Book.java

```java
package com.lib.LiMS.model;

import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;
import org.springframework.data.annotation.Id;
import org.springframework.data.mongodb.core.mapping.Document;

@Document(collection = "books")
@Data
@AllArgsConstructor
@NoArgsConstructor
public class Book {
    @Id
    private String id;

    private String title;
    private String author;
    private String genre;
    private int publicationYear;
    private String shelfLocation;
}
```

BookRepository.java

```java
package com.lib.LiMS.repository;

import com.lib.LiMS.model.Book;
import org.springframework.data.mongodb.repository.MongoRepository;
import org.springframework.transaction.annotation.Transactional;

import java.util.List;
import java.util.Optional;

public interface BookRepository extends MongoRepository<Book, String> {

    List<Book> findByPublicationYear(int publicationYear);

    Optional<Book> findGenreById(String id);

    @Transactional
    void deleteByPublicationYear(int publicationYear);
}
```

BookService.java

```java
package com.lib.LiMS.service;

import com.lib.LiMS.model.Book;
import org.springframework.stereotype.Service;

import java.util.List;
import java.util.Optional;

@Service
public interface BookService {
    Book createBook(Book book);
    List<Book> getAllBooks();
    Book getBookById(String id);
    Book updateBook(String id, Book book);
    void deleteBookById(String id);
    List<Book> getBooksByYear(int year);
    Optional<String> getGenreById(String id);
    void deleteByYear(int publicationYear);

}
```

BookServiceImpl.java

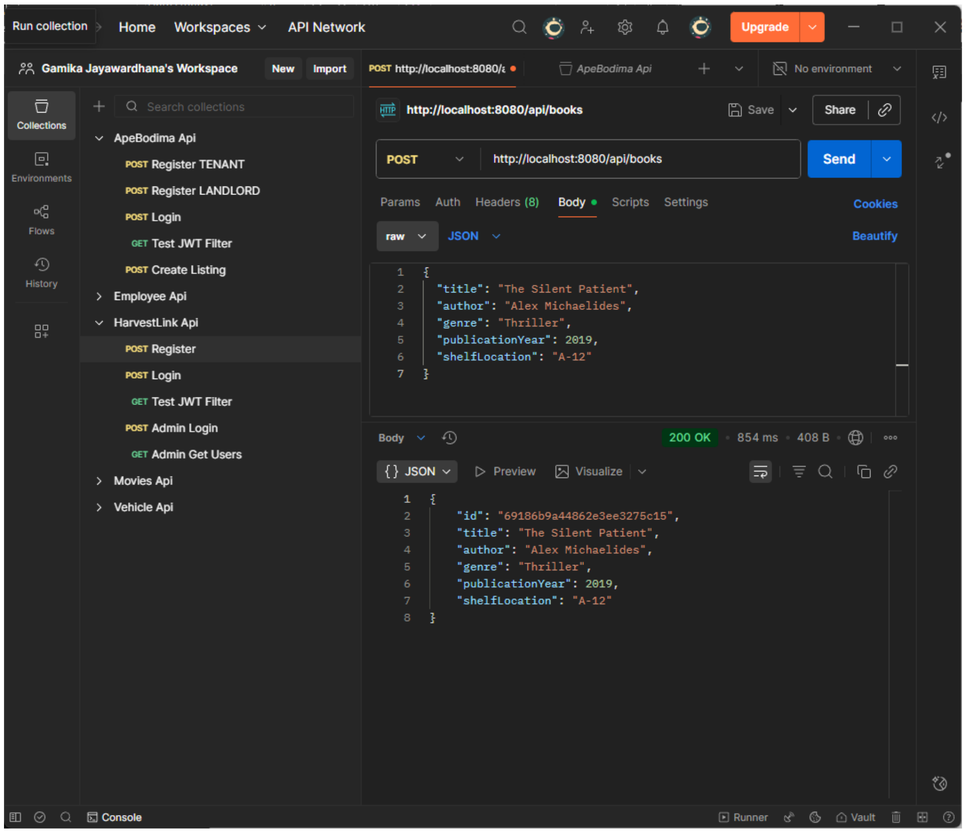
```java
package com.lib.LiMS.service.impl;

import com.lib.LiMS.model.Book;
import com.lib.LiMS.repository.BookRepository;
import com.lib.LiMS.service.BookService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import java.util.List;
import java.util.Optional;

@Service
public class BookServiceImpl implements BookService {


    @Autowired
    private BookRepository bookRepository;

    @Override
    public Book createBook(Book book) {
        return bookRepository.save(book);
    }

    @Override
    public List<Book> getAllBooks() {
        return bookRepository.findAll();
    }
    @Override
    public Book getBookById(String id) {
        Optional<Book> book = bookRepository.findById(id);
        return book.orElse(null);
        //return null or throw an exception
    }

    @Override
    public Book updateBook(String id,Book book) {
        if(bookRepository.existsById(id)){
            book.setId(id);
            return bookRepository.save(book);
        }
        return null;
    }

    @Override
    public void deleteBookById(String id) {
        bookRepository.deleteById(id);

    }

    @Override
    public List<Book> getBooksByYear(int year) {
        return bookRepository.findByPublicationYear(year);

    }

    @Override
    public Optional<String> getGenreById(String id) {
       Optional<Book> book = bookRepository.findGenreById(id);
       return book.map(Book::getGenre);
    }

    @Override
    public void deleteByYear(int publicationYear) {
        bookRepository.deleteByPublicationYear(publicationYear);

    }


}
```

