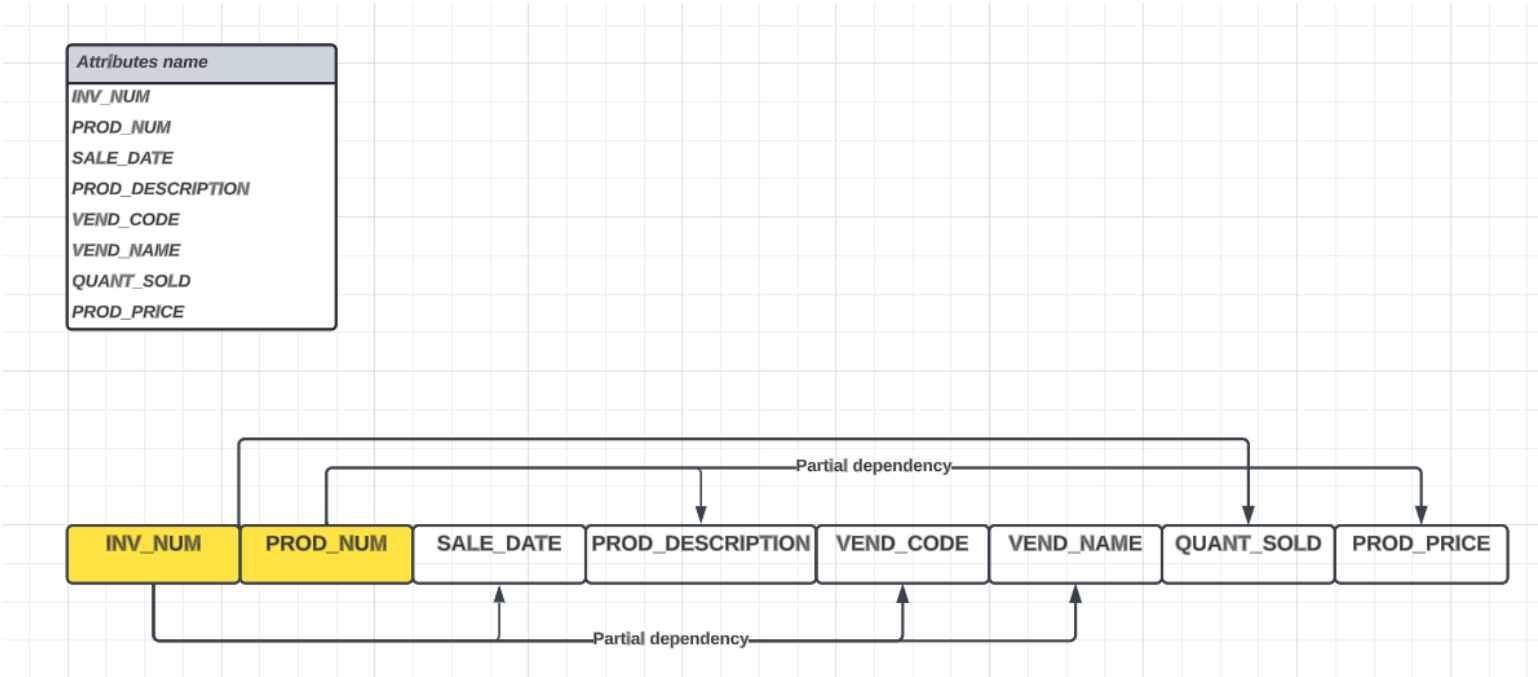
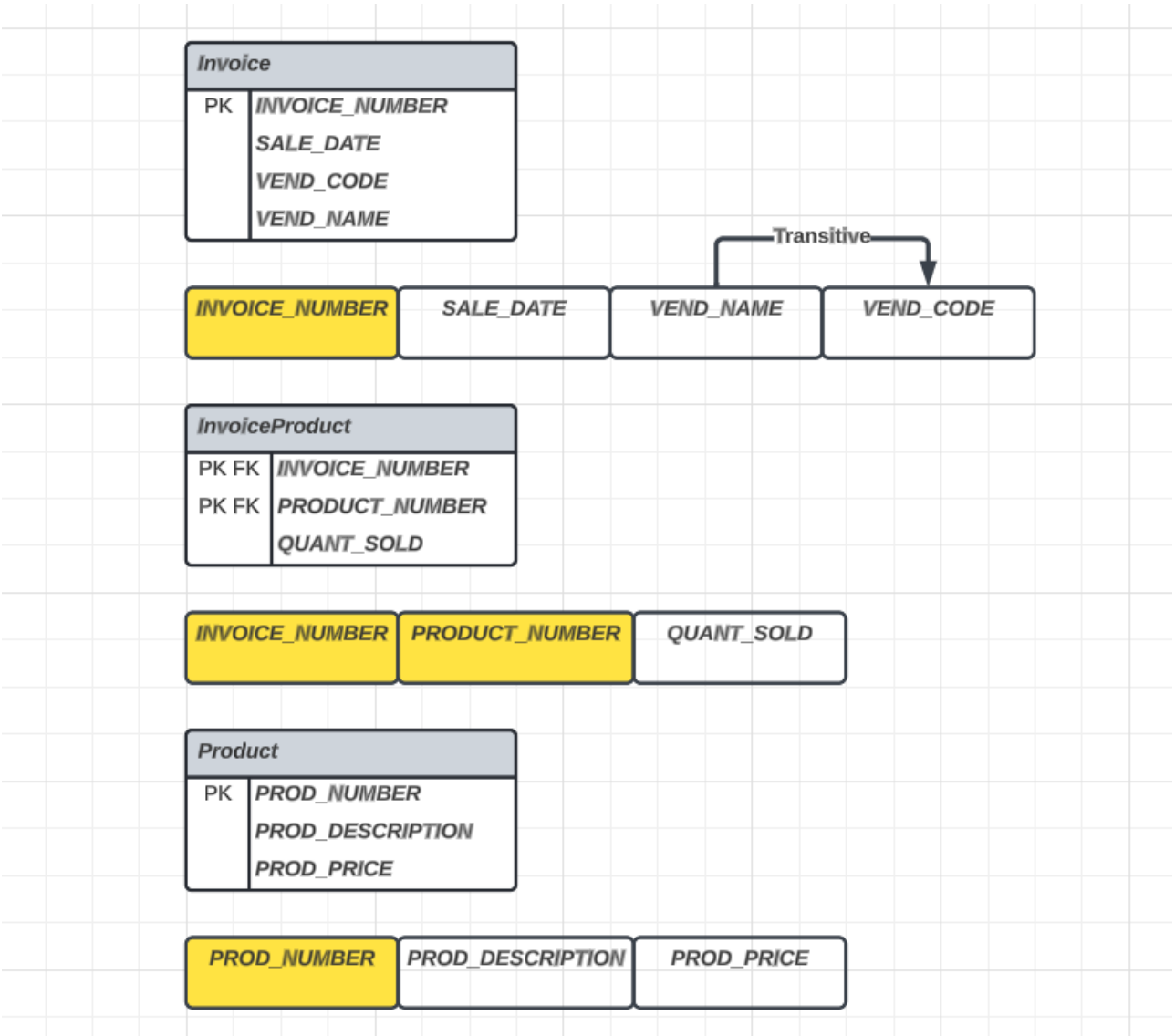
