DATABASE MANAGEMENT SYSTEMS
FUNCTIONAL DEPENDENCY MODEL

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Relational Schema :

1. Author (author_name, author_address, author_URL)
2. Publisher (publisher_name, publisher_address, publisher_URL, publisher_phone)
3. Customer (customer_email, customer_name, customer_address, customer_phone, password)
4. Shopping-Basket (customer_email , basketID)
5. Book (title, price, genre, year, ISBN)
6. Warehouse (warehouse_code, warehouse_phone, warehouse_address)
7. Written-by (author_name, author_address, ISBN)
8. Published-by (publisher_name, ISBN)
9. Contains (ISBN, basketID, basket_quantity)
10. Stocks (ISBN, warehouse_code, stock_quantity)

Functional Dependency Model :

F = {
{{author_name, author_address} -> { author_URL}},
{{publisher_name} -> {publisher_address, publlisher_URL, publisher_phone}},
{{customer_email} -> {customer_name, customer_address, customer_phone, password}},
{{customer_email} -> {basketID}},
{{ISBN} -> {title, price, genre, year}},
{{warehouse_code} -> {warehouse_phone, warehouse_address}},
{{ISBN} -> {author_name, author_address}},
{{ISBN} -> {publisher_name}},
{{ISBN, basketID} -> {basket_quantity}},
{{ISBN, warehouse_code} -> {stock_quantity}}
}

Let A = author_name, B = author_address, C = author_URL, D = publisher_name, E = publisher_address, F = publisher_URL, G = publisher_phone, H = customer_email, I = customer_name, J = customer_address, K = customer_phone, L = password, M = basketID, N = ISBN, O = title, P = price, Q = genre, R = year, S = warehouse_code, T = warehouse_phone, U = warehouse_address, V = basket_quantity, W = warehouse_quantity.
Thus, can write F as,

F = { { AB -> C },
{ D -> EFG },
{ H -> IJKL },
{ H -> M },
{ N -> OPQR },
{ S -> TU },
{ N -> AB },
{ N -> D },
{ NM -> V },
{ NS -> W}
}

Since, the for all the functional dependencies in F^+ the LHS is always a superkey, thus the given schema is in **BCNF**.