BookController.java

```
package com.lib.LiMS.controller;

import com.lib.LiMS.model.Book;
import com.lib.LiMS.service.BookService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.http.ResponseEntity;
import org.springframework.web.bind.annotation.*;
```

```java
import java.util.List;
import java.util.Optional;

@RestController
@CrossOrigin(origins = "*")
@RequestMapping("api/books")
public class BookController {

    @Autowired
    private BookService bookService;

    @PostMapping
    public ResponseEntity<Book> createBook(@RequestBody Book book){
        Book newBook = bookService.createBook(book);
        return ResponseEntity.ok(newBook);
    }

    @GetMapping
    public ResponseEntity<List<Book>> getAllBooks(){
        List<Book> books = bookService.getAllBooks();
        return ResponseEntity.ok(books);
    }

    @GetMapping("/{id}")
    public ResponseEntity<Book> getBookByID(@PathVariable String id){
        Book book = bookService.getBookById(id);
        return book != null? ResponseEntity.ok(book):
ResponseEntity.notFound().build();
    }

    @PutMapping("/{id}")
    public ResponseEntity<Book> updateBook(@PathVariable String id,
@RequestBody Book book) {
        Book updatedBook = bookService.updateBook(id, book);
        return updatedBook != null ? ResponseEntity.ok(updatedBook) :
ResponseEntity.notFound().build();
    }

    @DeleteMapping("/{id}")
    public ResponseEntity<Book> deleteBook(@PathVariable String id){
        bookService.deleteBookById(id);
        return ResponseEntity.noContent().build();
    }

    @GetMapping("/year/{year}")
    public ResponseEntity<List<Book>> getBooksByYear(@PathVariable int year){
        List<Book> books = bookService.getBooksByYear(year);
        return ResponseEntity.ok(books);
    }

    @GetMapping("/{id}/genre")
    public ResponseEntity<String> getGenre(@PathVariable String id){
        Optional<String> genre = bookService.getGenreById(id);
        return genre.map(ResponseEntity::ok).orElseGet(() ->
ResponseEntity.notFound().build());
```

```
    }

    @DeleteMapping("/year/{year}")
    public ResponseEntity<String> deleteBookByYear(@PathVariable int year){
        bookService.deleteByYear(year);
        return ResponseEntity.ok("Successfully deleted all service record for
the year: " + year);
    }


}
```