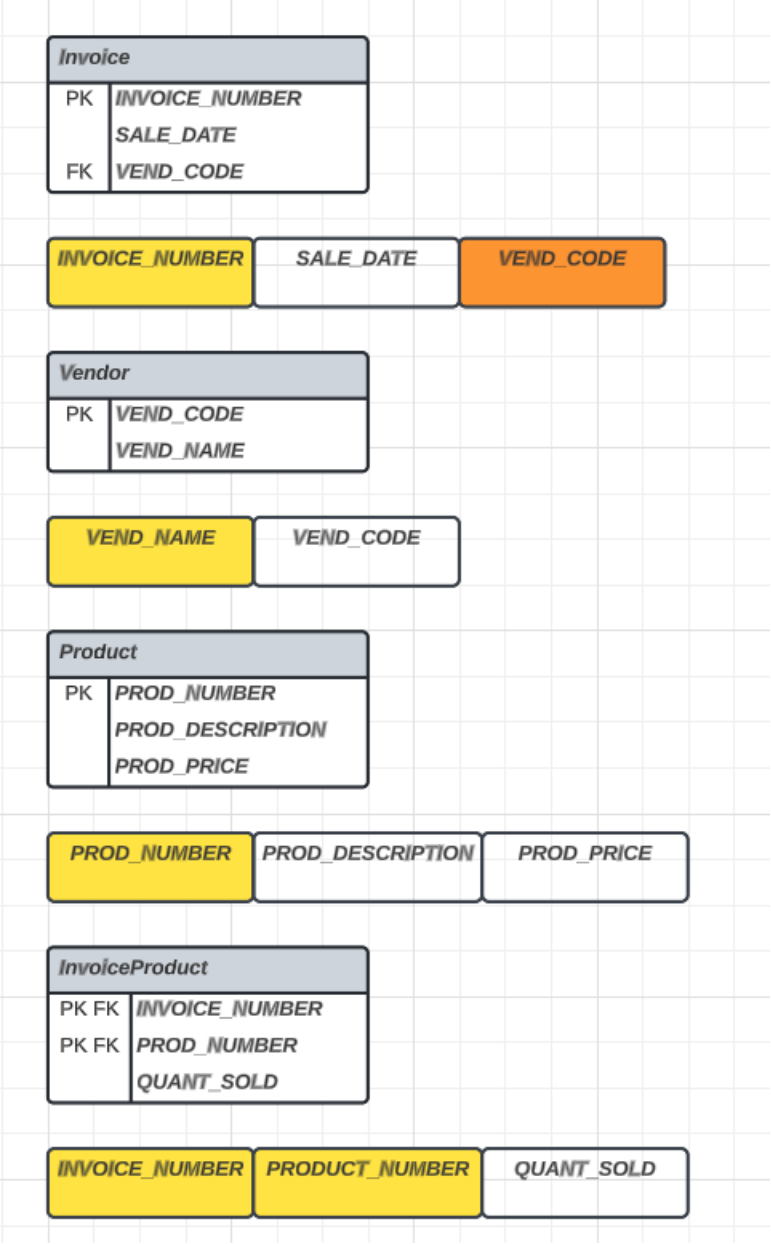
1.


