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Page<T> findAll(Pageable pageable); (PagingAndSortingRepository)
                         This method takes pagello(i) horsel/page/size as inputs in the form of
Pageshic obj and returns output as Pages-D-/Sites-D-obj
leaving requisited page records, pages count, correntifffinders, total records
and size.
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Puging And Sorting Repusits
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                                                   getContent()--} ListsTo
getTotalPages();
                                                                                                                                                                                                                                                                                 isfirst():
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   pagette pagett
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steps for coding
      step1.) Keep the soliting Mini Project ready
      vrop2) Makeisen ither the Repository interface polating to "Preplayer" model class
is extending. Item PagingSertingRepository()].
                                  //temployeettepository.iona
                                  package com. nr. mpoel ton;
import org. pringlamowork.data repository. Pogingandsorting repository.
Import com.nrt. model. Employee;
                                  public interface (Employee flapository extends Paging And Sorting Repository (Employee, Integer (Continuous Continuous 
                      step^2). Add i pagingation related report method in service interface and ins service, implicites
                                                                   public Page-Employees getEmployees(laportDataSyllage(lageable pageable);
                                                                in service implicates
                                                                                           ortuecniae
public Pages Employees getEmployeesReportEstaDyPage(Pagesble pagesble) (
                                                                                                         return empReps.Hnd4H/pageable);
                      steps) place the following bundles method: in controller class
                            public Serieg show-impleyee/igi-ingestion-frachipage. A, the - A, con - "pio", diversion - Sert. Biocetion 451", Fageable, pageable, May String Objects mad (
Systems, con. printin) "Englishes/Departed series and string systems permit";

[Systems, con. printin) "Englishes/Departed series are supposed appear?";
                                                Mine service

Page-Employees page-empdentica getEmployees ReportDatatin/Page(pageable);

Hight result is model attribute
                                                // put resultin model and
map.put("empData", page);
                 >Boarms; contains on of Ubraries
representing the readymade. Styles,
Javancing operations. CSS and JS
                                                   (%) page httlground* John" So
«Signigib uri. "Ampt//John.com/pp/Jol/com" prefix. "\"So

    Bootstrap gives lots of readymade external style
which can be applied in our brod files and lightfile.

                                                   \label{eq:continuity} $$ $\inf^* \exp(-i\pi t) = \frac{1}{2} \left( \frac{1}{2} \exp(-i\pi t) + \frac{1}{2} \exp(-i\pi t) \right) $$ $$ $in (f^*) $$ $in (f^*) $$ $in (f^*) $$ 
                                                                                                                                                                                                                                                                                                                                                                                         by specifying Unit style many.
                                                                                                                                                                                                                                                                                                                                                                                                                               To use incorrespin our Apps (hand files //spitter) add this
```

VI. 2.2

```
Page<T> findAll(Pageable pageable); (PagingAndSortingRepository)
=> This method takes pageNo(0 based),pageSize as inputs in the forn. of Pageable obj and returns output as
Page<T>/Slice<T> obj
having requested page records, pages count, currentmbers, total records
and etc..
(pageNo,pageSize)
Pageable(input)
Db s/w
findAll(Pageable p)
InMemory Proxy class object of
Db table
PagingAndSortingRepository....
page<T> or Slice<T>
getContent()-- List<T>
getTotalPages();
isFirst(); isLast();
Slice<T>
extends Page<T>
if total records count is 20 .. and pagesize is 5 then it gives
20 records in to 4 pages (5,5,5,5).. if we ask for 3 page (indirectly 4 page) records then it gives 16 to 20
records. if ask for 2nd page (indirectly 3 page) recors then it gives 11 to15 records.
Pageable pageable=PageRequest.of(2,5);
pageNo
note:: Pageable object can have
both Paging and Sorting info pageSize
=> DispatcherServlet can prepare Pageable object and can give as handler method arg value
if the parameter type is Pageable ... In this process it prepares that Pageable object having pageNo, pageSize
gathered from the request parameters "page", "size".
=>We can give default pageNo, pageSize to the Pageable object of Handler method parameter using
@PageableDefault annotation as shown below
@GetMapping("/emp_report")
public String showEmployee Report(
Map<String, Object> map) {
EmpNo
```

Spring Boot MVC with spring data jpa Pagination

```
120
Report havin pagination..
first next [1] [2] [3] [4] previous last
EmpName
ALLEN1
Job
Salary
Operations
CLERK
4567.0
7934
MILLER
CLERK
1300.0
7876
ADAMS
steps for coding
CLERK
1100.0
previous first [1] [2] [3] [4] [5] [6] [7] [8] [9] Last next
step1) Keep the existing Mini Project ready
step2) MakeSure that the Repository Inteface pointing to "Employee" model class
is extending from PagingSortingRepository(I).
//IEmployeeRepository.java
package com.nt.repository;
import\ org. spring framework. data. repository. Paging And Sorting Repository;
import com.nt.model.Employee;
public interface IEmployee Repository extends PagingAndSortingRepository<Employee, Integer> {
}
step3) Add pagingation related report method in service interface and ins service impl class
In service Interface
public Page<Employee> getEmployees ReportDataByPage(Pageable pageable);
In service Impl class
@Override
public Page<Employee> getEmployees ReportDataByPage(Pageable pageable) {
return empRepo.findAll(pageable);
```