POST http://localhost:8080/api/books

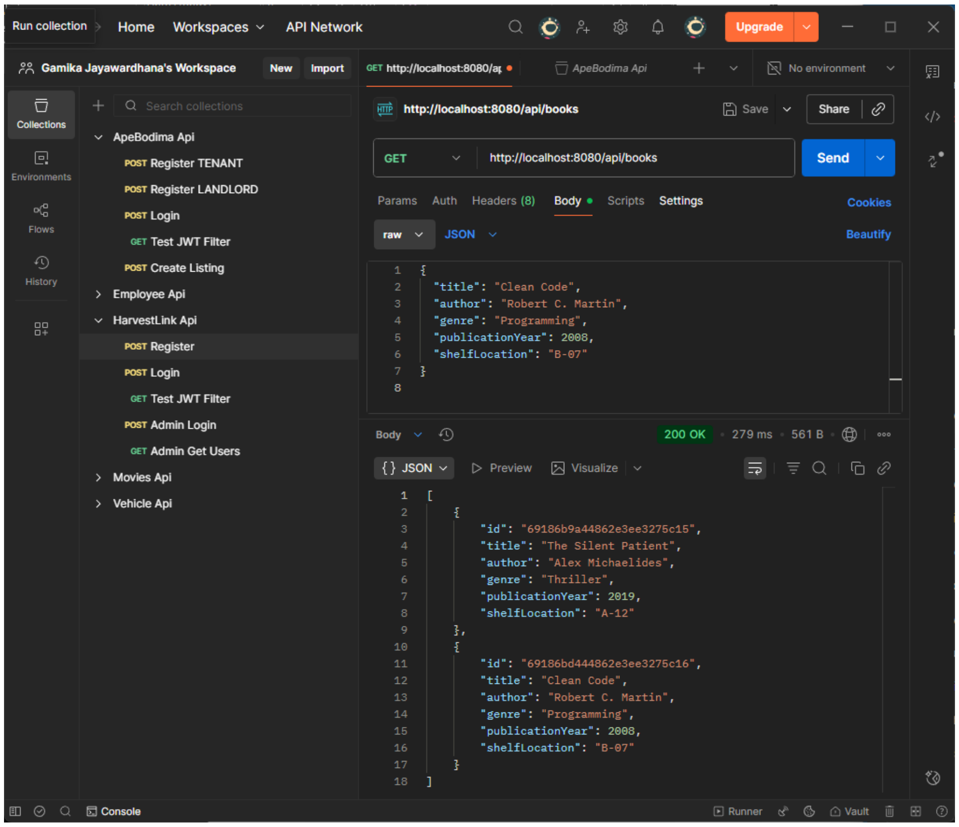
raw JSON

```
{
  "title": "The Silent Patient",
  "author": "Alex Michaelides",
  "genre": "Thriller",
  "publicationYear": 2019,
  "shelfLocation": "A-12"
}
```

Body 200 OK · 854 ms · 408 B

{} JSON

```
{
    "id": "69186b9a44862e3ee3275c15",
    "title": "The Silent Patient",
    "author": "Alex Michaelides",
    "genre": "Thriller",
    "publicationYear": 2019,
    "shelfLocation": "A-12"
}
```

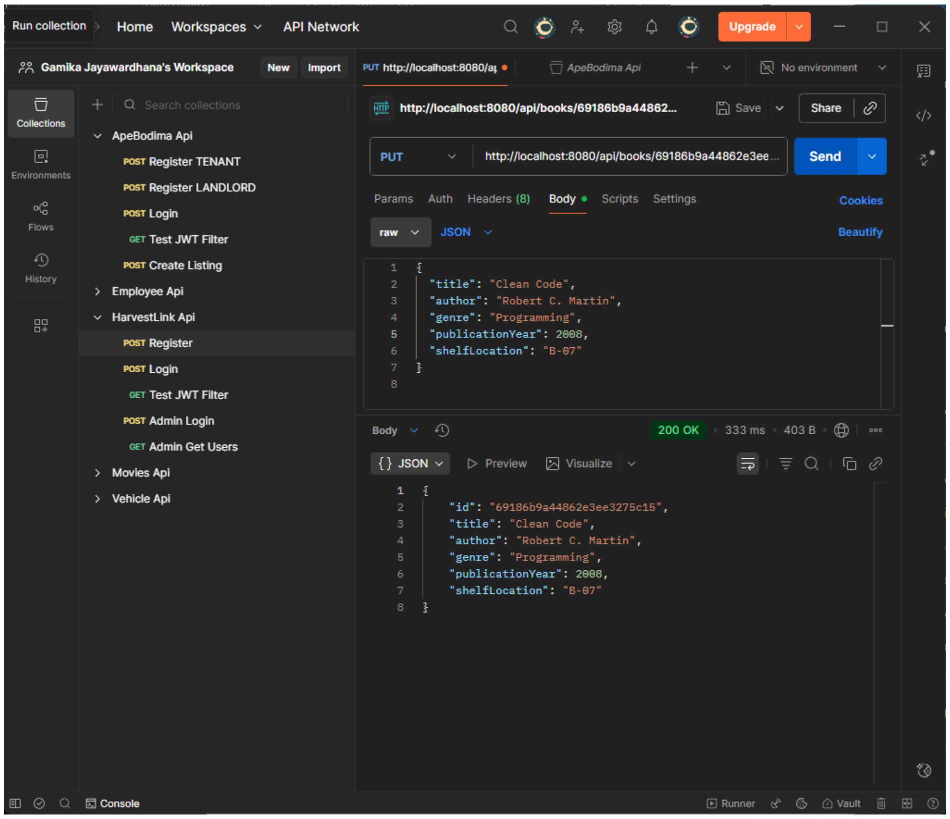


GET http://localhost:8080/api/books

```
{
  "title": "Clean Code",
  "author": "Robert C. Martin",
  "genre": "Programming",
  "publicationYear": 2008,
  "shelfLocation": "B-07"
}
```