Attributes name
INV_NUM
PROD_NUM
SALE_DATE
PROD_DESCRIPTION
VEND_CODE
VEND_NAME
QUANT_SOLD
PROD_PRICE
Partial dependency
INV_NUM
PROD_NUM
SALE_DATE
PROD_DESCRIPTION
VEND_CODE
VEND_NAME
QUANT_SOLD
PROD_PRICE
Partial dependency

2.


Invoice
PK
INVOICE_NUMBER
SALE_DATE
VEND_CODE
VEND_NAME
Transitive
INVOICE_NUMBER
SALE_DATE
VEND_NAME
VEND_CODE
InvoiceProduct
PK FK
INVOICE_NUMBER
PK FK
PRODUCT_NUMBER
QUANT_SOLD
INVOICE_NUMBER
PRODUCT_NUMBER
QUANT_SOLD
Product
PK
PROD_NUMBER
PROD_DESCRIPTION
PROD_PRICE
PROD_NUMBER
PROD_DESCRIPTION
PROD_PRICE

3.


Invoice
PK
INVOICE_NUMBER
SALE_DATE
FK
VEND_CODE
INVOICE_NUMBER
SALE_DATE
VEND_CODE
Vendor
PK
VEND_CODE
VEND_NAME
VEND_NAME
VEND_CODE
Product
PK
PROD_NUMBER
PROD_DESCRIPTION
PROD_PRICE
PROD_NUMBER
PROD_DESCRIPTION
PROD_PRICE
InvoiceProduct
PK FK
INVOICE_NUMBER
PK FK
PROD_NUMBER
QUANT_SOLD
INVOICE_NUMBER
PRODUCT_NUMBER
QUANT_SOLD

4. Table 1: Invoice

   Justification;

   - 1NF – It satisfies the 1NF because all attributes are atomic and there are no repeating groups.
   - 2NF – It satisfies the 2NF because there are no partial dependencies; all non-key attributes depend on the entire primary key.
   - 3NF – It satisfies the 3NF because there are no transitive dependencies. ‘vendor_code’ is a foreign key, so it’s referencing another table.

   Table 2: Product

   Justification;

   - 1NF – It satisfies the 1NF because all attributes are atomic and there are no repeating groups.
   - 2NF – It satisfies the 2NF because there are no partial dependencies; all non-key attributes depend on the entire primary key.
   - 3NF – It satisfies the 3NF because there are no transitive dependencies.

   Table 3: InvoiceProduct

   Justification;

   - 1NF – It satisfies the 1NF because all attributes are atomic and there are no repeating groups.
   - 2NF – It satisfies the 2NF because the primary key is a composite of ‘(invoice_number, product_number)’, and there is no partial dependency.
   - 3NF – It satisfies the 3NF because there are no transitive dependencies.

