

In this lecture, we will discuss...

✧ Relationships

- One to One
- One to Many
- Many to Many

One to One Relationships

✧ Employee → Address

```
{
  "_id": "jdoe",
  "name": "John Doe",
  "address": {
    "street": "123 Some Street",
    "city": "Some City",
    "state": "CA",
    "zip": "12345"
  }
}
```

One to Many Relationships

```
1  {
2    "_id": "jdoe",
3    "name": "John Doe",
4    "addresses": [
5
6      {
7        "street": "123 Some Street",
8        "city": "Some City",
9        "state": "CA",
10       "zip": "12345"
11      },
12
13     {
14       "street": "456 Second Street",
15       "city": "Some City",
16       "state": "DC",
17       "zip": "20010"
18     }
19   ]
20 }
21 }
```



Many to Many Relationships

- ✧ Movie → Actor
 - Movie can have many actors
 - Actor can be in many movies
- ✧ Two design approaches
 - Embedding
 - Linking

Movie → Actor (Embedding)

```
1 {
2   "_id": 101,
3   "title": "The Departed",
4   "type": "Movie",
5   "director": "Martin Scorsese",
6   "actors": [
7     {
8       "actorName": "Leonardo DiCaprio",
9       "character": "Billy",
10      "main": true,
11      "urlCharacter": "http://www.imdb.com/character/ch0251381",
12      "urlProfile": "http://www.imdb.com/name/nm0000138"
13    },
14    {
15      "actorName": "Matt Damon",
16      "character": "Colin Sullivan",
17      "main": true,
18      "urlCharacter": "http://www.imdb.com/character/ch0002488",
19      "urlProfile": "http://www.imdb.com/name/nm0000354"
20    }
21  ]
22 }
```

Movie \leftrightarrow Actor (Linking)

```
1 {
2   "_id": 101,
3   "title": "The Departed",
4   "type": "Movie",
5   "director": "Martin Scorsese",
6   "actors": [
7     "nm0000138",
8     "nm0000354",
9     "nm0000197"
10  ]
11 }
```

```
1 {
2   "actorId": "nm0000354",
3   "bio": "Matthew Paige Damon was born on October 8, 1970..... ",
4   "birthName": "Matthew Paige Damon",
5   "dateOfBirth": "8 October 1970",
6   "height": "5' 10\" (1.78 m)",
7   "name": "Matt Damon",
8   "placeOfBirth": " Boston, Massachusetts, USA",
9   "movies": [
10    {
11      "_id": 101
12    },
13    {
14      "_id": 102
15    }
16  ]
17 }
```

Many To Many Relationships

- ✧ Can put relation in **either one** of the documents (Movies with Actors OR Actors with Movies)
- ✧ “Application centric approach” – focus will be on **how data is accessed** from the application



Linking vs. Embedding

- ✧ Embedding – similar to pre-joins
- ✧ Embedded documents are **easy to handle** for clients
- ✧ Linking – more flexible but **extra work** at application level

Summary

- ✧ Embedded vs. Linking

What's Next?

- ✧ GridFS
- ✧ Geospatial Specifications

