COMP3005 A3 Drew Suitor - 101003158

Part 2

2.1 F={U V -> W X Y Z, V W -> Z, Z -> V}

a. Candidate keys: U, Z

b.

1st normal form **satisfied** because the relation has keys.

2nd normal form **satisfied** because it has no partial dependencies.

3rd normal form **satisfied** because for each dependency the dependency is on a superkey or the dependent is prime.

Boyce-Codd normal form **not satisfied** because in the dependency 'V W -> Z' V W is not a superkey, and for the dependency 'Z -> V' Z is not a superkey.

c. Where items on the left of the pipe are primary key attributes and items on the right are not.

[U, V | W, X, Y]

[V, W | Z]

[U, Z |]

2.2 F={U V -> W X Y Z, X -> W, W -> Z}

a. Candidate keys: U, V

b.

1st normal form **satisfied** because the relation has keys.

2nd normal form **satisfied** because it has no partial dependencies.

3rd normal form **not satisfied** because in the dependencies 'X -> W' and 'W -> Z' the left hand side of the dependencies are not superkeys and the right hand sides are not prime attributes.

Boyce-Codd normal form **not satisfied** because 3rd normal form is not satisfied.

c. Where items on the left of the pipe are primary key attributes and items on the right are not.

[U, V | X, Y]

[X | W]

[W | Z]

2.3 F={U V -> W X Y Z, V -> W X, X -> Z, V -> U}

a. Candidate key: V

b.

1st normal form **satisfied** because the relation has keys.

2nd normal form **satisfied** because it has no partial dependencies.

3rd normal form **not satisfied** because in the dependency 'X -> Z' X is not a superkey and Y is not a prime attribute.

Boyce-Codd normal form **not satisfied** because 3rd normal form is not satisfied.

c. Where items on the left of the pipe are primary key attributes and items on the right are not.

[V | W, X, U, Y]

[X | Z]

2.4

a.

A, B -> G

A -> C

B -> D E F

∴ A, B -> C D E F G

b.

A B -> C, D, E, F, G

∴ A, B -> G