

Question 1.

```
# Question 1.
from random import randint

def alea():
    L = [0,0,0,0]
    for k in range(4):
        L[k] = randint(1,4)
    return L
```

Question 2.

```
# Question 2.
def nombreIdentiques(L1,L2):
    N = 0
    for k in range(len(L1)):
        if L1[k] == L2[k]:
            N += 1
    return N
```

Question 3.

```
# Question 3
# Version naive :
def nombreCouleurs(L):
    R = [0,0,0,0]
    for k in range(len(L)):
        if L[k] == 1:
            R[0] += 1
        elif L[k] == 2:
            R[1] += 1
        elif L[k] == 3:
            R[2] += 1
        elif L[k] == 4:
            R[3] += 1
    return R
```

```
# Version moins naive :
def nombreCouleurs(L):
    R = [0,0,0,0]
    for k in range(len(L)):
        R[L[k]-1] += 1
    return R
```

Question 4.

```
# Question 4
def nombreMalPlaces(L1,L2):
    R1 = nombreCouleurs(L1)
    R2 = nombreCouleurs(L2)
    N = 0
    for k in range(4):
        if R2[k] <= R1[k]:
            N += R2[k]
        else:
            N += R1[k]
    return N - nombreIdentiques(L1,L2)
```

Question 5.

```
# Question 5
def nombres(C):
    L = [0,0,0,0]
    for k in range(len(C)):
        if C[k] == 'R':
            L[k] = 1
        elif C[k] == 'B':
            L[k] = 2
        elif C[k] == 'V':
            L[k] = 3
        elif C[k] == 'J':
            L[k] = 4
    return L
```

Question 6.

```
# Question 6
def lettres(L):
    C = ""
    for k in range(len(L)):
        if L[k] == 1:
            C += 'R'
        elif L[k] == 2:
            C += 'B'
        elif L[k] == 3:
            C += 'V'
        elif L[k] == 4:
            C += 'J'
    return C
```

Question 7.

```
# Question 7. Programme principal
print("="*40)
print("Jeu de Mastermind")
print("Deviner une 4-liste des couleurs R,B,V,J")
print("="*40)
L1 = alea() # Choix de l'ordinateur
N = int(input("Difficulté : nombre de coups ? "))
print("-"*40)
gagne = False
tour = 0
while tour < N and not(gagne):
    essai = input("Saisir une suite de 4 couleurs : ")
    L2 = nombres(essai)
    nIdentique = nombreIdentiques(L1,L2)
    nMalPlaces = nombreMalPlaces(L1,L2)
    if nIdentique == 4:
        gagne = True
    else:
        print(nIdentique,"bien places")
        print(nMalPlaces,"mal places")
    tour += 1
if gagne:
    print('Bravo !')
else:
    print('Perdu !\nIl fallait trouver :',lettres(L1))
```