**CSCI235: Database Systems**

**Assignment 1**

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**Task 1**

* + 1. B → D; D → AE; transitive B → AE

Therefore B → ADE

Minimal Keys: BC

* + 1. Schema does not satisfy 2NF because B → D and B is a subset of BC

Therefore schema is 1NF

* + 1. R ( B, D ) B → D,

R ( B, C ) ,

R ( D, A, E ) D → AE

All tables are in BCNF

* + 1. AB → CD; minimal key E+AB → CD

DE → AC; minimal key B+DE → AC

Minimal Keys: ABE, BDE

* + 1. Schema does not satisfy 2NF because AB → CD and AB is a subset of ABE, and DE → AC and DE is a subset of BDE

Therefore schema is 1NF

* + 1. R ( A, B, C, D ) AB → CD

R ( A, B, E )

All schemas are in BCNF

* + 1. BCD → AE;

CDE → AB;

Minimal Keys: BCD, CDE

* + 1. Schema satisfies 1NF as all columns are single value

Schema satisfies 2NF as all attributes are fully dependant on primary keys

Schema satisfies 3NF as there are no transitive functional dependencies

Schema satisfies BCNF as all minimal keys are super keys

* + 1. Already in BCNF