Washington State University

School of Electrical Engineering and Computer Science

CptS 451 – Introduction to Database Systems

Dr. Sakire Arslan Ay

Homework-5

Due Date: Monday, June 22

Name: _____

Student Number:_____

Question:	Max points:	Score:
1	20	
2	80	
Total	100	

Question1: (20 pts) BCNF Decomposition

Consider the attribute set {A,B,C,D,E,G,H} and the functional dependency set:
F = { AC→ B, BD → A, AB → CD, B → C, AD → E, E → G}. For each of the following attribute sets, compute the set of dependencies that hold over that attribute set. **Show your work.**

(a) {A,B,C,D}
(b) {A,B,C}
(c) {A,C,E,H}
(d) {A,B,C,E,G}

Question2: (80 pts) BCNF Decomposition

Consider the following relations and functional dependencies. For each relation do the following:

a) Identify the minimal key(s) for the relation
b) Identify whether the relation is in BCNF, if not in BCNF decompose it into a set of BCNF relations.
c) If you decomposed the relation in part b, argue whether the composition preserved functional dependencies.

Show your work for all steps.

1. **R(A,B,C,D,E)** and FD's **BDE → C, C → AE**
2. **S(A,B,C,D,E,F)** and FD's **B → CE, C → AD**

Submission Instructions:

HW5 will be on Blackboard (HW5 dropbox under "Homeworks"). Write your answers in a file and save it as PDF. Name your file "HW5.pdf".
Please don't submit Word or text files.