Data.php

```
<?php
//Loading classes
spl autoload register('autoload');
function autoload ($sClassname): void
  require once($sClassname . ".php");
}
//Load pre-defined users and add to UserList
$user = new User("admin1", "abcdefgh", "email", 1); //ADMIN
$user1 = new User("PhpLover1", "abcdefgh", "email"); //USER
$user2 = new User("jdoe", "abcdefgh", "email"); //USER
$userList = new UserList(); //VERWALTUNG ALLER USER
$userList->addUser($user);
$userList->addUser($user1);
$userList->addUser($user2);
//An admin is logged in in the recent TodoList
$toDoList = new TodoList($user);
//Creating various tasks
$entry = new ToDoListItem("e1", new DateTime("2021-02-01"), $user2->userId,
"Hausarbeit", new DateTime("2021-02-01"));
$entry1 = new ToDoListItem("e2", new DateTime("2021-04-05"), $user1-
>userId, "Hausübung machen", new DateTime("2021-04-02"), "Dringend die PHP
Hausübung abgeben :D");
$entry2 = new ToDoListItem("e3", new DateTime("2021-03-06"), $user1-
>userId, "Yoga", new DateTime("2021-03-02"));
$entry3 = new ToDoListItem("e4", new DateTime("2021-08-05"), $user2-
>userId, "Prokrastinieren", new DateTime("2021-03-02"), "Ich bin eine
Notiz, hallo!");
//Add tasks to TodoList
$toDoList->addEntry($entry);
$toDoList->addEntry($entry1);
$toDoList->addEntry($entry2);
$toDoList->addEntry($entry3);
?>
```