200 OK • 279 ms • 561 B

```
[
    {
        "id": "69186b9a44862e3ee3275c15",
        "title": "The Silent Patient",
        "author": "Alex Michaelides",
        "genre": "Thriller",
        "publicationYear": 2019,
        "shelfLocation": "A-12"
    },
    {
        "id": "69186bd444862e3ee3275c16",
        "title": "Clean Code",
        "author": "Robert C. Martin",
        "genre": "Programming",
        "publicationYear": 2008,
        "shelfLocation": "B-07"
    }
]
```

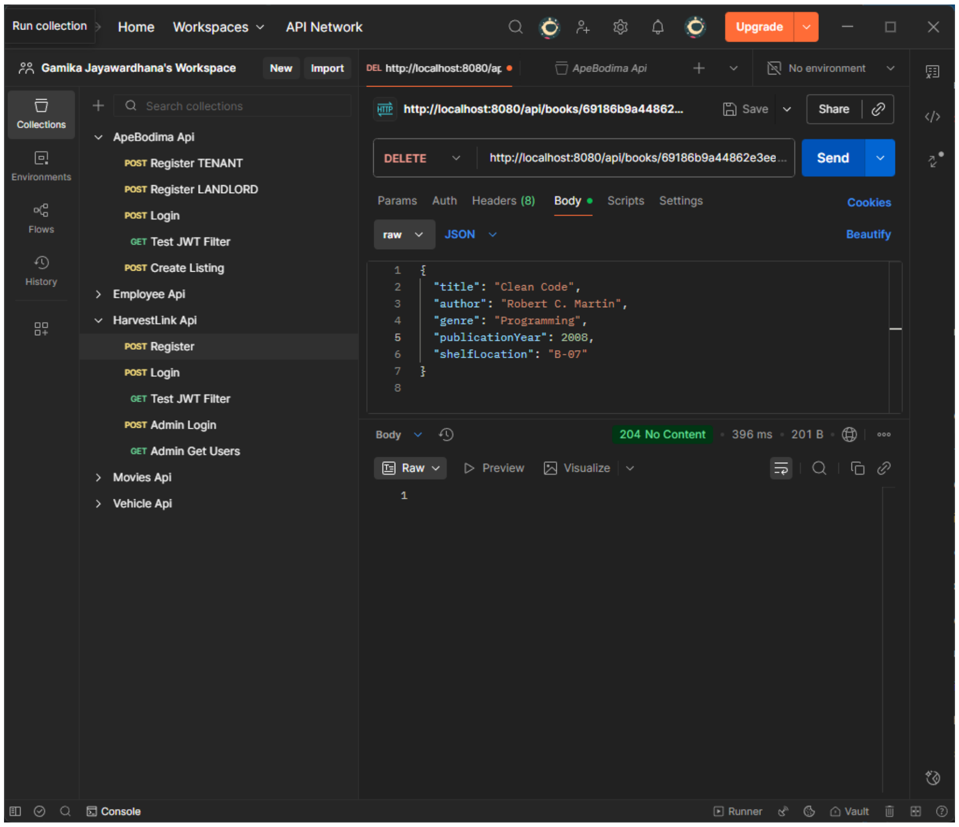


PUT http://localhost:8080/api/books/69186b9a44862e3ee...

```
{
  "title": "Clean Code",
  "author": "Robert C. Martin",
  "genre": "Programming",
  "publicationYear": 2008,
  "shelfLocation": "B-07"
}
```

