# Table Descriptions

1. **contacttype**

* Primary Key (PK): id
* Foreign Keys (FK): None

1. **person**

* Primary Key (PK): id
* Foreign Keys (FK): None

1. **contact**

* Primary Key (PK): None (if required, a composite key could be used)
* Foreign Keys (FK):
  + pid references person(id)
  + cid references contacttype(id)

1. **role**

* Primary Key (PK): id
* Foreign Keys (FK): None

1. **project**

* Primary Key (PK): id
* Foreign Keys (FK): None

1. **projectperson**

* Primary Key (PK): None (composite key used)
* Foreign Keys (FK):
  + prid references project(id)
  + pid references person(id)
  + rid references role(id)

# Explanation

1. **Primary Key (PK):**

* contacttype(id): Unique identifier for contact types.
* person(id): Unique identifier for persons.
* contact(pid, cid): Composite primary key to uniquely identify each contact.
* role(id): Unique identifier for roles.
* project(id): Unique identifier for projects.
* projectperson(prid, pid, rid): Composite primary key to uniquely identify each project-person-role association.

1. **Foreign Key (FK):**

* contact(pid) references person(id): Ensures each contact is linked to a valid person.
* contact(cid) references contacttype(id): Ensures each contact is linked to a valid contact type.
* projectperson(prid) references project(id): Ensures each project-person-role association is linked to a valid project.
* projectperson(pid) references person(id): Ensures each project-person-role association is linked to a valid person.
* projectperson(rid) references role(id): Ensures each project-person-role association is linked to a valid role.

# Relationship Descriptions

1. **contacttype**

* Relationship with contact: contacttype to contact is a 1..n relationship.
  + Explanation: Each contacttype can be associated with one or more contacts, but each contact must have exactly one contacttype.

1. **person**

* Relationship with contact: person to contact is a 1..n relationship.
  + Explanation: Each person can have multiple contacts, but each contact is associated with exactly one person.
* Relationship with projectperson: person to projectperson is a 1..n relationship.
  + Explanation: Each person can be associated with multiple projectperson records, but each projectperson record is associated with exactly one person.

1. **contact**

* Relationship with contacttype: contact to contacttype is a n..1 relationship.
  + Explanation: Each contact has exactly one contacttype.
* Relationship with person: contact to person is a n..1 relationship.
  + Explanation: Each contact is associated with exactly one person.

1. **role**

* Relationship with projectperson: role to projectperson is a 1..n relationship.
  + Explanation: Each role can be associated with multiple projectperson records, but each projectperson record is associated with exactly one role.

1. **project**

* Relationship with projectperson: project to projectperson is a 1..n relationship.
  + Explanation: Each project can be associated with multiple projectperson records, but each projectperson record is associated with exactly one project.

1. **projectperson**

* Relationship with person: projectperson to person is a n..1 relationship.
  + Explanation: Each projectperson record is associated with exactly one person.
* Relationship with project: projectperson to project is a n..1 relationship.
  + Explanation: Each projectperson record is associated with exactly one project.
* Relationship with role: projectperson to role is a n..1 relationship.
  + Explanation: Each projectperson record is associated with exactly one role.

# Summary of Relationships

* **1..1 (exactly one match):**
  + None of the relationships in this schema are strictly 1..1.
* **1..n (one or more matches):**
  + contacttype to contact (1..n)
  + person to contact (1..n)
  + person to projectperson (1..n)
  + role to projectperson (1..n)
  + project to projectperson (1..n)
* **n..1 (many to one):**
  + contact to contacttype (n..1)
  + contact to person (n..1)
  + projectperson to person (n..1)
  + projectperson to project (n..1)
  + projectperson to role (n..1)