The following question is based on Employees relation:

Employees(Name, Project, Task, Office)

Name → Office

An employee can work on different tasks and different projects. NOTE that Tasks are independent of Projects.

Name	Project	Task	Office
Bill	100X	T1	400
Bill	100X	T2	400
Bill	200Y	T1	400
Bill	200Y	T2	400
Sue	100X	T33	442
Sue	200Y	T33	442
Sue	300Z	T33	442
Ed	100X	T2	588

What non-trivial multi-value dependencies hold on this relation? Is this relation in BCNF? Is it in 4NF? (8 pts)

Every FD is also an MVD, so if Name → Office, Name →→ Office as well.

Name →→ Project because for all values of Name which are the same (example all Name = Bill or Name = Sue or Name = Ed), if the values in the Project column are switched with any other value in the column, the same two tuples will be represented in the table already.

Name →→ Task for the same reason that Name →→ Project, as the same switching of values in the Task column where all Name values are the same.

Employees(Name, Project, Task, Office) is not in BCNF and therefore it also violates 4NF. With the only functional dependency being Name → Office, Name+ = Name, Office, so there is a BCNF violation, as also evidenced by the data redundancies in the table.