Index.php

```
<?php
require once "data.php";
session start(); //Zugriff auf Session Array
<!doctype html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>ToDoList</title>
    <link rel="stylesheet" type="text/css" href="style.css"/>
    <link rel="stylesheet"</pre>
href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.
css" integrity="sha384-
Vkoo8x4CGsO3+Hhxv8T/Q5PaXtkKtu6uq5TOeNV6qBiFeWPGFN9MuhOf23Q9Ifjh"
crossorigin="anonymous">
</head>
<body>
<?php
global $toDoList; //TodoList of data.php
global $userList; //UserList of data.php
//Vordefinierte Todoliste soll nur beim ersten Mal eingespielt werden
//Ermöglicht Aktualisieren der Todoliste
//und der Userliste mittels Session-Variable
//Pre-defined TodoList should only be loaded at the first time
//So the Todolist can be updated frequently with new tasks
//and wont be overwritten by the old TodoList
if(!isset($ SESSION["todolist"])){
  $ SESSION["todolist"] = $toDoList;
//Pre-defined UserList should only be loaded at the first time
//So the UserList can be updated frequently with new users
//and wont be overwritten by the old UserList
else if(!isset($ SESSION["userlist"])){
   $ SESSION["userlist"] = $userList;
}
//Login and Registration Process incl. Error-Handling
$errors = [];
if(!isset($ SESSION["user"])){
  //case user is not logged in
if(isset($ REQUEST["action"]) && $ REQUEST["action"] == "login"){
        //case user wants to log in
        if(isset($ REQUEST["username"])
            && isset($ REQUEST["password"])
            && $ REQUEST["username"] != ""
            && $ REQUEST["password"] != ""
            && checkLogin($_REQUEST["username"], $ REQUEST["password"])){
```

```
//case user data is correct
            $ SESSION["user"] = $ REQUEST["username"];
           showData();
           showTaskForm();
           showLogoutForm();
        }
        else{
            //case user data is incorrect
            echo("<div class='notify red'>Login data incorrect!</div>");
           showLoginForm();
           showRegistrationForm();
    else if(isset($ REQUEST["action"]) && $ REQUEST["action"] ==
"register"){
  //case user wants to register
   if(checkRegistration()){
           //data correct
          register();
        else{
            //data incorrect
            echo("<div class='notify red'>Registration data not
correct!</div>");
       showLoginForm();
      showRegistrationForm();
    }
   else{
        //case user wants to view page
       showLoginForm();
      showRegistrationForm();
 }
}
//case user is logged in
else{
    //case user creates new task
    if(isset($ REQUEST["action"]) && $ REQUEST["action"] == "addTasks"){
       if(checkAddEntry())
           actualizeData();
       showData();
       showTaskForm();
      showLogoutForm();
    }
    //case user wants to logout
    else if(isset($ REQUEST["action"]) && $ REQUEST["action"] == "logout"){
       unset($ SESSION["user"]);
       showLoginForm();
      showRegistrationForm();
   //case user wants to view page
   else{
       showData();
       showTaskForm();
      showLogoutForm();
  }
```

```
//register()
//This function allows a new user to register by entering all
//data needed. If the user wants to register with a already
//existing username, a error message shows up.
function register(){
    try {
        $newUser = new User($ REQUEST["usernamereg"],
$ REQUEST["password1"], $ REQUEST["email"]);
       $ SESSION["userlist"]->addUser($newUser);
        echo("<div class='notify green'>Registration successful!</div>");
    } catch (Exception $e) {
      echo("<div class='notify red'>".$e->getMessage()."</div>");
//actualizeData()
//The TodoList will be updated by adding a new TodoListItem.
function actualizeData() {
    $entry = new TodoListItem("e".rand(), new DateTime("now"),
$ SESSION["user"], $ REQUEST["addTitle"], new DateTime("now"),
$ REQUEST["addNote"]);
  $ SESSION["todolist"]->addEntry($entry);
//checkAddEntry()
//Checks the input fields of the form to add new tasks
function checkAddEntry():bool{
    global $errors;
    if(!isset($ REQUEST["addTitle"]) || strlen($ REQUEST["addTitle"]) < 6)</pre>
        $errors["addTitle"] = "<i>Title must be at least 6 characters
long!</i>";
if(count($errors) > 0)
       return false;
 return true;
}
//checkLogin()
//Checks the input fields of the login form by comparing it with the saved
data of the userList.
//Only if username and password are correct, the user can login.
function checkLogin(string $username, string $password):bool{
   return($username == $ SESSION["userlist"]->users[$username]->userId &&
$password == $ SESSION["userlist"]->users[$username]->password);
//checkRegistration()
//Checks if various rules of the input fields of the registration form
//are followed. Otherwise the errors will be saved.
function checkRegistration():bool{
    global $errors;
    //username
    if(!isset($ REQUEST["usernamereg"]) || strlen($ REQUEST["usernamereg"])
        $errors["usernamereq"] = "<br><i>Username must be at least 6
characters long</i>";
```

```
//password
   if(!isset($ REQUEST["password1"]) ||
        !isset($ REQUEST["password2"]) ||
        $ REQUEST["password1"] != $ REQUEST["password2"] ||
        strlen($ REQUEST["password1"]) < 8)</pre>
        $errors["password1"] = "<br><i>Password must be at least 8
characters long and must match</i>>";
//email
   if(!isset($ REQUEST["email"]) || filter var($ REQUEST["email"],
FILTER VALIDATE EMAIL) === false)
      $errors["email"] = "<br><i>Must be a valid email address</i>";
if(count($errors) > 0)
       return false;
  return true;
//showData()
//This function prints the (updated) TodoList. Only tasks of the
//user who is logged in will be shown, all other tasks wont be
//visible for this user.
function showData(){
   $user = $ SESSION["userlist"]->users[$ SESSION["user"]];
   $ SESSION["todolist"]->loginUser = $user;
 echo($ SESSION["todolist"]);
}
//showTaskForm()
//Output of the TaskForm - if errors occur, the incorrect fields
//will be highlighted and the error will be described
function showTaskForm(){
 global $errors;
$title = "";
 if(isset($ REQUEST["addTitle"]) && count($errors) > 0){
    $title = $ REQUEST["addTitle"];
   }
?>
   <div class="form-style-5">
        <form action="<?php echo($ SERVER['PHP SELF']);?>" method="post">
            <fieldset>
                <legend><span class="number">+</span>Eintrag
hinzufügen</legend>
                <?php
                if (isset ($errors["addTitle"])) {
                   echo('<input type="text" name="addTitle" id="addTitle"</pre>
placeholder="Titel*" class="error" value="'.$title.'">');
                  echo($errors["addTitle"]);
                else echo('<input type="text" name="addTitle" id="addTitle"</pre>
placeholder="Titel*" value="'.$title.'">');
                if(isset($ REQUEST["addNote"]) && count($errors) > 0){
                    $desc = $ REQUEST["addNote"];
                    echo('<textarea name="addNote"
id="addNote">'.$desc.'</textarea>');
    }
```

```
else echo('<textarea name="addNote" id="addNote"</pre>
placeholder="Beschreibung"></textarea>');
               ?>
            </fieldset>
            <input type="hidden" name="action" value="addTasks">
            <input type="submit" id="addTasks" value="Eintrag hinzufügen">
        </form>
    </div>
    <?php
}
//showRegistrationForm()
//Output of the registration form - if errors occur, the incorrect fields
//will be highlighted and the error will be described
function showRegistrationForm(){
   global $errors;
   $usernameVal = "";
 $emailVal = "";
 if(isset($ REQUEST["usernamereg"]) && count($errors) > 0){
     $usernameVal = $ REQUEST["usernamereg"];
    if(isset($ REQUEST["email"]) && count($errors) > 0){
    $emailVal = $ REQUEST["email"];
    }
   ?>
    <div class="registration_form">
        <h3>Register:</h3>
        <form action="<?php echo($ SERVER['PHP SELF']);?>" method="post">
            <label for="usernamereg">Username:</label>
            <?php
            if(isset($errors["usernamereg"])){
               echo('<input type="text" name="usernamereg"</pre>
id="usernamereg" value="'.$usernameVal.'" class="error">');
             echo($errors["usernamereg"]);
            else
               echo('<input type="text" name="usernamereg"</pre>
id="usernamereg" value="'.$usernameVal.'">');
?>
            <br>
            <label for="password1">Password:</label>
            if (isset ($errors["password1"])) {
               echo('<input type="password" name="password1"</pre>
id="password1" class="error">');
              echo($errors["password1"]);
                echo('<input type="password" name="password1"</pre>
id="password1">');
           ?>
            <br>
            <label for="password2">Repeat:</label>
            <input type="password" name="password2" id="password2"><br>
            <label for="email">Email:</label>
            <?php
```

```
if(isset($errors["email"])){
                echo('<input type="email" name="email" id="email"</pre>
class="error" value="'.$emailVal.'">');
               echo($errors["email"]);
            else echo('<input type="email" name="email" id="email"</pre>
value="'.$emailVal.'">');
            <hr>>
            <input type="hidden" name="action" value="register">
            <input type="submit" value="Register" class="reg button">
        </form>
    </div>
    <?php
//showLoginForm()
//Output of the login form
function showLoginForm() {?>
   <div class="login form">
    <h3>Login:</h3>
    <form action="<?php echo($ SERVER['PHP SELF']);?>" method="post">
        <label for="username">Username:</label>
        <input type="text" name="username" id="username"/><br>
        <label for="password">Password:</label>
        <input type="password" name="password" id="password"/><br>
        <input type="hidden" name="action" value="login">
        <input type="submit" class="login_button" value="Login">
   </form>
   </div><?php
}
//showLogoutForm()
//Output of the logout button
function showLogoutForm() { ?>
    <form action="<?php echo($_SERVER['PHP_SELF']);?>" method="post">
        <input type="hidden" name="action" value="logout">
        <input type="submit" value="Logout" class="logout button">
    </form>
} ?>
</body>
</html>
```

