Module 1: SQL & Relational Database
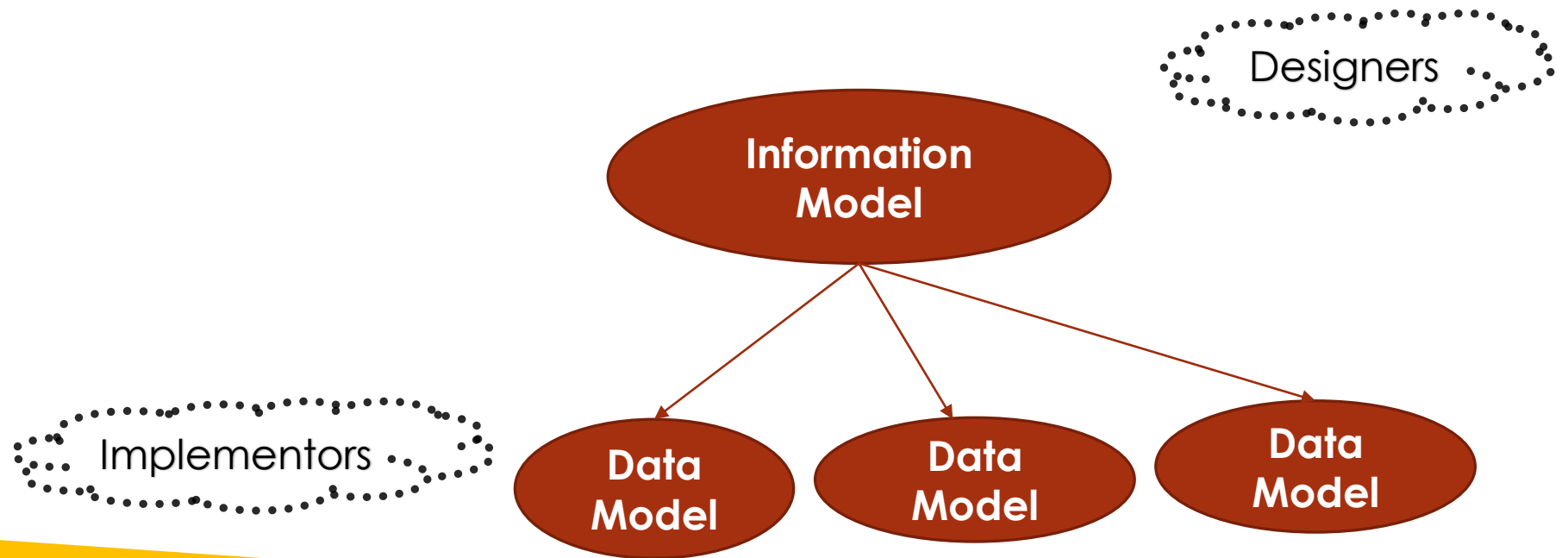
Lesson 2: Information & Data Models
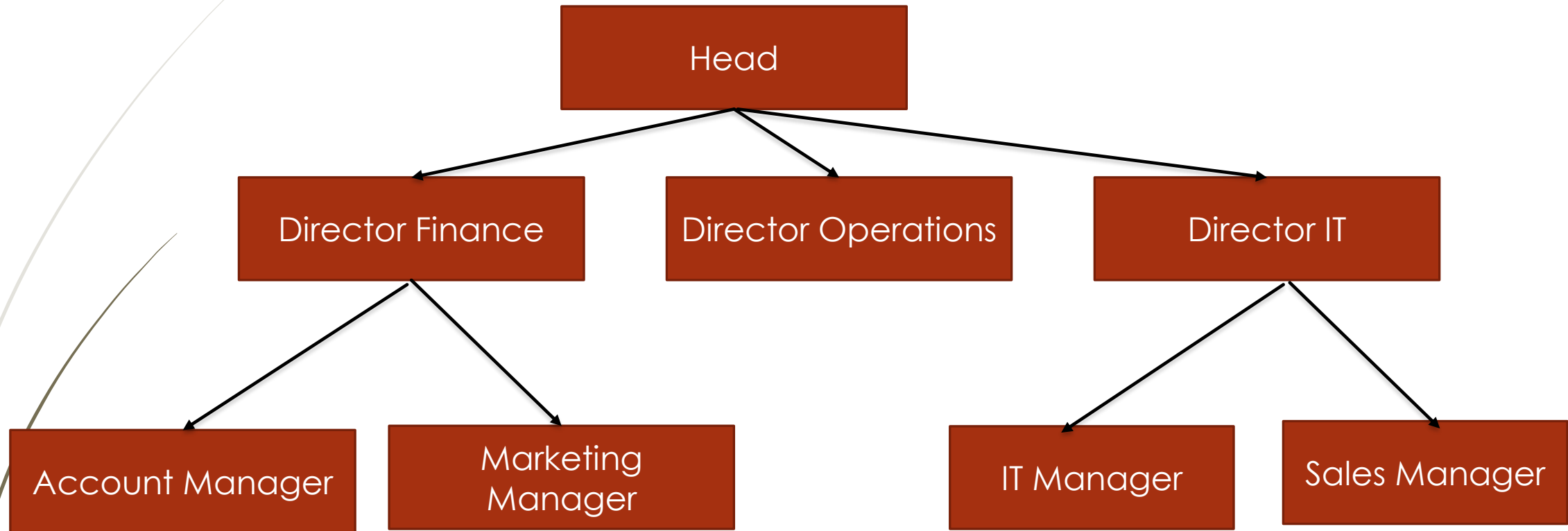
- ➢ Information Model
- ➢ Data Model
- ➢ Different types of Data Models
- ➢ Advantages of Relational Model
- ➢ Difference between Entity & an attribute

