

```
gabriel-dp@gabriel-dp:~/Desktop/dev/cpp/Linear-Programming-Problems/src/01-PFCM$
./main.exe < input.txt
```

```
Version identifier: 22.1.0.0 | 2022-03-09 | 1a383f8ce
```

```
Tried aggregator 2 times.
```

```
MIP Presolve eliminated 7 rows and 0 columns.
```

```
Aggregator did 1 substitutions.
```

```
Reduced MIP has 8 rows, 13 columns, and 26 nonzeros.
```

```
Reduced MIP has 0 binaries, 13 generals, 0 SOSs, and 0 indicators.
```

```
Presolve time = 0.00 sec. (0.02 ticks)
```

```
Found incumbent of value 265.000000 after 0.00 sec. (0.06 ticks)
```

```
Tried aggregator 1 time.
```

```
Reduced MIP has 8 rows, 13 columns, and 26 nonzeros.
```

```
Reduced MIP has 0 binaries, 13 generals, 0 SOSs, and 0 indicators.
```

```
Presolve time = 0.00 sec. (0.01 ticks)
```

```
MIP emphasis: balance optimality and feasibility.
```

```
MIP search method: dynamic search.
```

```
Parallel mode: deterministic, using up to 8 threads.
```

```
Root relaxation solution time = 0.00 sec. (0.01 ticks)
```

	Nodes		Objective	IInf	Best Integer	Cuts/ Best Bound	ItCnt	Gap
	Node	Left						
*	0+	0			265.0000	4.0000		98.49%
*	0	0	integral	0	184.0000	184.0000	10	0.00%

```
Elapsed time = 0.00 sec. (0.10 ticks, tree = 0.00 MB, solutions = 2)
```

```
Root node processing (before b&c):
```

```
Real time = 0.00 sec. (0.10 ticks)
```

```
Parallel b&c, 8 threads:
```

```
Real time = 0.00 sec. (0.00 ticks)
```

```
Sync time (average) = 0.00 sec.
```

```
Wait time (average) = 0.00 sec.
```

```
-----
Total (root+branch&cut) = 0.00 sec. (0.10 ticks)
```

```
Status da solucao: Optimal
```

```
Variaveis de decisao:
```

```
xRN: -0
```

```
xQR: 6
```

```
xNS: 3
```

```
xHS: 6
```

```
xHN: 3
```

```
xHM: 4
```

```
xGH: 3
```

```
xGM: 7
```

```
xPQ: 10
```

```
xMR: -0
```

```
xMQ: 3
```

```
xMP: 16
```

```
xFP: 2
```

```
xFM: 8
```

```
Valor da solucao = 184
```

```
(0.000000 segundos)
```

```
gabriel-dp@gabriel-dp:~/Desktop/dev/cpp/Linear-Programming-Problems/src/01-PFCM$
```

gabriel-dp@gabriel-dp:~/Desktop/dev/cpp/Linear-Programming-Problems/src/02-PT\$
 ./main.exe < input.txt

Version identifier: 22.1.0.0 | 2022-03-09 | 1a383f8ce

Found incumbent of value 1510.000000 after 0.00 sec. (0.00 ticks)

Tried aggregator 1 time.

Reduced MIP has 7 rows, 12 columns, and 24 nonzeros.

Reduced MIP has 0 binaries, 12 generals, 0 SOSs, and 0 indicators.

Presolve time = 0.01 sec. (0.01 ticks)

Tried aggregator 1 time.

Detecting symmetries...

Reduced MIP has 7 rows, 12 columns, and 24 nonzeros.

Reduced MIP has 0 binaries, 12 generals, 0 SOSs, and 0 indicators.

Presolve time = 0.00 sec. (0.01 ticks)

MIP emphasis: balance optimality and feasibility.

MIP search method: dynamic search.

Parallel mode: deterministic, using up to 8 threads.

Root relaxation solution time = 0.01 sec. (0.01 ticks)

	Nodes		Objective	IInf	Best Integer	Cuts/ Best Bound	ItCnt	Gap
	Node	Left						
*	0+	0			1510.0000	0.0000		100.00%
*	0+	0			1480.0000	0.0000		100.00%
*	0	0	integral	0	1330.0000	1330.0000	2	0.00%

Elapsed time = 0.02 sec. (0.05 ticks, tree = 0.00 MB, solutions = 3)

Root node processing (before b&c):

Real time = 0.02 sec. (0.05 ticks)

Parallel b&c, 8 threads:

Real time = 0.00 sec. (0.00 ticks)

Sync time (average) = 0.00 sec.

Wait time (average) = 0.00 sec.

