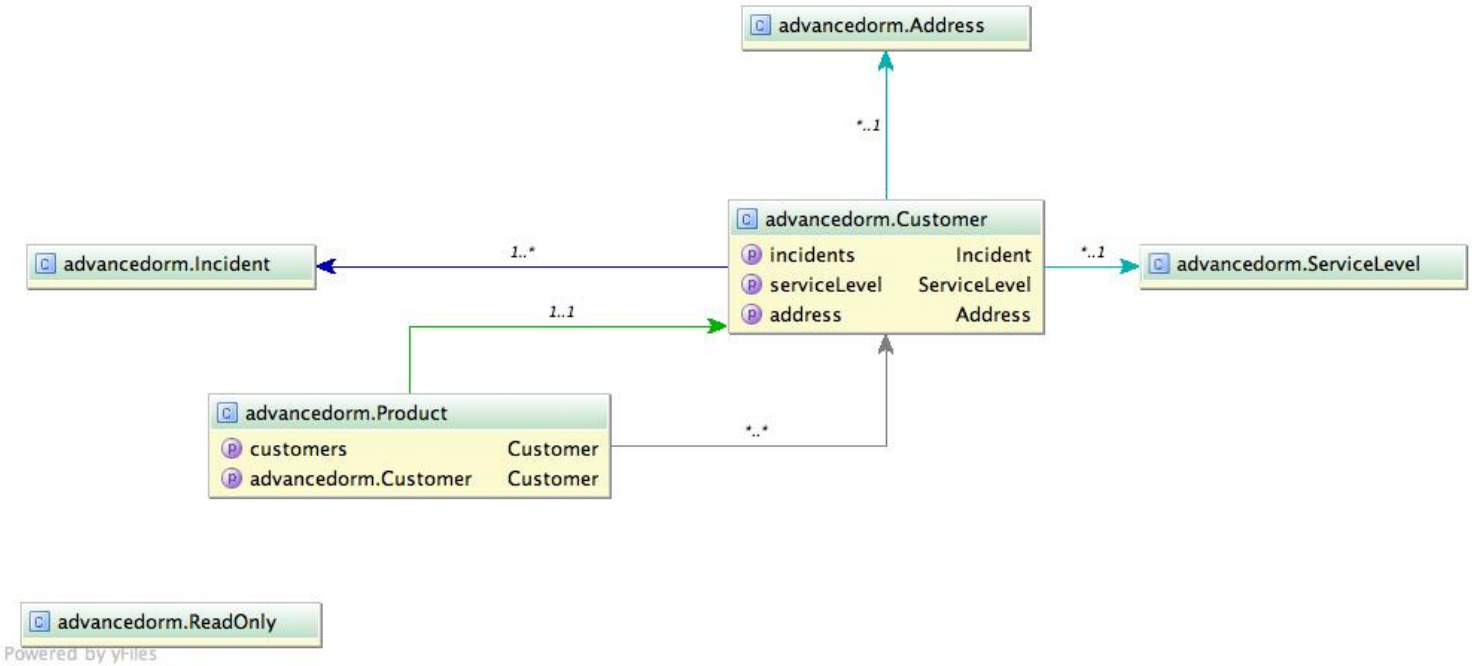
Introduction to Object Relational Mapping

1



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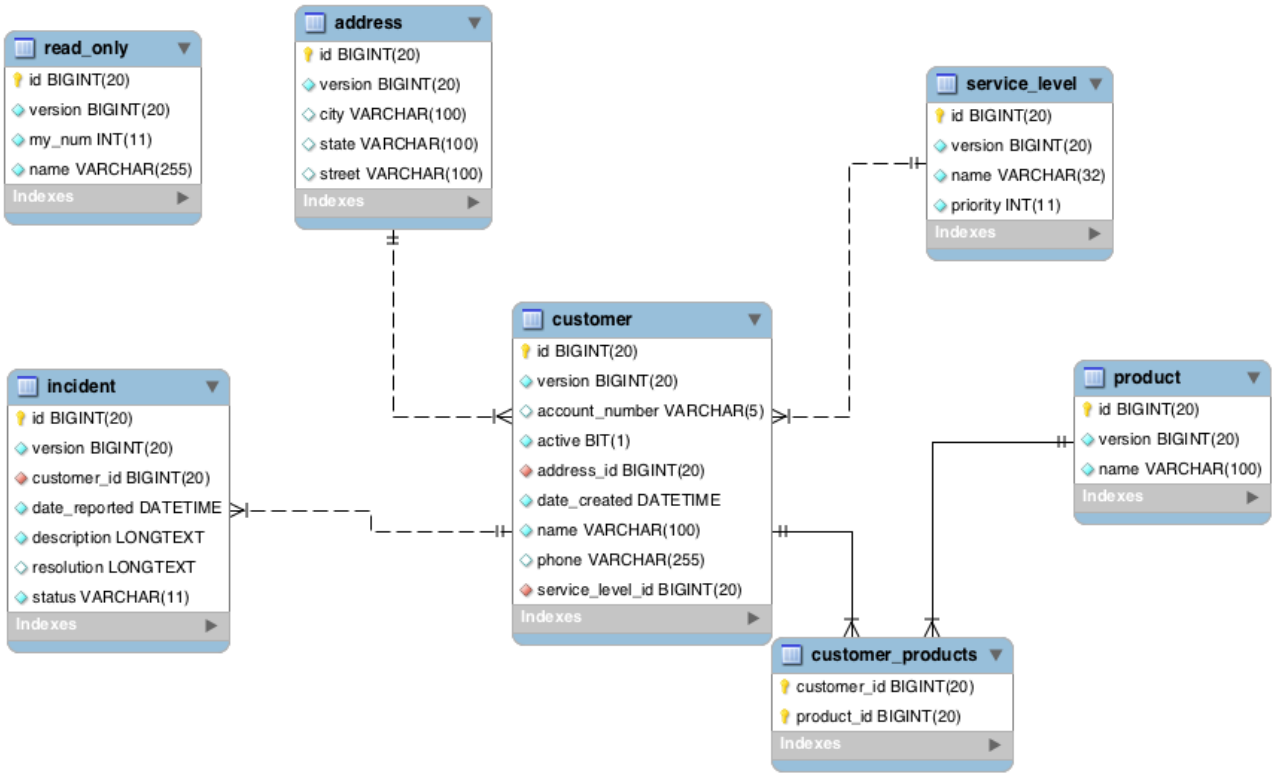