TodoList.php

```
<?php
class TodoList
   public function construct(
      private User $loginUser,
       private array $entries = []
  ) {
 }
//Getter
   public function get(string $list):mixed
       if (property exists('TodoList', $list)) {
           return $this->{$list};
       } else throw new Exception("Attribute " . $list . " does not exist
in class TodoList!");
//Setter
  public function set(string $entries, mixed $value):void
       if (property exists('TodoList', $entries)) {
           \frac{1}{\sinh s} = \frac{1}{\sinh s}
       } else throw new Exception("Attribute " . $entries . " does not
exist in class TodoList!");
//Ein neuer Entry kann von jedem erstellt werden. Jedoch darf
   //der die Entry-ID noch nicht existieren.
   public function addEntry(TodoListItem $entry):void
       if (!array key exists($entry->entryId, $this->entries))
           $this->entries[$entry->entryId] = $entry;
       else throw new Exception("Entry " . $entry->entryId . " does not
exist!");
}
//Es ist nur für den Ersteller möglich, seine Einträge zu löschen.
   //Dieser werden hier aus dem Array mittels der Entry-ID gelöscht.
   public function deleteEntry(TodoListItem $entry):void
      if($this->loginUser->role == 1 ||
            ($this->loginUser->userId === $entry->creatorId &&
               array key exists($entry->entryId, $this->entries)))
           unset($this->entries[$entry->entryId]);
        else throw new Exception("Entry " . $entry->entryId . " cant be
deleted!");
}
```

```
//Es ist hier wieder nur für den Ersteller möglich, seine
    //Einträge zu bearbeiten. Er kann hier den Titel sowie
    //den Text seines Eintrages ändern. Zudem ändert sich
    //dann auch die Editor-ID und das Edit-Datum auf das
    //heutige Datum.
   public function editEntry(TodoListItem $entry, string $title, string
$text):void
   {
        if($this->loginUser->role == 1 ||
            $this->loginUser->userId === $entry->creatorId &&
            array key exists($entry->entryId, $this->entries)) {
            $obj = $this->entries[$entry->entryId];
            $obj->title = $title;
            $obj->text = $text;
            $obj->editorId = $this->loginUser->userId;
           $obj->editDate = new DateTime();
        else throw new Exception("Entry" . $entry->entryId . " cant be
edited!");
 //Es ist hier wieder nur für den Ersteller möglich, seine
    //Einträge abzuschließen. Hier ändert sich der Status.
   public function finishEntry(TodoListItem $entry):void
        if($this->loginUser->role == 1 ||
            $this->loginUser->userId === $entry->creatorId &&
            array key exists($entry->entryId, $this->entries))
            $entry->status = "abgehakt";
        else throw new Exception("Entry " . $entry->entryId . " cant be
finished!");
}
 //Magic Method toString() für die Ausgabe der
    //TodoListe für den gerade angemeldeten User
   public function __toString():string
       $result="<div class='welcome'>\n
        <h1>DEINE TO-DO LISTE</h1>\n
       <h2>Hallo ".$this->loginUser->userId."!</h2>\n
       </div>\n";
      $result.="<div class='toDoList'>\n";
      foreach($this->entries as $entry) {
            //Zeigt nur Entries vom angemeldeten User, außer bei Admin
            if ($entry->creatorId === $this->loginUser->userId || $this-
>loginUser->role == 1)
) {
                $result .= $entry;
                $result .= "<div class='buttons'>\n<input type='submit'</pre>
class='edit' value='Bearbeiten'>";
                $result .= "<input type='submit' class='delete'</pre>
value='Löschen'>";
                $result .= "<input type='submit' class='finish'</pre>
value='Abschließen'>\n</div>";
               $result .= "\n</div>";
        }
 }
      $result .= "\n</div>";
      return $result;
  }
```

