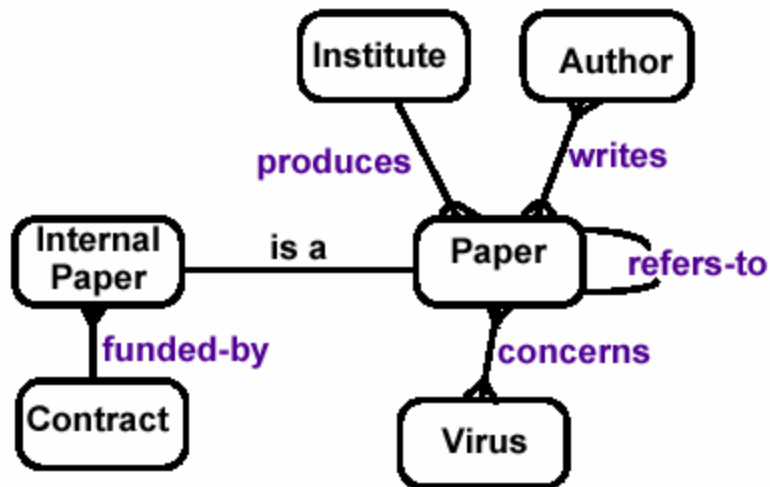


## The Entity Relationship Model



## The Relational Schema

Paper (p#, title, institute-name, journal, vol#, issue#, year)

Internal-Paper (p#, contract#)

Author (author-name, nationality, date-of-birth)

Institute (institute-name, address, type)

Contract (contract#, amount, start-date, end-date)

Writes (p#, author-name)

References (p#, ref-p#)

Virus (Virus-name, description)

Concerns (p#, virus-name)

## Some Points To Highlight

Each entity is translated to a relation.

For M:N relationships a new relation is created, i.e. WRITES, REFERS, CONCERNS.

For 1:N relationships the primary key is posted into the  $N$  entity to act as a foreign key.

For IS\_A relationship it is treated just as a 1:1 relationship and the primary key appears in both relations, for example, P#.

*Note:* The details concerning a research paper are stored in many different relations:

- the title, journal details and institute name are stored in the relation PAPER;
- the names of the viruses discussed in a paper are stored in the relation CONCERNS;
- the authors are stored in the relation WRITES;
- the references are stored in the relation REFERENCES.