



BATTLE CODE 2014

Solutions & test cases

CONFIDENTIAL

EXERCISE 1 : PYRAMID OF BARRELS

EXERCISE VALIDATED IF...

MAIN FLOW



a/ What is your result with **10** barrels ?



The answer is : **3 628 800**



b/ What is your result with **11** barrels ?



The answer is : **39 916 800**

EXCEPTION FLOW



What is your result with **12** barrels ?



The answer is : **239 500 800**



What is your result with **13** barrels ?



The answer is : **1 037 836 800**

MALUS GIVEN IF...

- A wrong response is given in any flow

EXERCISE 2 : PYTHAGORE

EXERCISE VALIDATED IF...

MAIN FLOW



What are all combinations (a, b, c) you have for this exercise?



a/ When X = **1000** ?

The answer is :

a=0, b=500, c=500

a=200, b=375, c=425

a=375, b=200, c=425

a=500, b=0, c=500

b/ When X = **1500** ?

The answer is :

a=0, b=750, c=750

a=250, b=600, c=650

a=375, b=500, c=625

a=500, b=375, c=625

a=600, b=250, c=650

a=750, b=0, c=750

EXCEPTION FLOW



When X = **2000** ?

The answer is :

a=0, b=1000, c=1000

a=400, b=750, c=850

a=750, b=400, c=850

a=1000, b=0, c=1000

When X = **5000** ?

The answer is :

a=0, b=2500, c=2500

a=1000, b=1875, c=2125

a=1875, b=1000, c=2125

a=2500, b=0, c=2500

MALUS GIVEN IF...

- A wrong response is given or incomplete list (one malus per missing item of the answer list)

EXERCISE 3 : NUMBERS AND LETTERS

EXERCISE VALIDATED IF...

MAIN FLOW



What are longer words you can form with « smarinousz » ?



The answer is :
marsouins
sous-marin

EXCEPTION FLOW



What are longer words you can form with « npticaz »?



The answer is :

pinçât



What are longer words you can form with « hkhkhkhkhk »?



The answer is :

No words

MALUS GIVEN IF...

- Incomplete list on the main flow
- On the exception flow, algorithm may take a long time to say no answer, player can't break execution to say « no answer ». Breaking execution is a malus.

EXERCISE 4 : SMALLEST INTEGER

EXERCISE VALIDATED IF...

MAIN FLOW



What is the answer to the statement ?



a/ When $X = 5$, the answer is :
60



b/ When $X = 10$, the answer is :
2520

EXCEPTION FLOW



When $X = 16$, the answer is :
720 720



When $X = 20$, the answer is :
232 792 560

MALUS GIVEN IF...

- A wrong response is given

EXERCISE 5 : IN OR OUT ?

EXERCISE VALIDATED IF...

MAIN FLOW



Inside or Outside ?



a/ the point is **inside**

b/ the point is **outside**

EXCEPTION FLOW 1



Prove your algorithm with this configuration ?



Polygone : (2,0) ; (4,0) ; (4,4) ; (2,2)

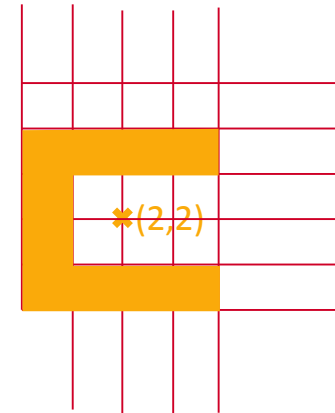
the point (2,3) is **outside**

the point (3,1) is **inside**

EXCEPTION FLOW 2



Polygone : (0,0) ; (4,0) ; (4,1) ;
(1,1) ; (1,3) ; (4,3); (4;4) ; (0,4)
the point (2,2) is **outside**



MALUS GIVEN IF...

- A wrong response is given in any flow (remind to participants that the code will be retrieved...)

EXERCISE 6 : TWO CIRCLES

EXERCISE VALIDATED IF...

MAIN FLOW



Number of intersections ?



C1 : 0,0 et R = 2

C2 : 2,0 et R = 1

2 points



C1 : 1,0 et R = 2

C2 : 1,3 et R = 1

1 point

EXCEPTION FLOW



Number of intersections with this configuration ?



C1 : 3,3 et R = 3

C2 : 4,4 et R = 1

No point



C1 : 3,3 et R = 2

C2 : 3,3 et R = 2

Infinite

MALUS GIVEN IF...

- A wrong response is given in any flow (remind to participants that the code will be retrieved...)

EXERCISE 7 : CODE BREAKER 1

EXERCISE VALIDATED IF...



MAIN FLOW



What is the encrypted text contained in this file ?



The answer is a long text beginning with :

spring security provides a comprehensive...

No mater the case sensitive or not.

EXCEPTION FLOW

No exception flow

MALUS GIVEN IF...



- A wrong response is given

EXERCISE 8 : CODE BREAKER 2

EXERCISE VALIDATED IF...



MAIN FLOW



What is the encrypted text contained in this file ?