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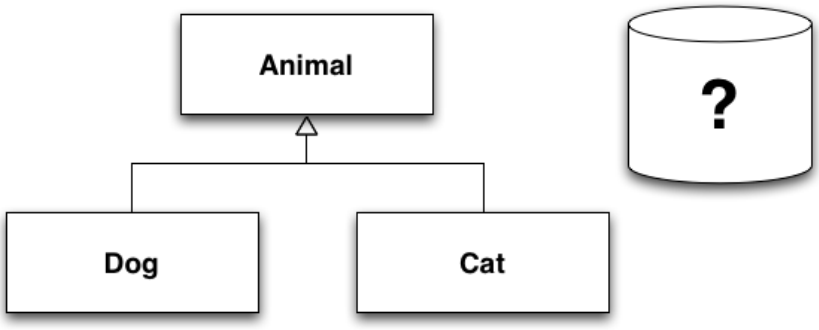
Object Relational Impedance Mismatch

- Inheritance, abstraction, polymorphism



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Object Relational Impedance Mismatch

- Different data types (String vs. VARCHAR(255))

```
class Customer {
    Long id
    String name // how many characters long could this be?
}
```

```
mysql> describe customer;
+----------------+--------------+------+-----+---------+
| Field          | Type         | Null | Key | Default |
+----------------+--------------+------+-----+---------+
| id             | bigint(20)   | NO   | PRI | NULL    |
| name           | varchar(255) | NO   |     | NULL    |
+----------------+--------------+------+-----+---------+
```

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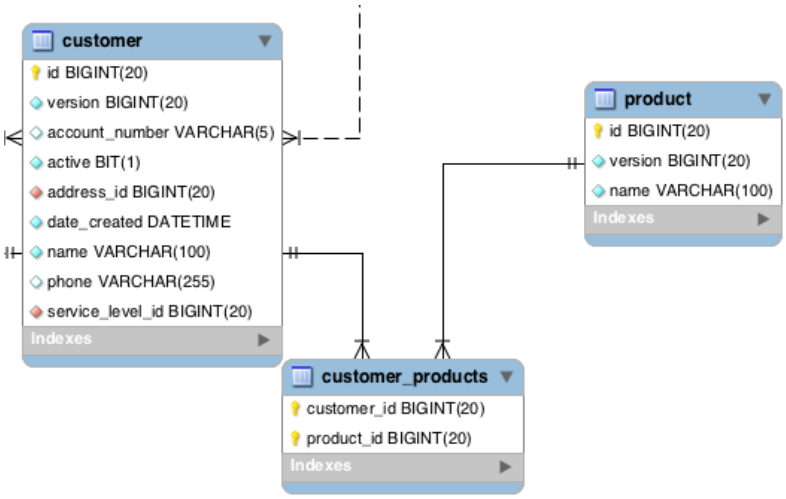
Object Relational Impedance Mismatch

- Relationships
  - objects are related by reference, DB records related by primary and foreign keys



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impedance mismatch

http://www.flickr.com/photos/jeffsand/3871415191

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Why

- Databases are good at storing data
- Relational Databases are common
- Proven mathematical foundation
  - Edgar F. Codd, "A Relational Model of Data for Large Shared Data Banks" 1970
- Mature products (both for profit and open source)
  - Oracle, SQL Server
  - MySql, PostgreSQL

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It's changing

- NoSQL - Not Only SQL
  - key/value
  - document
  - graph
  - column
- Relational model isn't *always* the best mechanism to store data for every application

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ORM Persistence patterns

- Service / Data Transfer Object

```
class Customer { // domain class
    Long id
    String name
    CustomerDTO buildDto(){...}
}

class CustomerDto { // data transfer object
    Long id
    String name
}

class CustomerService { // persistence logic
    void save(CustomerDto){....}
    CustomerDto read(Long id){....}
}
```

ORM Persistence patterns

- Data Access Object

```
class Customer { // domain class
    Long id
    String name
}

class CustomerDao { // data access object
    void save(CustomerDao){....}
    CustomerDao read(Long id){....}
}
```

ORM Persistence patterns

- Active Record

```
class Customer { // domain class
    Long id
    String name

    void save(){....}
    Customer read(Long id){....}
}
```

ORM Frameworks (just to name a few)

- Java
  - Hibernate (Grails default)
  - IBATIS
  - JDO
  - EclipseLink
- .NET
  - NHibernate
  - Entity Framework

References

- http://www.agiledata.org/essays/mappingObjects.html
- "Persistence in the Enterprise: A Guide to Persistence Technologies" Geoffrey Hambrick
- http://en.wikipedia.org/wiki/Relational_model

- http://www.dcs.fmph.uniba.sk/diplomovky/obhajene/getfile.php/dp.orsag.orm.pdf?id=86&fid=147&type=application%2Fpdf
- http://www.seas.upenn.edu/~zives/03f/cis550/codd.pdf