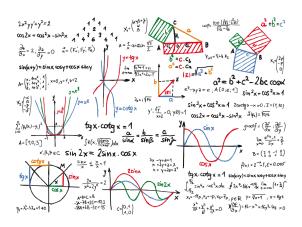


# **B5 - Mathematics**

B-MAT-500

# 307 multigrains

Multigrains and Dantzig's Simplex Method



EPITECH.



# 307 multigrains

binary name: 307multigrains

language: everything working on "the dump"

compilation: when necessary, via Makefile, including re, clean and fclean

rules



• The totality of your source files, except all useless files (binary, temp files, obj files,...), must be included in your delivery.

• All the bonus files (including a potential specific Makefile) should be in a directory named *bonus*.

• Error messages have to be written on the error output, and the program should then exit with the 84 error code (O if there is no error).

A farmer grows grains: oat, wheat, corn, barley and soy. He uses four different types of fertilizers ( $F_1$ ,  $F_2$ ,  $F_3$  et  $F_4$ ), in the following quantities (per ton of fertilizer in order to produce one unit of grains):

	$F_1$	$F_2$	$F_3$	$F_4$
oat	1	1	2	0
wheat	0	2	1	0
corn	1	0	0	3
barley	0	1	1	1
soy	2	0	0	2

Keeping in mind that he has limited yearly quantities of each type of fertilizer, he would like to optimize his output according to the grains' prices.

With a smile, you're going to develop a program that will take his fertilizer resources and the prices of each type of grain as parameter. It will display the quantities to produce, as well as the total value of his output.





## **USAGE**

```
- + x
                                    Terminal
  B-MAT-500> ./307multigrains -h
USAGE
   ./307multigrains n1 n2 n3 n4 po pw pc pb ps
DESCRIPTION
   n1
           number of tons of fertilizer F1
           number of tons of fertilizer F2
   n2
   n3
           number of tons of fertilizer F3
           number of tons of fertilizer F4
   n4
           price of one unit of oat
   ро
           price of one unit of wheat
   рw
           price of one unit of corn
   рс
           price of one unit of barley
   pb
           price of one unit of soy
   ps
```

### **SUGGESTED BONUSES**

- Additional constraint on the maximum farmable surface
- A graph that simulates the importance of a variable for the grain output



### **EXAMPLES**

 $\sim\!$  /B-MAT-500> ./307multigrains 10 100 10 0 200 200 200 200 Resources: 10 F1, 100 F2, 10 F3, 0 F4

**Terminal** 

Oat: O units at \$200/unit

Wheat: 10.00 units at \$200/unit Corn: 0 units at \$200/unit Barley: 0 units at \$200/unit Soy: 0 units at \$200/unit

Total production value: \$2000.00

#### 7 Terminal

 $\sim$ /B-MAT-500> ./307multigrains 45 41 21 63 198 259 257 231 312

Resources: 45 F1, 41 F2, 21 F3, 63 F4

Oat: 0 units at \$198/unit

Wheat: 20.00 units at \$259/unit Corn: 8.50 units at \$257/unit Barley: 1.00 units at \$231/unit Soy: 18.25 units at \$312/unit

Total production value: \$13289.50

- + X