```
}
step3) place the following handler method in controller class
public String showEmployee Report(@PageableDefault(page=0,size = 3,sort = "job", direction = Sort.
Direction.ASC) Pageable pageable,
Map<String, Object> map) {
System.out.println("EmployeeOperationsController.showEmployee Report()");
//use service
Page<Employee> page=empService.getEmployees ReportDataByPage(pageable);
// put result in model attribute
map.put("empData",page);
//retunr LVN
return "show_employee_report";
step3) Write the following code in
show_employee_report.jsp
< @ page is ELIgnored = "false" %>
<%@taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c"%>
k rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"/>
<div class="container">
<c:choose>
<!-- <table border="1" class="table table-striped" > -->
<!-- <table border="1" class="table table-hover" > -->
EmpNo 
EmpName
Job 
Salary
 Operations 
=>Boostrap contains set of Libraries representing the readymade Styles, Javascript operations
provides the readymade CSS and JS
=> Bootstrap gives lots of readymade external styles which can be applied in out html files and jsp file
by specifying their style name..
To use bootstrap in our Apps (html files /jsp files) add this
```

```
k rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"/>
v5.2.2
CSS
get this from bootstrapcdn.com
https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/css/bootstrap.min.css
Click to copy
JavaScript
https://cdn.jsdelivr.net/npm/bootstrap 5.2.2/dist/js/bootstrap.min.js
<c:forEach var="emp" items="${empsData.getContent()}">
${emp.empno} 
${emp.ename} 
${emp.job} 
$\emp.sal} 
Click to copy
JavaScript Bundle
https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/js/bootstrap.bundle.min.js
note:: In CSS we have 3 types of styles
a) Inline CSS (specific to one tag)
b) Embedded CSS (Specific to one UI comp) c) External CSS (Common for multiple UI Comps)
note:: Bootstrap offers lots of external CSS
<a href="edit?no=${emp.empno}"><img src="images/edit1.png" width="50" height="50"/></a>
    <a onclick="return confirm('Do you want to delete')"
href="delete?no=${emp.empno}"><img src="images/delete1.jpg" width="50" height="50"></a> 
</c:forEach> 
<c:if test="${empsData.hasPrevious()}">
<a href="report?page=${empsData.getPageable().getPageNumber()-1}"> previous </a> &nbsp; &nbsp;
</c:if>
<c:if test="${!empsData.isFirst()}">
<a href="report?page=0">first</a> &nbsp; &nbsp;
</c:if>
<c:forEach var="i" begin="1" end="${empsData.getTotalPages()}" step="1">
[<a href="report?page=${i-1}">${i}</a>] &nbsp;&nbsp;
</c:forEach>
```

```
<c:if test="${!empsData.isLast()}">
<a href="report?page=${empsData.getTotalPages()-1}">Last</a> &nbsp; &nbsp;
</c:if>
<c:if test="${empsData.hasNext()}">
<a href="report?page=${empsData.getPageable().getPageNumber()+1}"> next</a>
</c:if>
</c:when>
<c:otherwise>
<h1 style="color:red;text-align:center"> Records not found </h1>
</c:otherwise> </c:choose>
<c:if test="${!empty resultMsg}">
<h3 style="color:green;text-align:center"> ${resultMsg}</h3> </c:if>
<br><br>>
<hr>
<hr>
<h1 style="text-align:center"><a href="./"><img src="images/home1.png" width="50"
height="50">Home</a></h1>
<h1 style="text-align:center"><a href="add"><img src="images/add.png" width="50" height="50"> Add
Employee</a> </h1> </div>
Page<T> docs
Sir where we can find
Method Summary
All Methods
Modifier and Type
Static Methods Instance Methods Method and Description
isFist() and getPagabl
Madhav Tamaje to Me (Dire
yes sir
Akshay G to Me (Direct Mes
static <T> Page<T>
empty()
Creates a new empty Page.
static <T> Page<T>
empty (Pageable pageable)
```

```
AG
```

yes sir

Who can see your

Creates a new empty Page for the given Pageable.

To: ROHIT AV

(Direct Me

long

Type message here...

int

<U> Page<U>

getTotalElements()

Returns the total amount of elements.

getTotalPages()

Returns the number of total pages.

map(Function<? super T,? extends U> converter)

Returns a new Page with the content of the current one mapped by the given Function.

Methods inherited from interface org.springframework.data.domain. Slice

getContent, getNumber, getNumberOfElements, getPageable, getSize, getSort, hasContent,
hasNext, has Previous, isFirst, islast, nextOrLastPageable, nextPageable,
previousOrFirstPageable, previousPageable

note:: if we run the Eclipse IDE web application in an external Tomcat Server, the changes done in the source code of the Application will reflect to the output automatically

note:: if we run the Eclipse IDE web application in an embedded Tomcat Server, that changes done in the source code of the Application will not reflect to the output automatically though we refresh the the webpage in browser.. To make this happen add "devtool starter" to Eclipse IDE maven/gradle based spring boot web /Disributed Application

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-devtools</artifactId>

<scope>runtime</scope> <optional>true</optional>

</dependency>

=>we can add this starter while creating the Spring boot Project by select dev tool starter

=> we can add this starter after creating the Project

right click on the Project ---> spring ----> add starters ---> select pom.xml/build.gradle --> select dev tools starter

=> Modify the source code of java classes like service class, controller class and etc.. and observe the server console for automatic code changes and those changes will reflect in the browser output