TodoListItem.php

```
<?php
class TodoListItem
   public function __construct(
       private string $entryId,
       private DateTime $creationDate,
       private string $creatorId,
       private string $title,
       private DateTime $editDate,
       private string $text = "",
       private string $status = "aktiv",
      private string $editorId = "",
   )
   {
  }
   public function get(string $entry):mixed
       if (property_exists('TodoListItem', $entry)) {
           return $this->{$entry};
       } else throw new Exception("Attribute " . $entry . " does not exist
in class TodoListItem!");
}
//Setter
   public function set(string $entry, mixed $mValue):void
       if (property exists('TodoListItem', $entry)) {
           $this->{$entry} = $mValue;
       } else throw new Exception("Attribute " . $entry . " does not exist
in class TodoListItem!");
}
 //Magic Method toString() für die Ausgabe der
   //einzelnen Einträge in der TodoListe
   public function __toString():string
       $result = "\n<div id='.$this->entryId.' class='entry'>
           <div class='status'>Status: ".$this->status."</div>
           <h3 class='title'>Titel: ".$this->title."</h3>";
   if($this->text != "")
          $result .= "".$this->text."";
       $result .= "Ersteller: ".$this->creatorId."
           Erstellungsdatum: ".$this->creationDate-
>format("d.m.Y")."";
       //Erst wenn eine Bearbeitung stattfand soll auch das
       // Bearbeitungsdatum und die ID des Bearbeiters angezeigt werden
       if($this->editorId != "") {
        $result .= "Letzter Bearbeiter: " . $this->editorId .
          $result .= "Letztes Bearbeitungsdatum: " . $this->editDate-
>format("d.m.Y") . "";
       }
       return $result;
```

```
}
```

UserList.php

```
<?php
class UserList{
  public function construct(
      private array $users = []
   {
}
public function get(string $users): mixed
       if (property_exists('UserList', $users)) {
          return $this->{$users};
      } else throw new Exception("Attribute " . $users . " does not exist
in class User!");
public function set(string $users, mixed $newValue): void
      if (property_exists('UserList', $users)) {
          } else throw new Exception("Attribute " . $users . " does not exist
in class User!");
}
public function addUser(User $user) {
       if (!array_key_exists($user->userId, $this->users)){
        $this->users[$user->userId] = $user;
       else throw new Exception("User " . $user->userId . " already
exists!</div>");
}
}
```