200 OK • 333 ms • 403 B

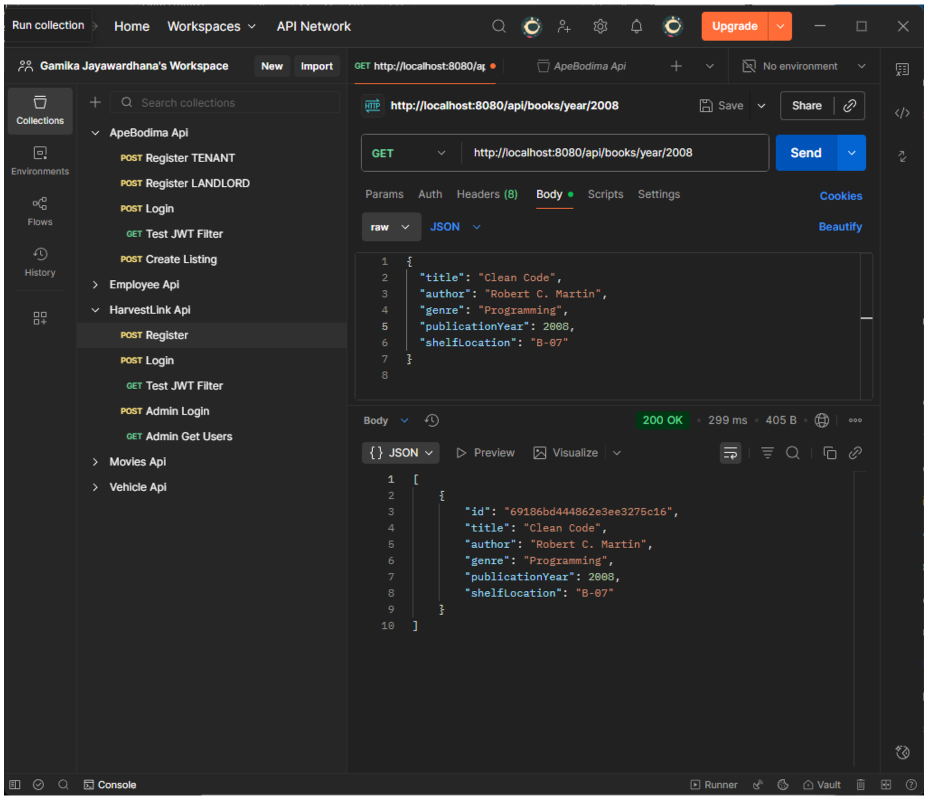
```
{
    "id": "69186b9a44862e3ee3275c15",
    "title": "Clean Code",
    "author": "Robert C. Martin",
    "genre": "Programming",
    "publicationYear": 2008,
    "shelfLocation": "B-07"
}
```



DELETE http://localhost:8080/api/books/69186b9a44862e3ee...

```
{
  "title": "Clean Code",
  "author": "Robert C. Martin",
  "genre": "Programming",
  "publicationYear": 2008,
  "shelfLocation": "B-07"
}
```