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Information Model vs Data Model

- **Information Model –** Conceptual information about different entities (High Level)

- **Data Model -** Defined at more concrete level and defines relationship between objects.

Designers

Information Model

Implementors

Data Model

Data Model

Data Model

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Types of Information Models: Hierarchical

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                              ┌──────────┐
                              │   Head   │
                              └──────────┘
              ┌───────────────────┼───────────────────┐
    ┌──────────────────┐ ┌────────────────────┐ ┌─────────────┐
    │ Director Finance │ │ Director Operations│ │ Director IT │
    └──────────────────┘ └────────────────────┘ └─────────────┘
      ┌────────┴────────┐                      ┌───────┴────────┐
┌─────────────────┐ ┌────────────┐      ┌────────────┐ ┌───────────────┐
│ Account Manager │ │ Marketing  │      │ IT Manager │ │ Sales Manager │
│                 │ │ Manager    │      │            │ │               │
└─────────────────┘ └────────────┘      └────────────┘ └───────────────┘
```

First Hierarchical Database management system – Information Management System released by IBM in 1968 for Apollo Space program

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Relational Model

- Most used Data model
- Allows for data independence
- Data is stored in tables

Logical data independence

Physical data independence

Physical storage independence

AUTHOR

| Author_id |
| Last_name |
| First_name |
| Email |
| City |

AUTHOR_LIST

| Author_id(fk) |
| Book_id(pk) |
| Role |

BOOK

| book_id |
| book_title |
| Edition |
| year |
| Price |

BORROWER

| Borrower_id |
| Last_name |
| First_name |
| Email |
| address |

BORROWER

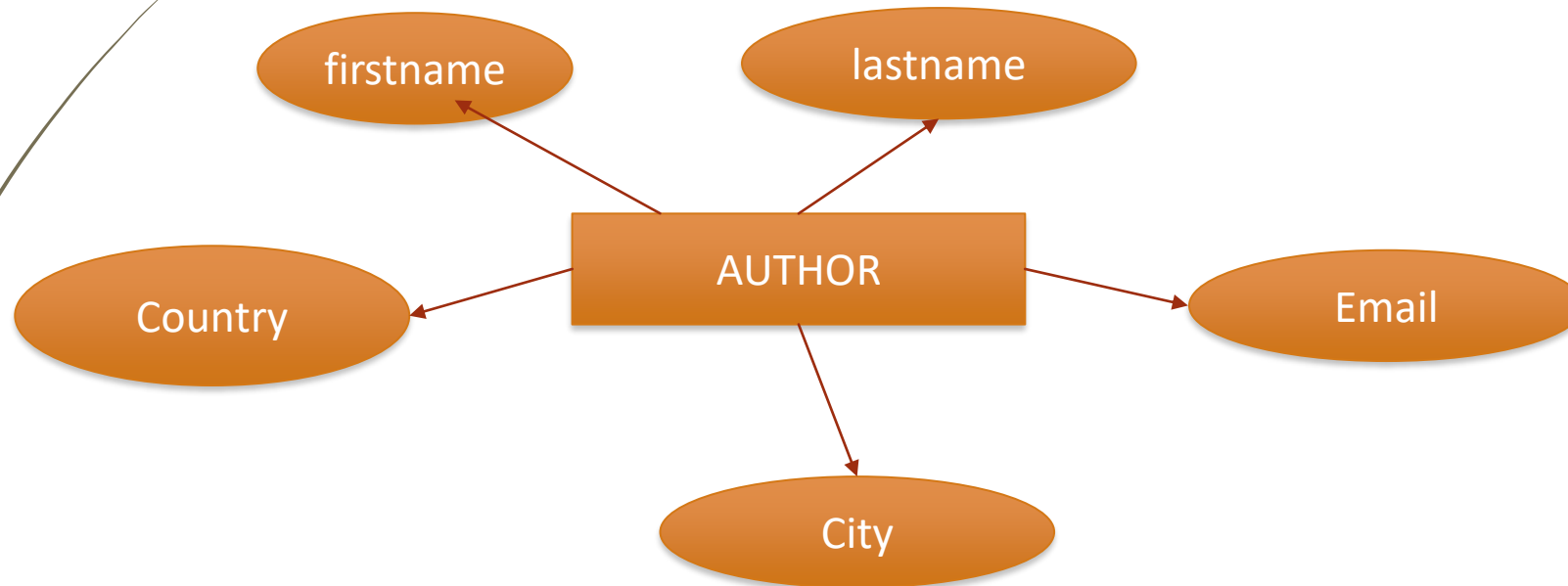| Borrower_id |
| Last_name |
| First_name |
| Email |
| address |

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Entity Relationship Model

- Used as a tool to design relational databases

- Building Blocks – Entities and Attributes
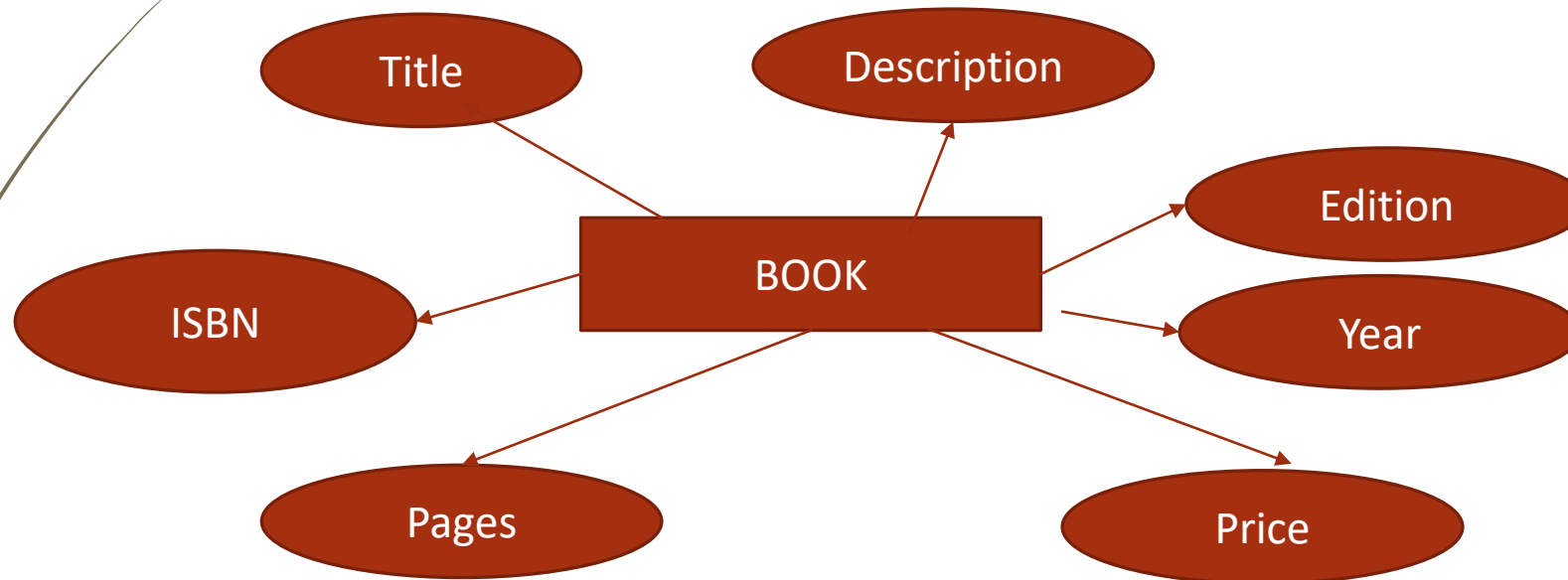
Entity Relationship Diagram

- Simplified library example
- Author as an entity

Summary

- Information Models vs Data Models

- Entity Relationship Models