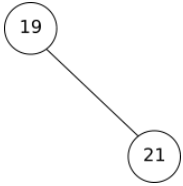


## Exercice 1

1 a

4 feuilles : 12 ; val ; 21 ; 32

1 b



1 c

hauteur = 4 ; taille = 9

1 d

16 ou 17

2 A

infixe : 12 – 13 – 15 – 16 – 18 – 19 – 21 – 23 – 32

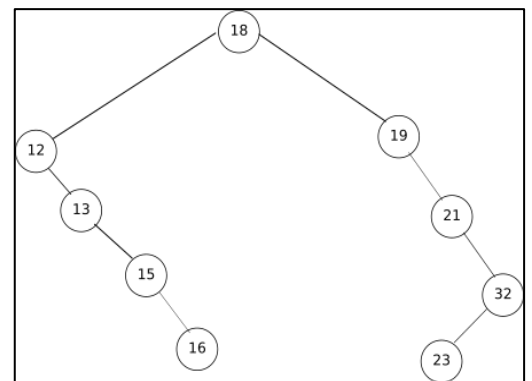
suffixe : 12 – 13 – 16 – 15 – 21 – 19 – 32 – 23 – 18

3 a

3 b

```
racine = Noeud(18)
```

```
racine.insere_tout([15, 23, 13, 16, 12, 19, 21, 32])
```



il y a d'autres solutions possibles, par exemple :

```
racine = Noeud(18)
```

```
racine.insere_tout([15, 13, 12, 16, 23, 19, 21, 32])
```

3 c

bloc 3 – bloc 2 – bloc 1

4

```
def recherche (self,v):  
    n = self while n is not None: if  
    v < n.v: n = n.ag  
        elif v > n.v: n = n.ad  
    else:  
        return True  
    return False
```