



Chapter 4: Patterns (Part 2)

Lab: Apply the Polymorphic Pattern

Problem:

User Story

Our recruiting agency has just picked up a big international client named Techsy. They want us to take over their recruitment infrastructure for the foreseeable future. Techsy has various community outreach and diversity initiative programs that are focused on recruiting which have to be incorporated into our existing system.

Before working with Techsy, most of our recruiting documents looked like this:

COPY

```
{
  "_id": ObjectId("5caa9e799c0aa5e39686f803"),
  "first_name": "Arya",
  "last_name": "Stark",
  "engineer_level": 3,
  "education": [{
    "level": "BS",
    "subject": "Computer Science"
  }],
  "years_experience": 3,
  "previous_employer": "Hooli",
  "technical": ["C++", "Python", "Java", "Golang", "MongoDB", "MySQL",
"Bash/Shell"],
  "non-technical": {
    "languages": ["English"],
    "other": ["fencing", "dance", "horseback riding", "management"]
  },
  "candidate_notes": "A fierce warrior and survivor. Will do amazingly on
any team."
}
```

The following two documents are additional types of documents we are now getting from the Techsy team:

COPY

```
[{
  "_id": ObjectId("5caa9e819c0aa5e39686f804"),
  "first_name": "Ginevra",
  "last_name": "Weasley",
  "program_affiliation": "Veteran Outreach Apprenticeship",
  "team_placement": "Server",
  "start_date": ISODate("2017-01-31T00:00:00.000Z"),
  "end_date": ISODate("2018-01-31T00:00:00.000Z"),
  "education": "App Bootcamp",
  "extend_offer": "yes",
  "technical_skills": ["JS", "ReactJS", "NodeJS", "bash/shell", "HTML5",
"CSS", "Ruby on Rails", "Python"],
  "non-technical_skills": {
    "languages": ["English"],
    "other": ["Magic"]
  },
  "notes": "Ginny has been an amazing part of the team during the
apprenticeship and we would love to extend her an offer to join us more
permanently."
}, {
  "_id": ObjectId("5caa9e899c0aa5e39686f805"),
  "name": {
    "first": "Rincewind",
    "last": "TheWizzard"
  },
  "program_affiliation": "Techsy Summer Internship ",
  "team_placement": "Data Optimization",
  "start_date": ISODate("2019-06-01T00:00:00.000Z"),
  "end_date": ISODate("2019-08-31T00:00:00.000Z"),
  "education": [{
    "level": "BA Major",
    "subject": "Philosophy"
  },
  {
    "level": "BS Minor",
    "subject": "Artificial Intelligence"
  }
],
  "extend_offer": "yes",
  "skills": {
    "technical": ["R", "Django", "JavaScript", "Matlab", "HTML5", "CSS",
"Mathematica", "LaTeX", "Java", "JIRA"],
    "languages": ["English", "Chimeran", "Vanglemesht", "Sumtri", "Black
Oroogu", "High Borogravian", "beTrobi"],
    "other": []
  },
  "notes": "Rinecewind has great ideas, but he is a bit of a mess. We
still like him a lot and would love to keep him on board."
}]
```

Our recruiters need to be able to search all the candidates available in the system, meaning that we have to add the Techsy records into our **candidates** collection. After adding their records, we will need to be able to differentiate between the different document shapes.

Task

We've decided that the name format for all the varying document shapes can be structured as two separate fields: **first_name** and **last_name**. However, the rest of the differences are not that easy to consolidate.

To address this, we will use the Polymorphic Pattern to identify the shape of each document depending on which recruiting source it came from. We will make the following modifications to our current schemas:

- Across all documents, we will use two fields for name: **first_name** and **last_name**.
- Across all documents, we will use a field called **recruiting_source** as the indicative field for the document shape.
- In documents that already have an existing **program_affiliation** field, we will use the value of this field as the **recruiting_source**.
- In documents that don't have **program_affiliation**, we will add a new field called **recruiting_source**.
- All documents should indicate whether an offer was extended via the **extend_offer** field.

To complete this task, complete the following steps:

- Modify the following schemas to incorporate the previously-stated changes:

```
[{
  "_id": "<objectId>",
  "first_name": "<string>",
  "last_name": "<string>",
  "engineer_level": "<int>",
  "education": [{
    "level": "<string>",
    "subject": "<string>"
  }],
  "years_experience": "<int>",
  "previous_employer": "<string>",
  "technical": ["<string>"],
  "non-technical": {
    "languages": ["<string>"],
    "other": ["<string>"]
  },
  "candidate_notes": "<string>"
}, {
  "_id": "<objectId>",
  "first_name": "<string>",
  "last_name": "<string>",
  "program_affiliation": "<string>",
  "team_placement": "<string>",
  "start_date": "<date>",
```

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```

"end_date": "<date>",
"education": "<string>",
"extend_offer": "<string>",
"technical_skills": ["<string>"],
"non-technical_skills": {
  "languages": ["<string>"],
  "other": ["<string>"]
},
"notes": "<string>"
}, {
  "_id": "<objectId>",
  "name": {
    "first": "<string>",
    "last": "<string>"
  },
  "program_affiliation": "<string>",
  "team_placement": "<string>",
  "start_date": "<date>",
  "end_date": "<date>",
  "education": [{
    "level": "<string>",
    "subject": "<string>"
  },
  {
    "level": "<string>",
    "subject": "<string>"
  }
],
  "extend_offer": "<string>",
  "skills": {
    "technical": ["<string>"],
    "languages": ["<string>"],
    "other": ["<string>"]
  },
  "notes": "<string>"
}]

```

- Save the updated schemas to a file named **pattern_polymorphic.json**, with each schema definition separated by a comma and the full solution enclosed in array brackets.
- Validate your answer on *Windows* by running in the **CMD** shell:

```
validate_m320 pattern_polymorphic --file pattern_polymorphic
```

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- Validate your answer on *MacOS* and *Linux* by running:

```
./validate_m320 pattern_polymorphic --file pattern_polymorph
```

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After running this script, you will either be given a validation code or an error message indicating what might be missing in your file.

When you get the validation code, paste it in the text box below and click submit.

Attempts Remaining: **Correct Answer**   

Enter answer here:

5caab67a9c0aa5e39686f806

Correct!

[See detailed answer](#)

[Proceed to next section](#)

Assignment is Due

05d:03hr:03m
07 sty, 17:00 UTC

Your Grade

PASS/FAIL
Submitted

Download Handouts

 go/m320/lab_pattern_polymorphic/problem_schema.json