

Algorithme 11 Nouvelle Calédonie novembre 2017 exercice 5

1. Algorithme

Initialisation : N prend la valeur 0
 B prend la valeur 1 000
 C prend la valeur 1 500

Traitement : Tant que B > 2 ou C > 2
 N prend la valeur N+1
 R prend la valeur B
 B prend la valeur 0,3R + 0,5C
 C prend la valeur - 0,5R + 1,3C

Sortie : Fin Tant que
 Afficher N

2. Programmation en Python

Les variations des suites (b_n) et (c_n) sont étudiées dans la correction de l'exercice.

```
print('Début de programme')
N=0
B=1000
C=1500
while(B>2):
    R=B
    B=0.3*R+0.5*C
    C=-0.5*R+1.3*C
    N=N+1
    print(N, " ", B, " ", C)
while(C>2):
    R=B
    B=0.3*R+0.5*C
    C=-0.5*R+1.3*C
    N=N+1
    print(N, B, " ", C)
print("N="+str(N))
print('Fin de programme')
```

3. Exécution du programme

Début de programme		
1	1050.0	1450.0
2	1040.0	1360.0
3	992.0	1248.0
4	921.5999999999999	1126.4
5	839.6800000000001	1003.5200000000002
6	753.6640000000001	884.7360000000002
7	668.4672000000002	773.3248000000003
8	587.2025600000002	671.0886400000004
9	511.7050880000003	578.8139520000004
10	442.9185024000003	496.6055936000004
11	381.17834752000033	424.1280204800004
12	326.4175144960003	360.77725286400033
13	278.3138807808003	305.8016714752003
14	236.3949999718402	258.38523252736024
15	200.11111625523216	217.70330229964821
16	168.88498602639376	182.95873486192662
17	142.14486323888144	153.40386230730775
18	119.3453901253183	128.35258938005936
19	99.97991172762516	107.18567113141802
20	83.58680908399656	89.35141660703084

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21 69.75175102871438 74.36343704714182
22 58.10724383218522 61.79659264692717
23 48.33046947311915 51.28194852491271
24 40.140115104392095 42.501298345826946
25 33.2926837042311 35.18163029737899
26 27.578620259958825 29.089777534477133
27 22.818474845226213 24.02740066484086
28 18.859242785988293 19.826383441680015
29 15.570964556636495 16.344677081189875
30 12.843627907585887 13.46259792722859
31 10.58438733589006 11.079563351604223
32 8.71509787656913 9.11123868914046
33 7.170148707540969 7.4870613575980345
34 5.894575291061308 6.14810541110696
35 4.842425292871873 5.0452493889083945
36 3.975352282315759 4.137611559144976
37 3.2614114642672156 3.3912188857305896
38 2.6740328821454593 2.777878819316159
39 2.1911492743017176 2.2742260240382772
40 1.794457794309654 1.8609191940989018
```

N=40

Fin de programme