

# Bases de données

## Correction devoir

Yousra Lembachar

### Exercice 1

1.  $\pi_{nomMarin, qualification, nomBateau, couleur, date} \text{ MARIN} \bowtie \text{ BATEAU} \bowtie \text{ ACQUISITION}$
2.  $\pi_{couleur}(\sigma_{nomMarin='Sparrow'} \text{ MARIN} \bowtie \text{ BATEAU} \bowtie \text{ ACQUISITION})$
3.  $\rho_{Noms}(\pi_{nomMarin} \text{ MARIN}) \cup \rho_{Noms}(\pi_{nomBateau} \text{ BATEAU})$
4. Le bateau de Sparrow :  $B = \pi_{idBateau}(\sigma_{nomMarin='Sparrow'} \text{ MARIN} \bowtie \text{ ACQUISITION})$   
 $\pi_{idMarin}(\sigma_{qual>8} \text{ MARIN}) \cup \pi_{idMarin}(\sigma_{idBateau=B} \text{ ACQUISITION})$
5.  $\pi_{idMarin}(\sigma_{age>20} \text{ MARIN}) - \pi_{idMarin}(\sigma_{couleur='rouge'} \text{ ACQUISITION} \bowtie \text{ BATEAU})$
6.  $\pi_{A1.idMarin}(\sigma_{A1.idMarin=A2.idMarin \wedge A2.idMarin=A3.idMarin \wedge A1.idBateau<>A2.idBateau \wedge A2.idBateau<>A3.idBateau \wedge A1.idBateau<>A3.idBateau} \rho_{A1} \text{ ACQUISITION} \times \rho_{A2} \text{ ACQUISITION} \times \rho_{A3} \text{ ACQUISITION})$
7.  $\pi_{M1.idMarin}(\sigma_{M1.qual>M2.qual \wedge M2.nomMarin='Sparrow'} \rho_{M1} \text{ MARIN} \times \rho_{M2} \text{ MARIN})$
8.  $\pi_{idMarin} \text{ MARIN} - \pi_{M1.idMarin}(\sigma_{M1.qual<M2.qual} \rho_{M1} \text{ MARIN} \times \rho_{M2} \text{ MARIN})$

### Exercice 2

1. 

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SELECT nomMarin, qualification, nomBateau, couleur, date
FROM MARIN, BATEAU, ACQUISITION
WHERE MARIN.idMarin = ACQUISITION.idMarin AND BATEAU.idBateau = ACQUISITION.idBateau
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2. SELECT couleur  
FROM MARIN, BATEAU, ACQUISITION  
WHERE MARIN.idMarin = ACQUISITION.idMarin AND BATEAU.idBateau = ACQUISITION.idBateau  
AND nomMarin = 'Sparrow'
3. SELECT nomBateau as Noms FROM BATEAU  
UNION  
SELECT nomMarin as Noms FROM MARIN
4. SELECT idMarin FROM MARIN WHERE qual > 8  
UNION  
SELECT idMarin  
FROM ACQUISITION  
WHERE idBateau = (SELECT idBateau  
FROM MARIN,ACQUISITION  
WHERE MARIN.idMarin = ACQUISITION.idMarin AND nomMarin = 'Sparrow')
5. SELECT idMarin FROM MARIN  
EXCEPT  
SELECT idMarin  
FROM MARIN,ACQUISITION,BATEAU  
WHERE MARIN.idMarin = ACQUISITION.idMarin AND BATEAU.idBateau = ACQUISITION.idBateau  
AND couleur = 'rouge'
6. SELECT idMarin  
FROM MARIN,ACQUISITION  
WHERE MARIN.idMarin = ACQUISITION.idMarin  
HAVING COUNT(idBateau) >= 3;
7. SELECT M1.idMARIN  
FROM MARIN M1, MARIN M2  
WHERE M1.qual > M2. qual AND M2.nomMarin = 'Sparrow';
8. SELECT idMARIN FROM MARIN  
EXCEPT  
SELECT M1.idMarin  
FROM MARIN M1, MARIN M2  
WHERE M1.idMarin <> M2.idMarin AND M1.qual < M2. qual;