**CS 542 Homework: Is this relation an equivalence relation?**

Recall that a relation is a set of ordered pairs — in our case, a set of ordered pairs of unsigneds. Underlying a relation is the relation's universal set: each element of each ordered pair is an element of that universal set.

Recall that a relation may or may not be an equivalence relation.

An equivalence relation is a relation with 3 properties:

Reflexivity: for each element e in the universal set, the ordered pair (e, e) is in the relation.

Symmetry: for each ordered pair (a, b) in the relation, the ordered pair (b, a) is also in the relation.

Transitivity: for any a, b, and c in the universal set, if (a, b) and (b, c) are in the relation, then (a, c) is also in the relation.

Your job is to write function named er (equivalence relation):

bool er(const SOP & sop, const set<unsigned> & univ)

(In the above I'm assuming the use of

typedef pair<unsigned, unsigned> OP;

typedef set<OP> SOP;

that we introduced previously, but if you prefer, you can write

bool er(const set<pair<unsigned, unsigned>> & sop, const set<unsigned> & univ);

instead.)

The function's job is to return whether sop is an equivalence relation. If it passes all 3 tests, return true; if it fails any of the 3, return false.

Write a main that calls your er function. You decide the details of your main, I'm interested in your er function.

Please write your program as a single .cpp file, and make the first line a comment telling me the class (CS 542), the assignment (Hw6), and your name.