User.php

```
<?php
class User
  public function construct(
      private string $userId,
       private string $password,
       private string $email,
       private int $role = 0,
      private array $entries = []
   )
    {
  public function get(string $user): mixed
       if (property_exists('User', $user)) {
           return $this->{$user};
       } else throw new Exception("Attribute " . $user . " does not exist
in class User!");
}
public function set(string $user, mixed $newValue): void
       if (property_exists('User', $user)) {
           $this->{$user};
       } else throw new Exception("Attribute " . $user . " does not exist
in class User!");
}
}
```

style.css

```
body{
    position: relative;
    font-family: "Bahnschrift", sans-serif;
    box-sizing: border-box;
    background: url("../img/bg.jpg");
.welcome{
   width: 100%;
    background-color: #fff;
    text-align: center;
    color: #5e8949;
    padding: 10px;
    border-bottom: 8px solid #5e8949;
}
h1, h2{
    margin: 0;
    font-size: 28px !important;
.title{
    text-align: left;
    font-size: 18px !important;
.login_form, .registration_form, .notify{
    position: absolute;
    padding: 20px 50px 5px 50px;
    background-color: white;
    left: 35vw;
    width: 30%;
}
.login form{
   top: 13vh;
.registration form{
   top: 43vh;
    z-index: -1;
}
.registration form h3{
    z-index: 999;
}
i{
    color: red;
}
.notify{
    margin-top: 40px;
   font-size: 20px;
    text-align: center;
}
```

```
.red{
   color: red;
.green{
   color: green;
form input{
   box-sizing: border-box;
   border-radius: 5px;
   border: 1px solid #999;
   padding: 4px;
   outline: none;
}
.reg button, .login button, .logout button{
    font-size: 1.1em;
   padding: 10px;
    font-family: Roboto, sans-serif;
   font-weight: 300;
   color: #fff;
   background-color: #5e8949;
   border-radius: 20px;
   cursor: pointer;
   margin-bottom: 2em;
   margin-top: 15px;
}
.logout_button{
   position: absolute;
   top: 10px;
   right: 30px;
}
.toDoList{
   width: 100%;
   padding: 7%;
   display: flex;
   gap: 50px;
   flex-wrap: wrap;
}
.entry{
   display: flex;
    justify-content: space-evenly;
   flex-direction: column;
   background-color: #fff;
   color: #5e8949;
   padding: 30px;
   border-radius: 20px;
   font-size: 13px;
   width: 400px;
}
.entry h3{
   margin-bottom: 20px;
}
```

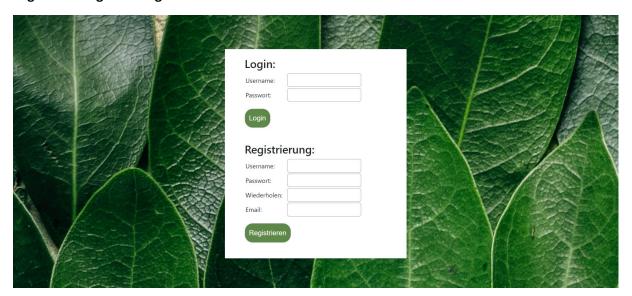
```
.status{
    background-color: #aaa;
    color: #fff;
    padding: 20px;
    text-transform: uppercase;
    margin-bottom: 20px;
   font-size: 15px;
    text-align: center;
}
.note{
    color: #aaa;
    font-size: 14px;
    margin-bottom: 20px;
.buttons{
    display: flex;
    justify-content: center;
    gap: 20px;
    text-align: center;
.delete, .edit, .finish{
   background-color: #aaa;
    color: #fff;
    padding: 10px;
    border-radius: 10px;
    cursor: pointer;
    font-size: 15px;
    border: none;
    width: 30%;
}
label{
    display: inline-block;
    width: 100px;
   margin: 2px;
}
input{
    display: inline-block;
    margin: 2px;
}
.error{
   border-color: red;
.form-style-5{
    max-width: 500px;
    background: #f4f7f8;
    margin: 10px auto;
    padding: 20px;
    border-radius: 8px;
}
.form-style-5 fieldset{
   border: none;
}
```

```
.form-style-5 legend {
    font-size: 1.4em;
   margin-bottom: 10px;
.form-style-5 label {
   display: block;
   margin-bottom: 8px;
}
.form-style-5 input[type="text"],
.form-style-5 textarea{
   background: rgba(255,255,255,.1);
   border: none;
   border-radius: 4px;
    font-size: 15px;
   outline: 0;
   padding: 10px;
   width: 100%;
   box-sizing: border-box;
    -webkit-box-sizing: border-box;
    -moz-box-sizing: border-box;
   background-color: #e8eeef;
   color: #8a97a0;
    -webkit-box-shadow: 0 1px 0 rgba(0,0,0,0.03) inset;
   box-shadow: 0 1px 0 rgba(0,0,0,0.03) inset;
   margin-top: 20px;
}
.form-style-5 input[type="text"]:focus,
.form-style-5 textarea:focus{
   background: #d2d9dd;
.form-style-5 select{
   height:35px;
.form-style-5 .number {
   background: #5e8949;
   color: #fff;
   height: 30px;
   width: 30px;
   display: inline-block;
   font-size: 0.8em;
   margin-right: 4px;
   line-height: 30px;
   text-align: center;
   text-shadow: 0 1px 0 rgba(255,255,255,0.2);
   border-radius: 15px 15px 15px 0px;
}
```

