Lecture 44: Bean Output Converter

Introduction:

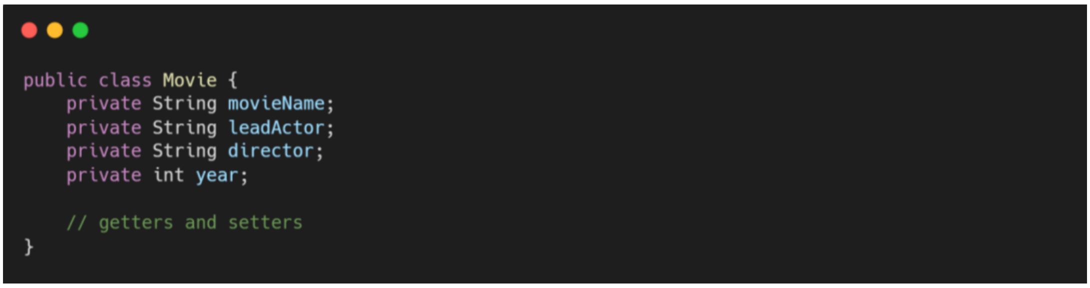
- Often, AI returns plain text or lists, but many applications expect data in the form of a **Java object (Bean)**.
- The **Bean Output Converter** in Spring AI is used to map AI responses into a structured Java class format.

Why Use a Bean Output Converter?

- Plain string output is not structured.
- Bean Output Converter maps the response into a **Java Bean**.
- Useful when you already have entity classes with defined fields.
- Ensures seamless integration with existing models.

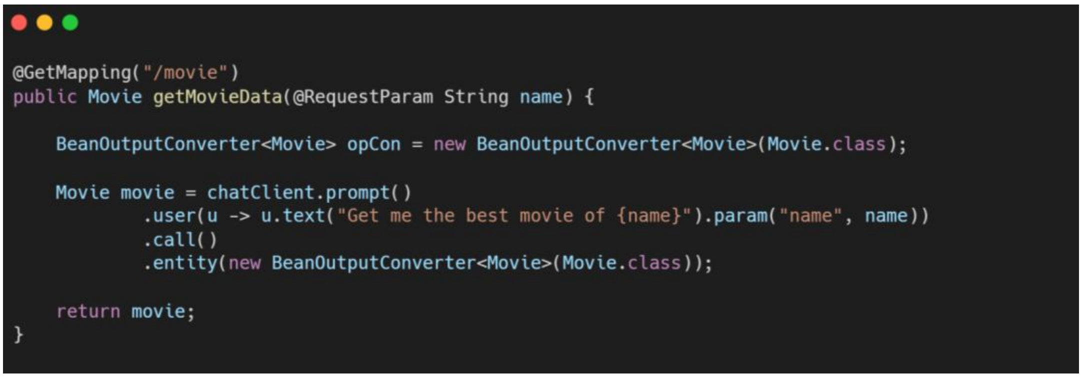
Code Implementation:

- **Movie Class**



```java
public class Movie {
    private String movieName;
    private String leadActor;
    private String director;
    private int year;

    // getters and setters
}
```

- **Logic to Convert into Bean**

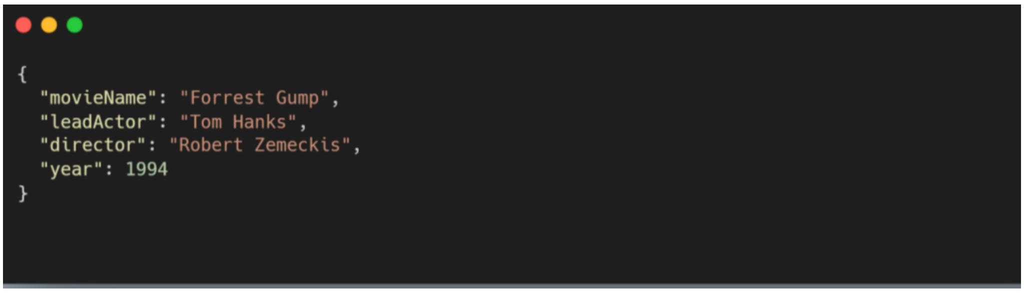


```java
@GetMapping("/movie")
public Movie getMovieData(@RequestParam String name) {

    BeanOutputConverter<Movie> opCon = new BeanOutputConverter<Movie>(Movie.class);

    Movie movie = chatClient.prompt()
            .user(u -> u.text("Get me the best movie of {name}").param("name", name))
            .call()
            .entity(new BeanOutputConverter<Movie>(Movie.class));

    return movie;
}
```

Explanation:

- **Entity Class** → Defines structure (movieName, leadActor, director, year).
- **BeanOutputConverter<Movie>** → Informs Spring AI to use **the Movie** format.
- **Prompt** → e.g., "Get me the best movie of Tom Hanks."

- **AI Output** → Returns structured JSON.
- **Converter** → Converts JSON into a **Movie** object.
- **Example Output:**



```
{
  "movieName": "Forrest Gump",
  "leadActor": "Tom Hanks",
  "director": "Robert Zemeckis",
  "year": 1994
}
```

Key Points:

- Maps AI output directly into a Java Bean.
- Requires specifying the class type.
- Works well when the AI is guided to output in JSON.
- Makes results directly usable in enterprise applications.

Summary:

- **Bean Output Converter** → Converts AI text into Java objects.
- Best for scenarios where structured data is needed
- Requires entity definition and converter setup.
- Ensures clean integration between AI output and business logic.