 Total (root+branch&cut) = 0.02 sec. (0.05 ticks)

Status da solucao: Optimal

Variaveis de decisao:

xC4: -0

xC3: -0

xC2: 27

xC1: -0

xB4: 34

xB3: -0

xB2: 1

xB1: 15

xA4: 0

xA3: 25

xA2: -0

xA1: 5

Valor da solucao = 1330

(0.000000 segundos)

gabriel-dp@gabriel-dp:~/Desktop/dev/cpp/Linear-Programming-Problems/src/02-PT\$


```
gabriel-dp@gabriel-dp: ~/Desktop/dev/cpp/Linear-Program...
gabriel-dp@gabriel-dp:~/Desktop/dev/cpp/Linear-Programming-Problems/src/04-PCM$ ./main.exe < input.txt
Version identifier: 22.1.0.0 | 2022-03-09 | 1a383f8ce
Tried aggregator 1 time.
MIP Presolve added 12 rows and 12 columns.
Reduced MIP has 19 rows, 36 columns, and 84 nonzeros.
Reduced MIP has 24 binaries, 12 generals, 0 SOSs, and 0 indicators.
Presolve time = 0.00 sec. (0.04 ticks)
Found incumbent of value 149.000000 after 0.01 sec. (0.06 ticks)
Probing fixed 0 vars, tightened 2 bounds.
Probing time = 0.00 sec. (0.01 ticks)
Tried aggregator 1 time.
Detecting symmetries...
MIP Presolve eliminated 12 rows and 12 columns.
MIP Presolve added 12 rows and 12 columns.
Reduced MIP has 19 rows, 36 columns, and 84 nonzeros.
Reduced MIP has 26 binaries, 10 generals, 0 SOSs, and 0 indicators.
Presolve time = 0.00 sec. (0.06 ticks)
Probing time = 0.00 sec. (0.01 ticks)
Clique table members: 6.
MIP emphasis: balance optimality and feasibility.
MIP search method: dynamic search.
Parallel mode: deterministic, using up to 8 threads.
Root relaxation solution time = 0.00 sec. (0.03 ticks)

      Nodes
      Node Left      Objective  IInf  Best Integer      Cuts/
                                     Best Bound      ItCnt      Gap
*      0+      0                                     149.0000      0.0000      100.00%
*      0+      0                                     25.0000      0.0000      100.00%
*      0      0      integral      0      22.0000      22.0000      3      0.00%
Elapsed time = 0.02 sec. (0.24 ticks, tree = 0.00 MB, solutions = 3)

Root node processing (before b&c):
  Real time           =      0.02 sec. (0.24 ticks)
Parallel b&c, 8 threads:
  Real time           =      0.00 sec. (0.00 ticks)
  Sync time (average) =      0.00 sec.
  Wait time (average) =      0.00 sec.
-----
Total (root+branch&cut) =      0.02 sec. (0.24 ticks)

Status da solucao: Optimal

Variaveis de decisao:
xGF: -0
xGE: -0
xGC: -0
xEG: -0
xED: -0
xEC: -0
xFG: -0
xFC: -0
xFB: -0
xCG: 1
xCF: -0
xCE: -0
xCD: -0
xCB: -0
xDE: -0
xDC: 1
xDB: -0
xDA: -0
xBF: -0
xBD: 1
xBC: -0
xBA: -0
xAD: 0
xAB: 1

Valor da solucao = 22
gabriel-dp@gabriel-dp:~/Desktop/dev/cpp/Linear-Programming-Problems/src/04-PCM$
gabriel-dp@gabriel-dp:~/Desktop/dev/cpp/Linear-Programming-Problems/src/04-PCM$
```

```

gabriel-dp@gabriel-dp: ~/Desktop/dev/cpp/Linear-Program...
gabriel-dp@gabriel-dp:~/Desktop/dev/cpp/Linear-Programming-Problems/src/05-PFMS$ ./main.exe < input.txt
Version identifier: 22.1.0.0 | 2022-03-09 | 1a383f8ce
Found incumbent of value 0.000000 after 0.00 sec. (0.00 ticks)
Tried aggregator 2 times.
MIP Presolve eliminated 11 rows and 11 columns.
MIP Presolve added 1 rows and 1 columns.
Aggregator did 1 substitutions.
Reduced MIP has 5 rows, 11 columns, and 18 nonzeros.
Reduced MIP has 0 binaries, 11 generals, 0 SOSs, and 0 indicators.
Presolve time = 0.00 sec. (0.02 ticks)
Tried aggregator 1 time.
Detecting symmetries...
MIP Presolve eliminated 1 rows and 1 columns.
MIP Presolve added 1 rows and 1 columns.
Reduced MIP has 5 rows, 11 columns, and 18 nonzeros.
Reduced MIP has 0 binaries, 11 generals, 0 SOSs, and 0 indicators.
Presolve time = 0.00 sec. (0.01 ticks)
MIP emphasis: balance optimality and feasibility.
MIP search method: dynamic search.
Parallel mode: deterministic, using up to 8 threads.
Root relaxation solution time = 0.00 sec. (0.01 ticks)

      Nodes
      Node  Left      Objective  IInf  Best Integer    Cuts/
                                     Best Bound    ItCnt    Gap
*      0+      0              0.0000    21.0000
*      0+      0              14.0000    21.0000      50.00%
*      0      0      integral      0      19.0000    19.0000      1      0.00%
Elapsed time = 0.02 sec. (0.06 ticks, tree = 0.00 MB, solutions = 3)

Root node processing (before b&c):
  Real time           =    0.02 sec. (0.06 ticks)
Parallel b&c, 8 threads:
  Real time           =    0.00 sec. (0.00 ticks)
  Sync time (average) =    0.00 sec.
  Wait time (average) =    0.00 sec.
-----
Total (root+branch&cut) =    0.02 sec. (0.06 ticks)

Status da solucao: Optimal

Variaveis de decisao:
xET: 6
xCE: -0
xCB: 5
xBT: 13
xDE: 6
xDC: 5
xAD: -0
xAC: -0
xAB: 8
xSD: 11
xSA: 8

Valor da solucao = 19
(0.000000 segundos)
gabriel-dp@gabriel-dp:~/Desktop/dev/cpp/Linear-Programming-Problems/src/05-PFMS$

