

Inheritance problem: AMPL model

```
param n;  
  
set A := 1..n;  
  
param v{A};  
  
var x{A} binary;  
var y{A} binary;  
  
minimize cost:  
    abs(sum{i in A}(v[i]*x[i]) - sum{i in A}(v[i]*y[i]));  
  
subject to split {i in A}: x[i] + y[i] = 1;
```

Inheritance problem: AMPL data

```
param n := 13;
```

```
param: v :=
```

```
1 25000
```

```
2 5000
```

```
3 20000
```

```
4 40000
```

```
5 12000
```

```
6 12000
```

```
7 12000
```

```
8 3000
```

```
9 6000
```

```
10 10000
```

```
11 15000
```

```
12 10000
```

```
13 13000
```

```
;
```

Inheritance problem: AMPL run

```
model subsetsum.mod;
data subsetsum.dat;

option solver boncouenne;
solve;

display x,y;

param value1;
param value2;
let value1 := sum {i in A} v[i]*x[i];
let value2 := sum {i in A} v[i]*y[i];
display value1, value2;
```

Inheritance problem: AMPL run

```
bonmin: Optimal
:   x   y   :=
1   1   0
2   0   1
3   0   1
4   1   0
5   0   1
6   1   0
7   1   0
8   1   0
9   0   1
10  0   1
11  0   1
12  0   1
13  0   1
;

value1 = 92000
value2 = 91000
```

Inheritance problem: AMPL model 2, linear

```
param n;  
  
set A := 1..n;  
  
param v{A};  
param V := sum {i in A} v [i];  
  
var x{A} binary;  
  
minimize cost: sum {i in A} v[i] * x[i];  
  
subject to limit: sum {i in A} v [i]* x[i] >= 0.5 * V;
```

Inheritance problem: AMPL run 2

```
model subsetsum_lin.mod;

data subsetsum.dat;

option solver cplex;
solve;

display cost;
display x;

param value1;
param value2;
let value1 := sum {i in A} v[i]*x[i];
let value2 := sum {i in A : x[i] = 0} v[i];
display value1, value2;
```

Inheritance problem: solution 2

```
ILOG CPLEX 10.100, licensed to "ecolepolytechnique-palaiseau", options
CPLEX 10.1.0: optimal integer solution; objective 92000
0 MIP simplex iterations
0 branch-and-bound nodes
cost = 92000
```

```
x [*] :=
```

```
1 1
2 0
3 1
4 0
5 1
6 0
7 1
8 0
9 0
10 1
11 0
12 0
13 1;
```

```
value1 = 92000
```

```
value2 = 91000
```