204 No Content · 396 ms · 201 B

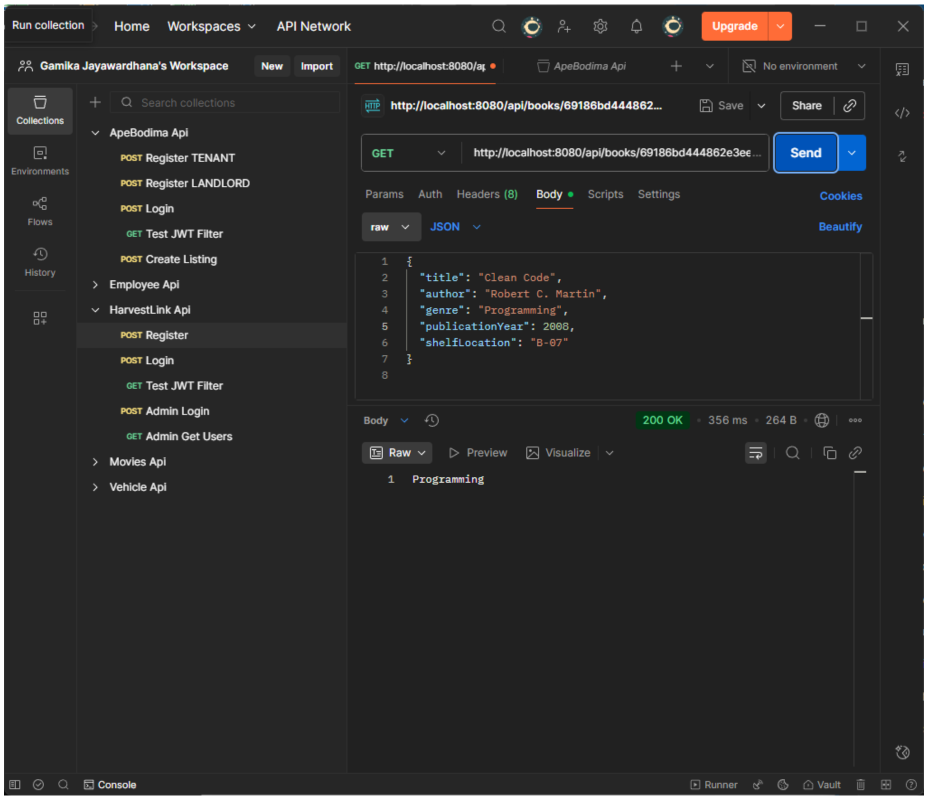


GET http://localhost:8080/api/books/year/2008

```
{
  "title": "Clean Code",
  "author": "Robert C. Martin",
  "genre": "Programming",
  "publicationYear": 2008,
  "shelfLocation": "B-07"
}
```

200 OK · 299 ms · 405 B

```
[
    {
        "id": "69186bd444862e3ee3275c16",
        "title": "Clean Code",
        "author": "Robert C. Martin",
        "genre": "Programming",
        "publicationYear": 2008,
        "shelfLocation": "B-07"
    }
]
```

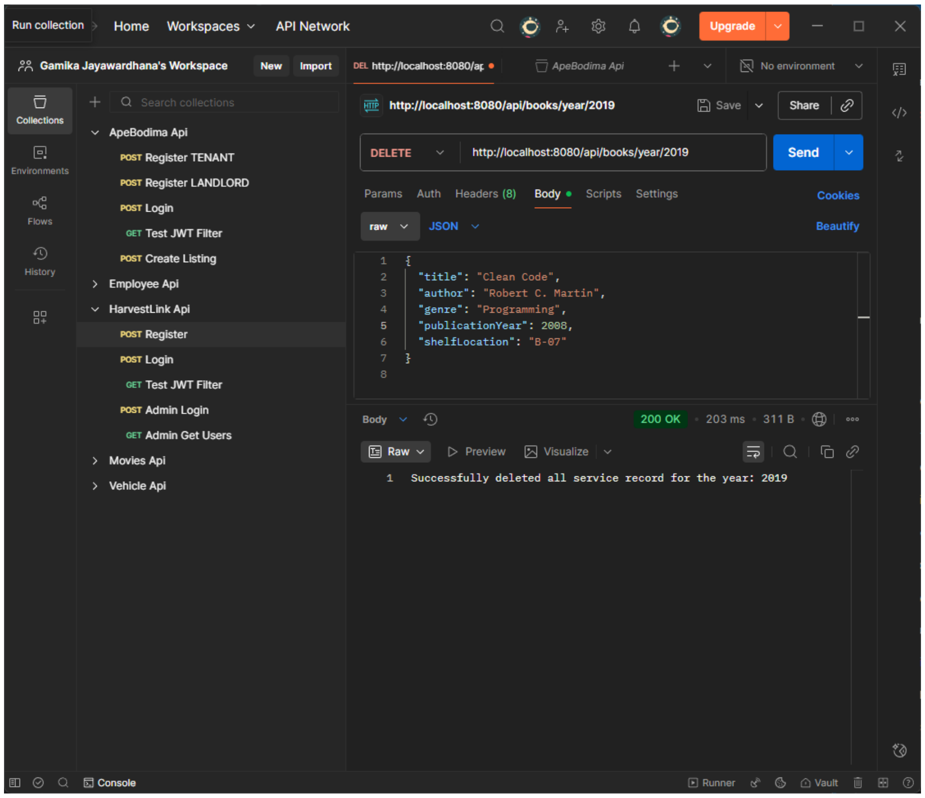


GET http://localhost:8080/api/books/69186bd444862e3ee...

```
{
  "title": "Clean Code",
  "author": "Robert C. Martin",
  "genre": "Programming",
  "publicationYear": 2008,
  "shelfLocation": "B-07"
}
```

200 OK · 356 ms · 264 B

```
Programming
```



DELETE http://localhost:8080/api/books/year/2019

```
{
  "title": "Clean Code",
  "author": "Robert C. Martin",
  "genre": "Programming",
  "publicationYear": 2008,
  "shelfLocation": "B-07"
}
```

200 OK · 203 ms · 311 B

```
Successfully deleted all service record for the year: 2019
```