8, 0, 0, 0, 0, 0, 0)
```

Question3

```
poseConstraints(Fab,NbTechTotal, Profit):-
    vecFab(Fab),
    sumNbTech(Fab,NbTechTotal),
    NbTechTotal #=<22,
    sumProfit(Fab, Profit),
    labeling(Fab).
```

Test

```
[eclipse 57]: poseConstraints(Fab,NbTechTotal, Profit).

Fab = [](0, 0, 0, 0, 0, 0, 0, 0, 0)
NbTechTotal = 0
Profit = 0
Yes (0.01s cpu, solution 1, maybe more) ? ;

Fab = [](0, 0, 0, 0, 0, 0, 0, 0, 1)
NbTechTotal = 3
Profit = 11
Yes (0.01s cpu, solution 2, maybe more) ? ;

Fab = [](0, 0, 0, 0, 0, 0, 0, 1, 0)
NbTechTotal = 5
Profit = 10
Yes (0.01s cpu, solution 3, maybe more) ? ;

Fab = [](0, 0, 0, 0, 0, 0, 0, 1, 1)
NbTechTotal = 8
Profit = 21
Yes (0.01s cpu, solution 4, maybe more) ?
```

Question4

```
generateX(X):-
    [X,Y,Z,W]#::[0..10],
    X # = Z+Y+2*W,
    X #\ = Z+Y+W,
    labeling([X,Y,Z,W]).

generateMinX(XMin):-
    minimize(generateX(XMin), XMin).
```

Test

```
generateX(X).
[eclipse 62]: generateX(X).
X = 2
Yes (0.00s cpu, solution 1, maybe more) ? ;
X = 3
Yes (0.00s cpu, solution 2, maybe more) ? ;
X = 3
Yes (0.00s cpu, solution 3, maybe more) ? ;
X = 4
Yes (0.00s cpu, solution 4, maybe more) ? ;
X = 5
Yes (0.00s cpu, solution 8, maybe more) ? ;
X = 6
Yes (0.00s cpu, solution 14, maybe more) ? ;

[eclipse 4]: generateMinX(Minn).
lists.eco loaded in 0.01 seconds
Found a solution with cost 2
Found no solution with cost -1.0Inf .. 1

Minn = 2
Yes (0.01s cpu)
```

Question5

```
poseConstraintsMin(Profitt):-
    minimize(poseConstraints(_Fab, _NbTechTotal, Profitt), 1000 - Profitt).
```

Test

```
poseConstraintsMin(Profitt).
```