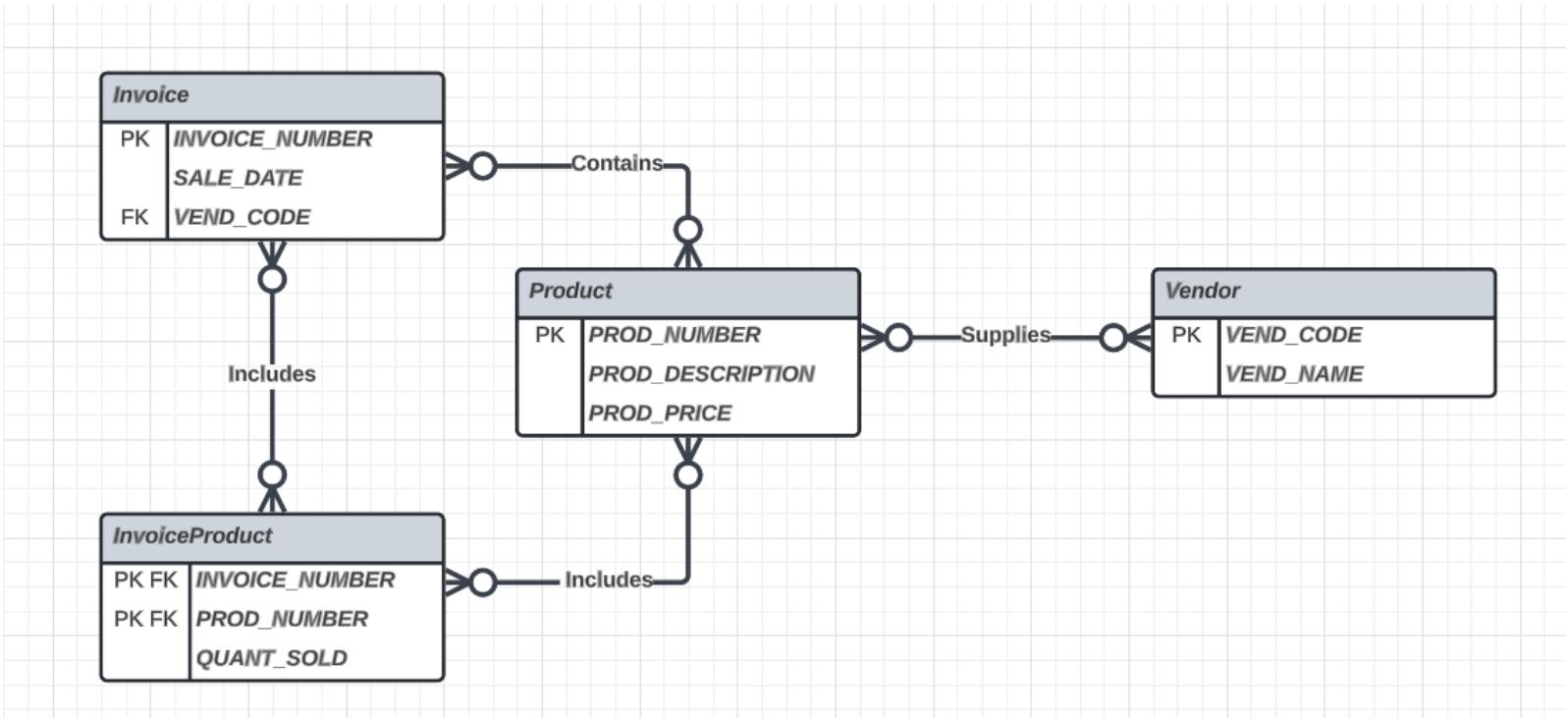
   Table 4: Vendor

   Justification;

   - 1NF – It satisfies the 1NF because all attributes are atomic and there are no repeating groups.
   - 2NF – It satisfies the 2NF because there it has a single attribute primary key.
   - 3NF – It satisfies the 3NF because there are no transitive dependencies

The database's tables all seem to meet the requirements for 1NF, 2NF, and 3NF. They are well-structured and lack transitive or partial dependencies, which guarantees data integrity and reduces redundancy.

5.


Invoice
PK
INVOICE_NUMBER
SALE_DATE
FK
VEND_CODE
Contains
Includes
Product
PK
PROD_NUMBER
PROD_DESCRIPTION
PROD_PRICE
Supplies
Vendor
PK
VEND_CODE
VEND_NAME
InvoiceProduct
PK FK
INVOICE_NUMBER
PK FK
PROD_NUMBER
QUANT_SOLD
Includes