

# Exercices représentation correction

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Terminale - NSI

**Algo 15**

1. Exercice 1

2. Exercice 2

3. Exercice 3

4. Exercice 4

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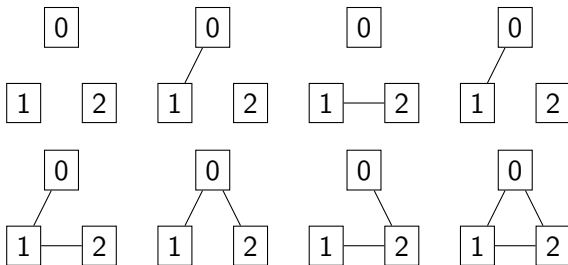
# Exercice 1

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## Exercice 2

degrés :

- ▶ A : 4
- ▶ B : 2
- ▶ C : 2
- ▶ D : 3
- ▶ E : 2
- ▶ F : 1

$$\sum_{s \in S} \deg(s) = 14 = 2.A$$

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## 1. Matrice d'adjacence

$$\begin{pmatrix} 0 & 1 & 1 & 1 & 0 & 1 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$$

## 2. Dictionnaire d'adjacence

```
1 g = {"A": ["B", "C", "D", "F"],  
2     "B": ["A", "D"],  
3     "C": ["A", "E"],  
4     "D": ["A", "B", "E"],  
5     "E": ["C", "D"],  
6     "F": ["A"]}
```

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## Exercice 3

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Le graphe est complet.

```
1 mat = [ [0, 1, 1, 1, 1],  
2         [1, 0, 1, 1, 1],  
3         [1, 1, 0, 1, 1],  
4         [1, 1, 1, 0, 1],  
5         [1, 1, 1, 1, 0]]
```

Code 1 – Matrice d'adjance



```
1 def ordre(mat: list) -> int:  
2     return len(mat)
```

```
1 >>> ordre(mat)  
2 5
```

Code 2 – Appel

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```
1 def est_complet(mat: list) -> bool:
2     """
3     vérifie si chaque sommet est relié à tous
4     les autres (sauf lui même)
5     """
6     for ligne in range(ordre(mat)):
7         for col in range(ordre(mat)):
8             if ligne != col and mat[ligne][
9 col] == 0:
10                 return False
11     return True
```

```
1 >>> est_complet(mat)
2 True
```

Code 3 – Appel

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## Exercise 4

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►  $0 : d^+ = 2, d^- = 0$

►  $1 : d^+ = 1, d^- = 0$

►  $2 : d^+ = 1, d^- = 1$

►  $3 : d^+ = 0, d^- = 3$

►  $4 : d^+ = 1, d^- = 2$

►  $5 : d^+ = 1, d^- = 2$

```
1 suivants = [[3, 5], [3], [4], [], [3, 5], [2]]
```

```
1 def degres_sortants(liste: list, s: int) -> int:  
2     return len(liste[s])
```

```
1 >>> degres_sortants(suivants, 4)  
2 2
```

Code 4 – Appel

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```
1 def degres_entrants(liste: list, s: int) -> int:
2     deg = 0
3     for liste_successeurs in liste:
4         for successeurs in liste_successeurs:
5             if successeurs == s:
6                 deg = deg+1
7     return deg
```

```
1 >>> degres_entrants(suivants, 4)
2 1
```

Code 5 – Appel