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| Relation | Functional Dependencies |
| Soldier(2nf) | Height, Weight -> BMI  Service\_Number -> Quarter\_Name, Room\_No., Cmdr\_S.No, First\_Name, Last\_Name, Height, Weight, BMI, Age |
| Commander(bcnf) | Cmdr\_S.No -> Cmdr\_Rank |
| Quarters(bcnf) | Quarters\_Name -> No.\_of\_Soldiers, Max\_Capacity |
| Room(bcnf) | - |
| Weapons(3nf) | Weapon\_Name -> Weapon\_ID, Type  Weapon\_ID -> Weapon\_Name, Type |
| Armory(bcnf) | - |
| Stores(bcnf) | - |
| Assigns(bcnf) | - |

Normalisation:

Soldier:

1NF:

Since the attributes are atomic i.e., attributes can’t be divided into sub-attributes,

It is in 1NF.

2NF:

Since there is no partial dependency,

It is in 2NF.

3NF:

Since there is a transitive dependency i.e.,

Service\_Number -> Height, Weight

Height, Weight -> BMI

So, we need to split the Soldier relation into two separate relations i.e.,

R1 (Service\_Number, Quarter\_Name, Room\_No., Cmdr\_S.No, First\_Name, Last\_Name, Height, Weight, Age)

R2 (Height, Weight, BMI)

BCNF:

Since there is no non-prime attribute defining a prime attribute,

R1, R2 are in BCNF.

Commander:

1NF:

Since the attributes are atomic i.e., attributes can’t be divided into sub-attributes,

It is in 1NF.

2NF:

Since there is no partial dependency,

It is in 2NF.

3NF:

Since there is no transitive dependency,

It is in 3NF.

BCNF:

Since there is no non-prime attribute defining a prime attribute,

It is in BCNF.

Quarters:

1NF:

Since the attributes are atomic i.e., attributes can’t be divided into sub-attributes,

It is in 1NF.

2NF:

Since there is no partial dependency,

It is in 2NF.

3NF:

Since there is no transitive dependency,

It is in 3NF.

BCNF:

Since there is no non-prime attribute defining a prime attribute,

It is in BCNF.

Room:

1NF:

Since the attributes are atomic i.e., attributes can’t be divided into sub-attributes,

It is in 1NF.

2NF:

Since there is no partial dependency,

It is in 2NF.

3NF:

Since there is no transitive dependency,

It is in 3NF.

BCNF:

Since there is no non-prime attribute defining a prime attribute,

It is in BCNF.

Weapons:

1NF:

Since the attributes are atomic i.e., attributes can’t be divided into sub-attributes,

It is in 1NF.

2NF:

Since there is no partial dependency,

It is in 2NF.

3NF:

Since there is no transitive dependency,

BCNF:

Since a non-prime attribute is defining a prime attribute i.e.,

Weapon\_Name -> Weapon\_ID

So, we need to split the Weapons relation into two separate relations i.e.,

R3 (Weapon\_ID, Type)

R4 (Weapon\_Name, Type)

Now R3, R4 are in BCNF.

Armory:

1NF:

Since the attributes are atomic i.e., attributes can’t be divided into sub-attributes,

It is in 1NF.

2NF:

Since there is no partial dependency,

It is in 2NF.

3NF:

Since there is no transitive dependency,

It is in 3NF.

BCNF:

Since there is no non-prime attribute defining a prime attribute,

It is in BCNF.

Stores:

1NF:

Since the attributes are atomic i.e., attributes can’t be divided into sub-attributes,

It is in 1NF.

2NF:

Since there is no partial dependency,

It is in 2NF.

3NF:

Since there is no transitive dependency,

It is in 3NF.

BCNF:

Since there is no non-prime attribute defining a prime attribute,

It is in BCNF.

Assigns:

1NF:

Since the attributes are atomic i.e., attributes can’t be divided into sub-attributes,

It is in 1NF.

2NF:

Since there is no partial dependency,

It is in 2NF.

3NF:

Since there is no transitive dependency,

It is in 3NF.

BCNF:

Since there is no non-prime attribute defining a prime attribute,

It is in BCNF.