**Problem 1a**

Set of all minimal keys:

**Problem 1b**

This violates BCNF because the left side of all FD’s must be a superkey of G.

**Problem 1c**

BCNF Sub-relations:

**Problem 1d**

The following FDs are not preserved be decomposition:

You can tell because no part of them is carried through to the sub-relations.

**Problem 1e**

Since none of the above relations are superkeys of R, must add relation that is key: