Spring Boot – Adding Pagination And Sorting In Home Page Continues

Updated SeedData.java

```
package org.studyeasy.SpringBlog.config;

import java.time.LocalDate;
import java.util.HashSet;
import java.util.List;
import java.util.Set;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.CommandLineRunner;
import org.springframework.stereotype.Component;
import org.studyeasy.SpringBlog.models.Account;
import org.studyeasy.SpringBlog.models.Authority;
import org.studyeasy.SpringBlog.models.Post;
import org.studyeasy.SpringBlog.services.AccountService;
import org.studyeasy.SpringBlog.services.AuthorityService;
import org.studyeasy.SpringBlog.services.PostService;
import org.studyeasy.SpringBlog.util.constants.Privillages;
import org.studyeasy.SpringBlog.util.constants.Roles;

@Component
public class SeedData implements CommandLineRunner{

    @Autowired
    private PostService postService;

    @Autowired
    private AccountService accountService;

    @Autowired
    private AuthorityService authorityService;

    @Override
    public void run(String... args) throws Exception {

       for(Privillages auth: Privillages.values()){
            Authority authority = new Authority();
            authority.setId(auth.getId());
            authority.setName(auth.getPrivillage());
            authorityService.save(authority);

       }
```

```
Account account01 = new Account();
Account account02 = new Account();
Account account03 = new Account();
Account account04 = new Account();

account01.setEmail("user@user.com");
account01.setPassword("pass987");
account01.setFirstname("User");
account01.setLastname("lastname");
account01.setAge(25);
account01.setDate_of_birth(LocalDate.parse("1990-01-01"));
account01.setGender("Male");



account02.setEmail("admin@studyeasy.org");
account02.setPassword("pass987");
account02.setFirstname("Admin");
account02.setLastname("lastname");
account02.setRole(Roles.ADMIN.getRole());
account02.setAge(25);
account02.setDate_of_birth(LocalDate.parse("1990-01-01"));
account02.setGender("Famale");

account03.setEmail("editor@editor.com");
account03.setPassword("pass987");
account03.setFirstname("Editor");
account03.setLastname("lastname");
account03.setRole(Roles.EDITOR.getRole());
account03.setAge(55);
account03.setDate_of_birth(LocalDate.parse("1975-01-01"));
account03.setGender("Male");

account04.setEmail("super_editor@editor.com");
account04.setPassword("pass987");
account04.setFirstname("Editor");
account04.setLastname("lastname");
account04.setRole(Roles.EDITOR.getRole());
account04.setAge(40);
account04.setDate_of_birth(LocalDate.parse("1980-01-01"));
account04.setGender("Female");


Set<Authority> authorities = new HashSet<>();
```

```
        authorityService.findById(Privillages.ACCESS_ADMIN_PANEL.getId()).ifPresen
t(authorities::add);
        authorityService.findById(Privillages.RESET_ANY_USER_PASSWORD.getId()).ifP
resent(authorities::add);
        account04.setAuthorities(authorities);

        accountService.save(account01);
        accountService.save(account02);
        accountService.save(account03);
        accountService.save(account04);



        List<Post> posts = postService.findAll();
        if (posts.size() == 0){
             Post post01 = new Post();
             post01.setTitle("About Git");
             post01.setBody("""
                Git (/gɪt/)[8] is a distributed version control system: tracking
changes in any set of files, usually used for coordinating work among programmers
collaboratively developing source code during software development. Its goals
include speed, data integrity, and support for distributed, non-linear workflows
(thousands of parallel branches running on different systems).[9][10][11]

                Git was originally authored by Linus Torvalds in 2005 for
development of the Linux kernel, with other kernel developers contributing to its
initial development.[12] Since 2005, Junio Hamano has been the core maintainer.
As with most other distributed version control systems, and unlike most client–
server systems, every Git directory on every computer is a full-fledged
repository with complete history and full version-tracking abilities, independent
of network access or a central server.[13] Git is free and open-source software
distributed under the GPL-2.0-only license.

             """);
             post01.setAccount(account01);
             postService.save(post01);

             Post post02 = new Post();
             post02.setTitle("Spring Boot Model–view–controller framework");
             post02.setBody("""

               <h3><strong>Model–view–controller framework</strong></h3>
               <p><a
href="https://en.wikipedia.org/wiki/File:Spring5JuergenHoeller2.jpg"><img
src="https://upload.wikimedia.org/wikipedia/commons/thumb/7/7b/Spring5JuergenHoel
```

ler2.jpg/220px-Spring5JuergenHoeller2.jpg" alt="" srcset="//upload.wikimedia.org/wikipedia/commons/thumb/7/7b/Spring5JuergenHoeller2.jpg/330px-Spring5JuergenHoeller2.jpg 1.5x, //upload.wikimedia.org/wikipedia/commons/thumb/7/7b/Spring5JuergenHoeller2.jpg/440px-Spring5JuergenHoeller2.jpg 2x" sizes="100vw" width="220">   Spring MVC/Web Reactive presentation given by Jürgen Höller The Spring Framework features its own model–view–controller (MVC) web application framework, which was not originally planned. The Spring developers decided to write their own Web framework as a reaction to what they perceived as the poor design of the (then) popular Jakarta Struts Web framework,[21] as well as deficiencies in other available frameworks. In particular, they felt there was insufficient separation between the presentation and request handling layers, and between the request handling layer and the model.[22] Like Struts, Spring MVC is a request-based framework. The framework defines strategy interfaces for all of the responsibilities that must be handled by a modern request-based framework. The goal of each interface is to be simple and clear so that it's easy for Spring MVC users to write their own implementations, if they so choose. MVC paves the way for cleaner front end code. All interfaces are tightly coupled to the Servlet API. This tight coupling to the Servlet API is seen by some as a failure on the part of the Spring developers to offer a high-level abstraction for Web-based applications[citation needed]. However, this coupling makes sure that the features of the Servlet API remain available to developers while also offering a high abstraction framework to ease working with it. The DispatcherServlet class is the front controller[23] of the framework and is responsible for delegating control to the various interfaces during the execution phases of an HTTP request. The most important interfaces defined by Spring MVC, and their responsibilities, are listed below: Controller: comes between Model and View to manage incoming requests and redirect to proper response. Controller will map the http request to corresponding methods. It acts as a gate that directs the incoming information. It switches between going into model or view.
HandlerAdapter: execution of objects that handle incoming requests
HandlerInterceptor: interception of incoming requests

```
comparable, but not equal to Servlet filters (use is optional and not controlled by DispatcherServlet).</li><li>HandlerMapping: selecting objects that handle incoming requests (handlers) based on any attribute or condition internal or external to those requests</li><li>LocaleResolver: resolving and optionally saving of the <a href="https://en.wikipedia.org/wiki/Locale_(computer_software)">locale</a> of an individual user</li><li>MultipartResolver: facilitate working with file uploads by wrapping incoming requests</li><li>View: responsible for returning a response to the client. Some requests may go straight to view without going to the model part; others may go through all three.</li><li>ViewResolver: selecting a View based on a logical name for the view (use is not strictly required)</li></ul><p>Each strategy interface above has an important responsibility in the overall framework. The abstractions offered by these interfaces are powerful, so to allow for a set of variations in their implementations, Spring MVC ships with implementations of all these interfaces and together offers a feature set on top of the Servlet API. However, developers and vendors are free to write other implementations. Spring MVC uses the Java java.util.Map interface as a data-oriented abstraction for the Model where keys are expected to be string values.</p><p>The ease of testing the implementations of these interfaces seems one important advantage of the high level of abstraction offered by Spring MVC. DispatcherServlet is tightly coupled to the Spring inversion of control container for configuring the web layers of applications. However, web applications can use other parts of the Spring Framework—including the container—and choose not to use Spring MVC.</p>

            """);

            post02.setAccount(account02);
            postService.save(post02);

            Post post03 = new Post();
            post03.setTitle("third post");
            post03.setBody("""
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```

```
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distributed under the GPL-2.0-only license.

            """);
            post03.setAccount(account01);
            postService.save(post03);

            Post post04 = new Post();
            post04.setTitle("Fouth post");
            post04.setBody("""

              <h3><strong>Model–view–controller framework</strong></h3>
              <p><a
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src="https://upload.wikimedia.org/wikipedia/commons/thumb/7/7b/Spring5JuergenHoel
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srcset="//upload.wikimedia.org/wikipedia/commons/thumb/7/7b/Spring5JuergenHoeller
2.jpg/330px-Spring5JuergenHoeller2.jpg 1.5x,
//upload.wikimedia.org/wikipedia/commons/thumb/7/7b/Spring5JuergenHoeller2.jpg/44
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Jürgen Höller</p><p>The Spring Framework features its own <a
href="https://en.wikipedia.org/wiki/Model%E2%80%93view%E2%80%93controller">model–
view–controller</a> (MVC) <a
href="https://en.wikipedia.org/wiki/Web_application_framework">web application
framework</a>, which was not originally planned. The Spring developers decided to
write their own Web framework as a reaction to what they perceived as the poor
design of the (then) popular <a
href="https://en.wikipedia.org/wiki/Jakarta_Struts">Jakarta Struts</a> Web
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particular, they felt there was insufficient separation between the presentation
and request handling layers, and between the request handling layer and the
model.<a href="https://en.wikipedia.org/wiki/Spring_Framework#cite_note-
22">[22]</a></p><p>Like Struts, Spring MVC is a request-based framework. The
framework defines <a
href="https://en.wikipedia.org/wiki/Strategy_pattern">strategy</a> interfaces for
all of the responsibilities that must be handled by a modern request-based
framework. The goal of each interface is to be simple and clear so that it's easy
for Spring MVC users to write their own implementations, if they so choose. MVC
paves the way for cleaner front end code. All interfaces are tightly coupled to
the <a href="https://en.wikipedia.org/wiki/Java_Servlet">Servlet API</a>. This
tight coupling to the Servlet API is seen by some as a failure on the part of the
Spring developers to offer a high-level abstraction for Web-based applications[<a
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```

```
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Servlet API remain available to developers while also offering a high abstraction
framework to ease working with it.</p><p>The DispatcherServlet class is the <a
href="https://en.wikipedia.org/wiki/Front_controller">front controller</a><a
href="https://en.wikipedia.org/wiki/Spring_Framework#cite_note-23">[23]</a> of
the framework and is responsible for delegating control to the various interfaces
during the execution phases of an <a
href="https://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol">HTTP
request</a>.</p><p>The most important interfaces defined by Spring MVC, and their
responsibilities, are listed below:</p><ul><li>Controller: comes between Model
and View to manage incoming requests and redirect to proper response. Controller
will map the http request to corresponding methods. It acts as a gate that
directs the incoming information. It switches between going into model or
view.</li><li>HandlerAdapter: execution of objects that handle incoming
requests</li><li>HandlerInterceptor: interception of incoming requests
comparable, but not equal to Servlet filters (use is optional and not controlled
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Spring inversion of control container for configuring the web layers of
applications. However, web applications can use other parts of the Spring
Framework—including the container—and choose not to use Spring MVC.</p>

            """);

            post04.setAccount(account02);
            postService.save(post04);
```

```
            Post post05 = new Post();
            post05.setTitle("Fifth post");
            post05.setBody("""
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            """);
            post05.setAccount(account01);
            postService.save(post05);

            Post post06 = new Post();
            post06.setTitle("Sixth post");
            post06.setBody("""

              <h3><strong>Model–view–controller framework</strong></h3>
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HandlerMapping: selecting objects that handle incoming requests (handlers) based on any attribute or condition internal or external to those requests
LocaleResolver: resolving and optionally saving of the locale of an individual user
MultipartResolver: facilitate working with file uploads by wrapping incoming requests
View: responsible for returning a response to the client. Some requests may go straight to view without going to the model part; others may go through all three.
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Framework—including the container—and choose not to use Spring MVC.</p>

            """);

            post06.setAccount(account02);
            postService.save(post06);

        }

    }

}
```

In PostService.java

```
public List<Post> getAll(){
        return postRepository.findAll();
    }
```

Change to

```
public List<Post> findAll(){
        return postRepository.findAll();
    }
```

In HomeController.java

```
@GetMapping("/")
    public String home(Model model){
        List<Post> posts = postService.getAll();
        model.addAttribute("posts", posts);
        return "home_views/home";
    }
```

Change to

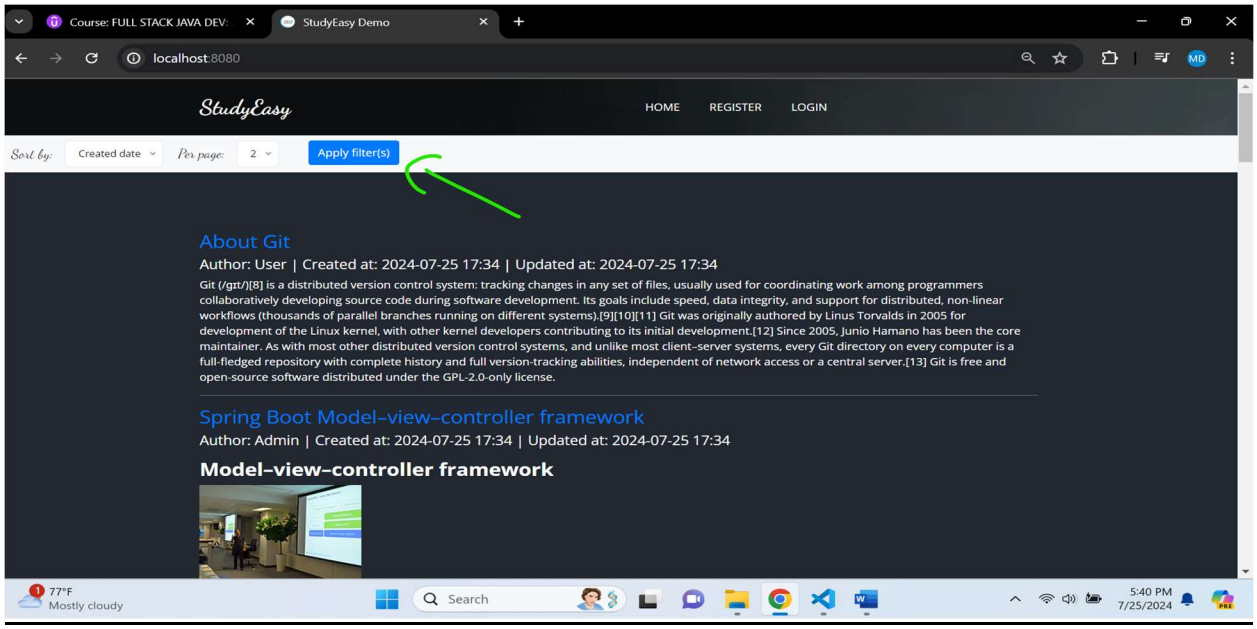
```
@GetMapping("/")
    public String home(Model model){
        List<Post> posts = postService.findAll();
        model.addAttribute("posts", posts);
        return "home_views/home";
    }
```

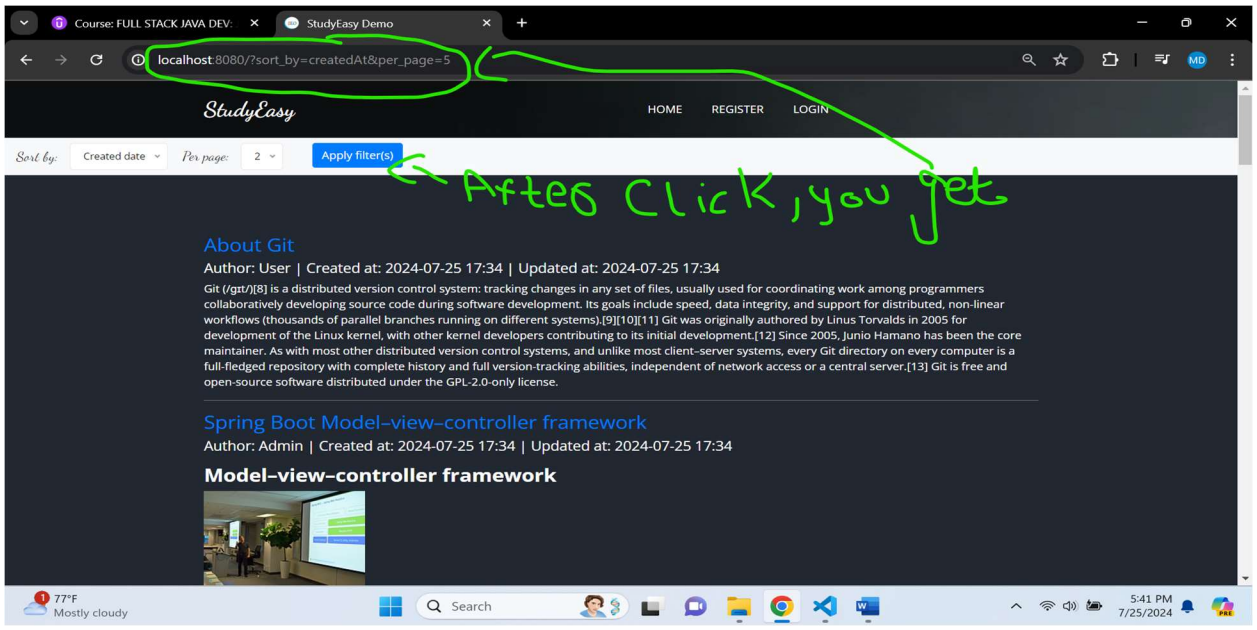
In home.html -> Modify code -> add below code

```
<!-- about section - added code - navbar -->
  <form action="/" , method="get">
    <nav class="navbar navbar-expand-lg navbar-light bg-light">
      <span class="navbar-brand">Sort by: </span>
      <ul class="navbar-nav">
        <li class="nav-item active" style="padding-right: 20px;">
          <div class="dropdown">
            <select class="form-select" aria-label="Default select example"
name="sort_by">
              <option value="createdAt">Created date</option>
              <option value="updatedAt">Updated date</option>
            </select>
          </div>
        </li>

        <span class="navbar-brand">Per page: </span>
        <ul class="navbar-nav">
          <li class="nav-item active" style="padding-right: 20px;">
            <div class="dropdown">
              <select class="form-select" aria-label="Default select example"
name="per_page">
                <option selected value="2">2</option>
                <option value="5">5</option>
                <option value="10">10</option>
                <option value="15">15</option>
              </select>
            </div>
          </li>

          <li class="nav-item active" style="padding-left: 20px;">
            <div class="input-group-prepend">
              <button class="btn btn-primary" type="submit"
id="dropdownMenuButton">
                Apply filter(s)
              </button>
```

```
            </div>
          </li>
        </ul>
    </nav>

</form>
```

Output





Overloading findAll() to get data for the paginated data in PostService.java

Offset – It means which page we are in.

PageSize – How many records there should be in particular page.

```
 //Paginated Page Service
 public Page<Post> findAll(int offset, int pageSize, String field){
   return postRepository.findAll(PageRequest.of(offset,
pageSize).withSort(Direction.ASC, field));
    }
```

----------XXXX----------

Updated HomeController -> home()

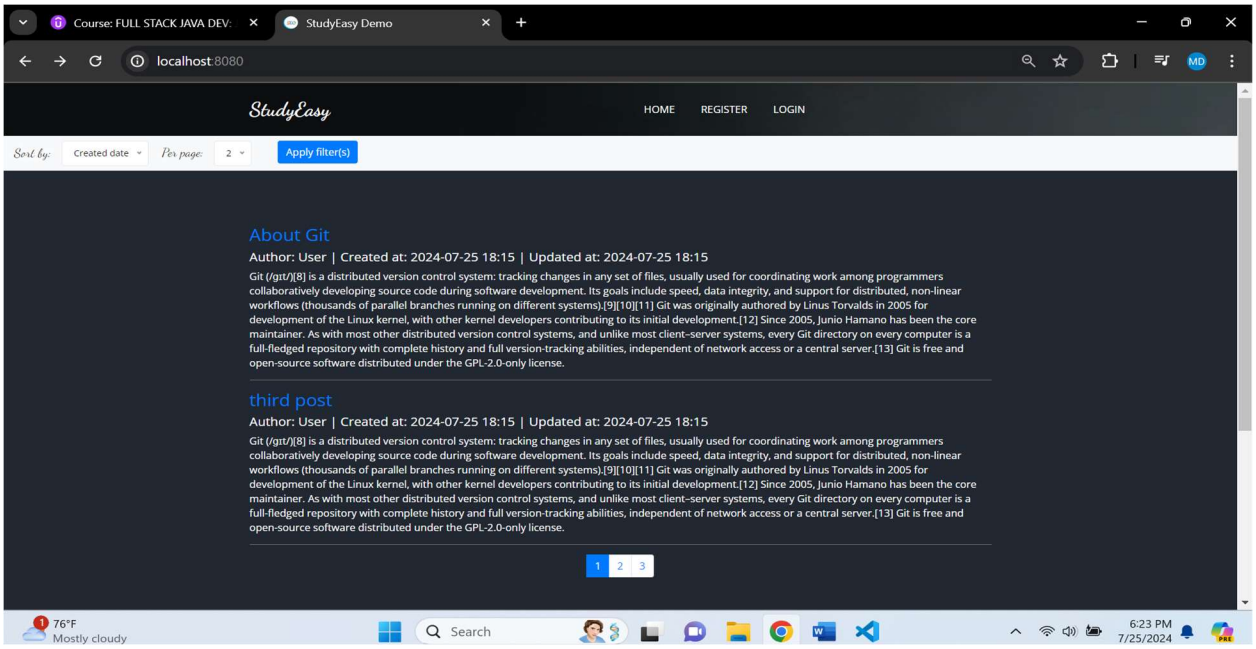
```
  @GetMapping("/")
    public String home(Model model,  @RequestParam(required = false, name =
"sort_by", defaultValue = "createdAt") String sort_by,
      @RequestParam(required = false, name="per_page", defaultValue = "2") String
per_page,
      @RequestParam(required = false, name="page", defaultValue = "1") String
page
    ) {

        Page<Post> posts_on_page = postService.findAll(Integer.parseInt(page)-1,
Integer.parseInt(per_page), sort_by);
        int total_pages = posts_on_page.getTotalPages();
        List<Integer> pages = new ArrayList<>();
        if (total_pages > 0){
            pages = IntStream.rangeClosed(0, total_pages-1)
            .boxed().collect(Collectors.toList());
        }
        List<String> links = new ArrayList<>();

        if(pages != null){
            for(int link : pages){
                String active = "";
                if(link == posts_on_page.getNumber()){
                    active = "active";
                }
                String _temp_link =
"/?per_page="+per_page+"&page="+(link+1)+"&sort_by="+sort_by;
```

```
                links.add("<li class=\"page-item "+active+"\"><a
href=\""+_temp_link+"\" class='page-link'>"+(link+1)+"</a></li>");
            }
            model.addAttribute("links", links);
        }
        model.addAttribute("posts", posts_on_page);
        return "home_views/home";
    }
```

Add this code in home.html

```
   <!--Pagination Code-->
    <nav th:if="${links ne null}" aria-label="...">
      <ul class="pagination justify-content-center">
        <th:block th:each="link: ${links}">
          <li class="page-item">
            <th:block th:utext="${link}">link</th:block>
          </li>
        </th:block>
      </ul>
    </nav>
```

Output



Status : working ; Output :success