ITEM(ID, Price)

MAGAZINE(Maganize\_ID unique NOT NULL , Title, Year\_Publish, Volume)

Foreign Key MAGAZINE (Maganize\_ID) references ITEM (ID)

2NF (Title + Volume = Candidate Key)

3NF, BCNF Maganize\_ID and Year\_Publish depends only on Title+ Volume & not the other way around.

ARTICLE(Article\_ID, Title, Page\_Start, Page\_End, Magazine\_ID NOT NULL)

Foreign Key ARTICLE (Magazine\_ID) references MAGAZINE (Magazine\_ID)

3NF, BCNF No partial and transitive dependencies all the fields depend on Article\_ID & not the other way around.

AUTHOR(Author\_ID, A\_Name, A\_Last, Email)

3NF, no partial and transitive dependencies all the fields depend on Article\_ID.

WRITES(Author\_ID, Article\_ID)

Foreign Key WRITES (Article\_ID) references ARTICLE (Article\_ID)

Foreign Key WRITES (Author\_ID) references AUTHOR (Author\_ID)

BCNF satisfied because both Author\_ID and Article\_ID form the candidate key.

CUSTOMER(CID, C\_Name, C\_Last, Phone, Mail\_Addr)

3NF, BCNF no partial and transitive dependencies all the fields depend on CID and not the other way around.

TRANSACTION (Trxn\_Number, Date, CID, Discount\_Code)

Foreign Key TRANSACTION(CID) references CUSTOMER(CID)

3NF, BCNF When a customer levels up their discount code will change even though CID remains the same. So, Discount Code is only determined by Trxn\_Number.

TRANSACTION\_DETAILS (Trxn\_Number, ID, Quantity)

Foreign Key TRANSACTION\_DETAILS(Trxn\_Number) references TRANSACTION(Trxn\_Number)

Foreign Key TRANSACTION\_DETAILS(ID) references ITEM(ID)

3NF, BCNF Since a customer can purchase same items on different transactions Trxn\_Number is required alongside with ID. Also, Trxn\_Number is not sufficient to determine quantity, since the transaction can include same quantities of different items.

So, Quantity is only determined by using Trxn\_Number and ID and not the other way around.

EMPLOYEE (SIN, E\_Name, E\_Last, Rate\_Hour)

3NF, BCNF no partial and transitive dependencies all the fields depend on SIN and not the other way around.

WORK\_HOURS (Day, Month, Year, SIN, Hours\_Worked) (Needs to be normalized)

Foreign Key WORK\_HOURS (Month, Year) references EXPENSES (Month, Year)

Foreign Key WORK\_HOURS (SIN) references EMPLOYEE (SIN)

EXPENSES (Year, Month, Electricity, Heat, Water, Rent, Total\_Emp\_Exp)

3NF, BCNF no partial and transitive dependencies all the fields depend on Year and Month and not the other way around.

Note: ID is unique for each vol. magazine and it is foreign key in MAGAZINE table

as Magazine\_ID