The answer is a long text beginning with :

Software engineering is one of the key components of our business: our projects involve specifying, building, testing and maintaining applications

on a daily basis. No matter the case sensitive or not.

EXCEPTION FLOW

No exception flow

MALUS GIVEN IF...



- A wrong response is given

EXERCISE 9 : A LITTLE PLANNING

EXERCISE VALIDATED IF...

MAIN FLOW



What is the number of days elapsed ?



- a/ **129** days
b/ **1109** days

EXCEPTION FLOW



What is the number of days elapsed between 2014/01/01 and 2014/01/**01** with this calendar ?



The answer is : **0** days



What is the number of days elapsed between 2014/01/01 and 2014/01/**02** with this calendar ?



The answer is : **0** days

MALUS GIVEN IF...

- A wrong response is give

EXERCISE 10 : LINUX AND MACKEREL

EXERCISE VALIDATED IF...

MAIN FLOW



What is the maximum distance with $S=12$, $T=6$?



The answer is : **8**.

EXCEPTION FLOW



What is the maximum distance with $S=51$, $T=50$?



The answer is : **50**.



What is the maximum distance with $S=134$, $T=15$?



The answer is : **30**.

MALUS GIVEN IF...

- A wrong response is given in any flow

EXERCISE 11 : NEEDLES RACE

EXERCISE VALIDATED IF...

MAIN FLOW



How many times the needles will be superimposed between 11h12 and 18h53 ?



The answer is : **8**.

EXCEPTION FLOW



How many times the needles will be superimposed between 23h12 and 01h53 ?



The answer is : **2**.



How many times the needles will be superimposed between 00h01 and 22h24 ?



The answer is : **21**.

MALUS GIVEN IF...

- A wrong response is given in any flow

EXERCISE 12 : MARATHON

EXERCISE VALIDATED IF...

MAIN FLOW



How long will take runners to cross at the same time starting line with this configuration ?

- First runner : 2 km/h
- Second runner : 4 km/h
- Third runner : 6 km/h



The answer is : **30** minutes

EXCEPTION FLOW



With this configuration ?

- First runner : 12 km/h
- Second runner : 14 km/h
- Third runner : 5 km/h



The answer is : **60** minutes

- First runner : 6 km/h
- Second runner : 6 km/h
- Third runner : 6 km/h



The answer is : **10** minutes

MALUS GIVEN IF...

- A wrong response is given in any flow

EXERCISE 13 : TRIANGLE ROUTE

EXERCISE VALIDATED IF...

MAIN FLOW



What is the maximum obtained with the triangle (15 lines - grosTriangle.txt) ?



The answer is : **1 074**



What is the maximum obtained with the big triangle (100 lines - enormeTriangle.txt) ?



The answer is : **7 273**

EXCEPTION FLOW



Substitute all occurrence of 4 by 0 in triangle.txt. Now what is the maximum obtained with this triangle?



The answer is : **19**

MALUS GIVEN IF...

- A wrong response is given in any flow

EXERCISE 14 : TANGENT

EXERCISE VALIDATED IF...

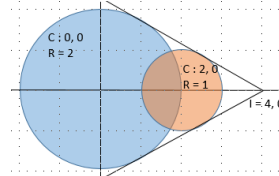
MAIN FLOW



Prove your algorithm with this configurations ?



Answer : (4, 0)



EXCEPTION FLOW 1



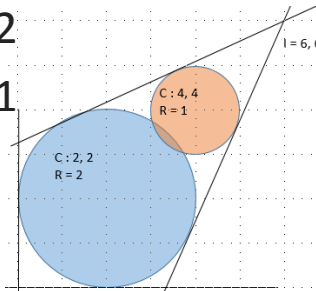
Same question with this 2 circles ?

C1 : (x=2, y=2), r=2

C2 : (x=4, y=4), r=1



Answer : (6, 6)



EXCEPTION FLOW 2



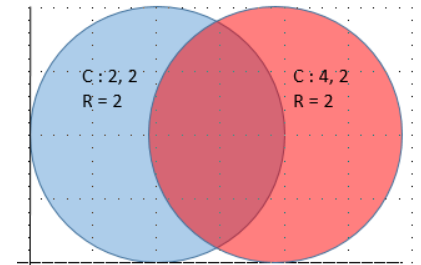
When the two radius are the same ?

C1 : (x=2, y=2), r=2

C2 : (x=4, y=2), r=2



Answer1 : No intersection



MALUS GIVEN IF...

- A wrong response is given

EXERCISE 15 : SOPRAPHONE

EXERCISE VALIDATED IF...

MAIN FLOW



How many items for this two inputs ?



a/ Answer is **10**

b/ Answer is **20**

Nombre de
numéro

EXCEPTION FLOW



How many items for this two inputs ?

INPUT1:
1
0467123456

INPUT2:
5
0412578440
0412199803
0468892011
112
15



Answer1 : **10**



Answer2 : **28**

MALUS GIVEN IF...

- A wrong response is given