1:) $R \leftarrow \pi_{pnumber, dnum, lname, address, bdate}(\sigma_{plocation='Stafford'}(Project \bowtie_{dnum=dnumber} Department *_{(mgrssn),(ssn)} Employee))$

2:) $R \leftarrow (\pi_{essn}\sigma_{hours<10} Works\_on) \cap (\pi_{essn}\sigma_{hours>30} Works\_on)$

3:) $R \leftarrow (\pi_{ssn,fname,lname} Employee) - (\pi_{ssn,fname,lname}(\sigma_{relationship='Spouse'}(Employee *_{(ssn),(essn)} Dependent)))$

4:) $R \leftarrow {}_{fname,lname}\Im_{count\ essn}(Employee \bowtie_{ssn=essn} Works\_on)$

5:) $R \leftarrow \Im_{count\ dlocation}(\pi_{dlocation}(\sigma_{(mgrssn=333445555\ or\ mgrssn=888665555)}(Dept\_locations * Department)))$

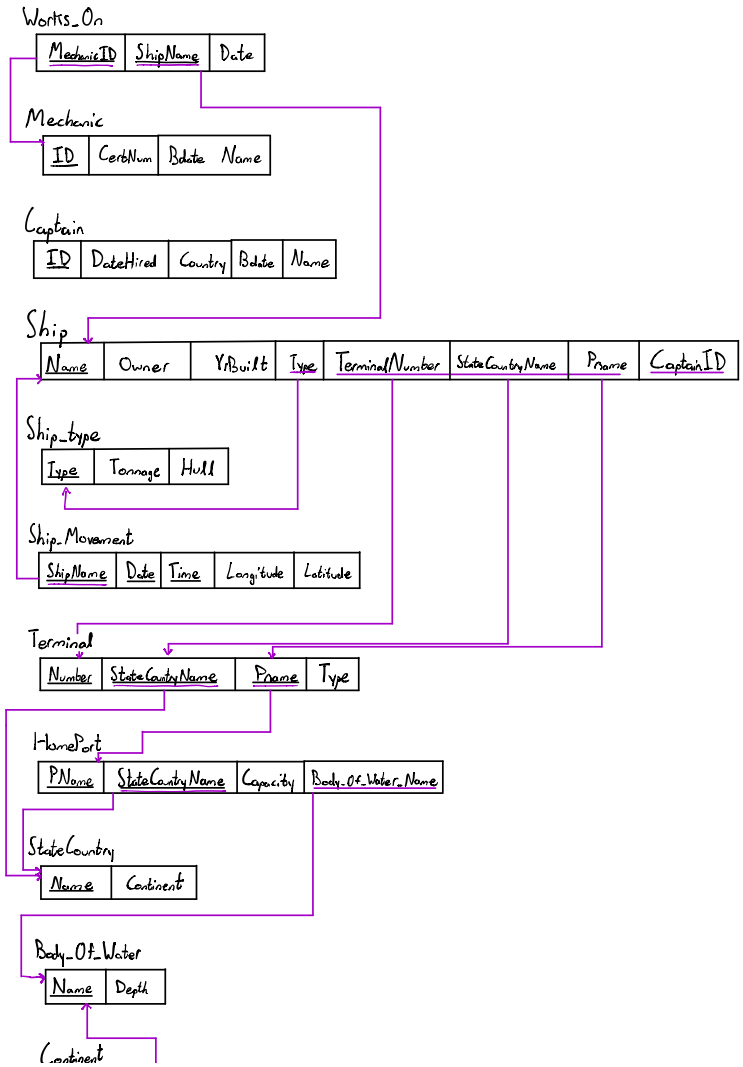
6:) $dept5\_locations \leftarrow \pi_{dlocation, dnumber}(\sigma_{dnumber=5}(Dept\_locations * Employee))$

$all\_depts \leftarrow \pi_{dnumber, dlocation} Department * Dept\_locations$

$dnums \leftarrow all\_depts \div dept5\_locations$

$R \leftarrow \pi_{dname}(dnums * department)$

7:)



Continent	Body_Of_Water_Name

```
CREATE VIEW NumContinents (Body_Of_Water_Name)
    AS SELECT COUNT(*)
    FROM Continent C
    WHERE C.Body_Of_Water_Name = Body_Of_Water_Name;
```

8:) (A B C D E) AB → C, B → D, AB → E

(a) 1st Normal Form

(b) (A B C E) (B D)

9:) (V W X Y Z) where X is a candidate key. VW → X, VW → Y, VW → Z, X → VW, X → Z, Z → Y

(a) 2nd Normal Form

(b) (V W X Z) (Z Y)

10:) (J K L M) J → K, J → L, J → M, M → J

(a) 3rd Normal Form

(b) N/A

Extra Credit:)

$$R \leftarrow \text{Employee} \; |X|_{\text{Salary} > \text{max\_sal}} \left(\mathcal{J}_{\text{max salary as max\_sal}} \left(\sigma_{\text{Sex}='F'} \text{Employee} \right) \right)$$