```



```
gabriel-dp@gabriel-dp:~/Desktop/dev/cpp/Linear-Programming-Problems/src/03-PD$ ./main.exe < input.txt
```

```
Version identifier: 22.1.0.0 | 2022-03-09 | 1a383f8ce
```

```
Found incumbent of value 104.000000 after 0.00 sec. (0.00 ticks)
```

```
Found incumbent of value 99.000000 after 0.00 sec. (0.00 ticks)
```

```
Tried aggregator 1 time.
```

```
Reduced MIP has 6 rows, 9 columns, and 18 nonzeros.
```

```
Reduced MIP has 9 binaries, 0 generals, 0 SOSs, and 0 indicators.
```

```
Presolve time = 0.00 sec. (0.01 ticks)
```

```
Probing time = 0.00 sec. (0.00 ticks)
```

```
Tried aggregator 1 time.
```

```
Reduced MIP has 6 rows, 9 columns, and 18 nonzeros.
```

```
Reduced MIP has 9 binaries, 0 generals, 0 SOSs, and 0 indicators.
```

```
Presolve time = 0.00 sec. (0.01 ticks)
```

```
Probing time = 0.00 sec. (0.00 ticks)
```

```
Clique table members: 6.
```

```
MIP emphasis: balance optimality and feasibility.
```

```
MIP search method: dynamic search.
```

```
Parallel mode: deterministic, using up to 8 threads.
```

```
Root relaxation solution time = 0.00 sec. (0.01 ticks)
```

	Nodes		Objective	IInf	Best Integer	Cuts/ Best Bound	ItCnt	Gap
	Node	Left						
*	0+	0			99.0000	0.0000		100.00%
*	0+	0			96.0000	0.0000		100.00%
	0	0	cutoff		96.0000	96.0000	2	0.00%
	0	0	cutoff		96.0000	96.0000	2	0.00%

```
Elapsed time = 0.00 sec. (0.06 ticks, tree = 0.01 MB, solutions = 2)
```

```
Root node processing (before b&c):
```

```
Real time = 0.00 sec. (0.06 ticks)
```

```
Parallel b&c, 8 threads:
```

```
Real time = 0.00 sec. (0.00 ticks)
```

```
Sync time (average) = 0.00 sec.
```

```
Wait time (average) = 0.00 sec.
```

```
Total (root+branch&cut) = 0.00 sec. (0.06 ticks)
```

```
Status da F0: Optimal
```

```
Variaveis de decisao:
```

```
x11: 0
```

```
x12: 0
```

```
x13: 1
```

```
x21: 1
```

```
x22: 0
```

```
x23: 0
```

```
x31: 0
```

```
x32: 1
```

```
x33: 0
```

```
Valor da solucao = 96
```

```
(0.000000 segundos)
```

```
gabriel-dp@gabriel-dp:~/Desktop/dev/cpp/Linear-Programming-Problems/src/03-PD$
```