

Relational Schema for Vendor Management System

1. Department

Schema:

Department(departmentid PK, departmentname, managername, contactinfo)

Explanation: departmentid is the primary key.

2. Vendor

Schema:

Vendor(vendorid PK, vendorname, contactinfo, servicecategory, certifications)

Explanation: vendorid is the primary key, and certifications is a multivalued attribute (can be normalized if needed).

3. Contract (Weak Entity)

Schema:

Contract(contractid PK, vendorid FK, contractterms, startdate, enddate)

Relationships:

vendorid references Vendor(vendorid).

Explanation: contractid is the primary key, but vendorid is required because a contract depends on a vendor.

4. PurchaseOrder (Weak Entity)

Schema:

PurchaseOrder(orderid PK, vendorid FK, contractid FK, departmentid FK, itemdetails, quantity, amount)

Relationships:

vendorid references Vendor(vendorid).

contractid references Contract(contractid).

departmentid references Department(departmentid).

Explanation: orderid is the primary key, but it relies on foreign keys (vendorid, contractid, and departmentid) for context.

5. Budget (Weak Entity)

Schema:

Budget(budgetid PK, departmentid FK, allocatedamount, spentamount, remainingamount)

Relationships:

departmentid references Department(departmentid).

Explanation: budgetid is the primary key, and remainingamount is a derived attribute (allocatedamount - spentamount).

6. Performance (Weak Entity)

Schema:

Performance(performanceid PK, vendorid FK, rating, feedback)

Relationships:

vendorid references Vendor(vendorid).

Explanation: performanceid is the primary key, but vendorid is required because a performance review depends on a vendor.

7. UserInfo

Schema:

UserInfo(userid PK, username, email UNIQUE, userrole DEFAULT 'vendor', userpassword)

Explanation: userid is the primary key, and email is unique.

Multivalued Attribute Normalization

Certifications (from Vendor):

If certifications is truly multivalued, it should be normalized into a separate table:

VendorCertifications(vendorid FK, certification)

vendorid references Vendor(vendorid).

certification contains one certification per row.