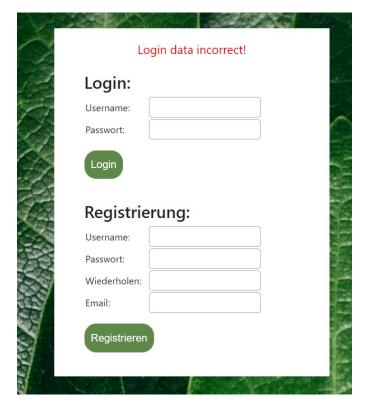
```
.form-style-5 input[type="submit"],
.form-style-5 input[type="button"]
{
   position: relative;
   display: block;
   padding: 19px 39px 18px 39px;
   color: #FFF;
   margin: 0 auto;
   background: #5e8949;
   font-size: 18px;
   text-align: center;
   font-style: normal;
   width: 100%;
   border: 1px solid #5e8949;
   border-width: 1px 1px 3px;
   margin-bottom: 10px;
input[type="submit"]:hover
   background: #6eaa69;
   transition: 0.5s ease;
}
```

Testfälle

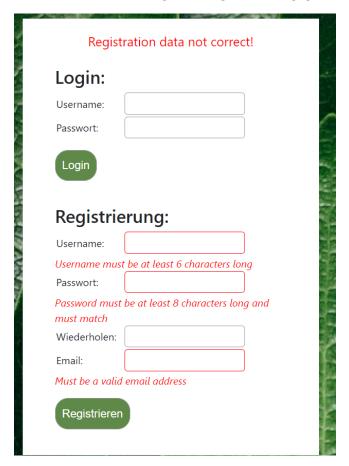
Login- und Registrierungsseite



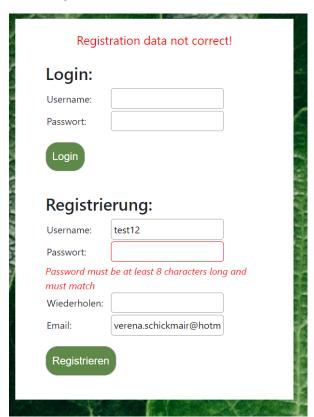
Fehler: keine Logindaten eingegeben



Fehler: keine/falsche Registrierungsdaten eingegeben



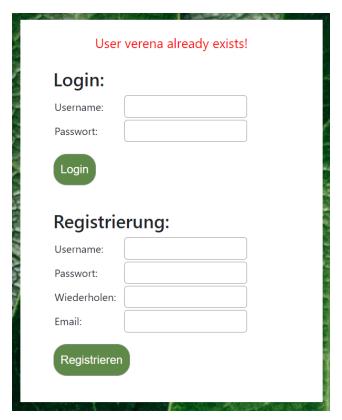
Auch Eingaben bleiben erhalten



Erfolgreiche Registrierung

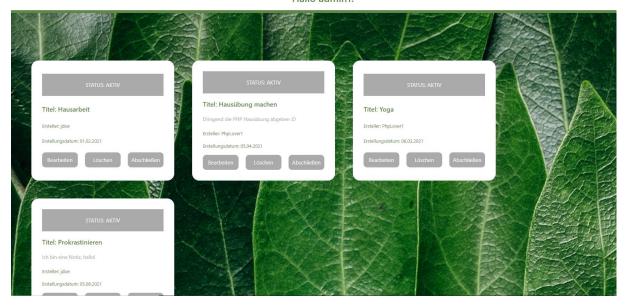


Fehler: Registrierung -> User existiert bereits



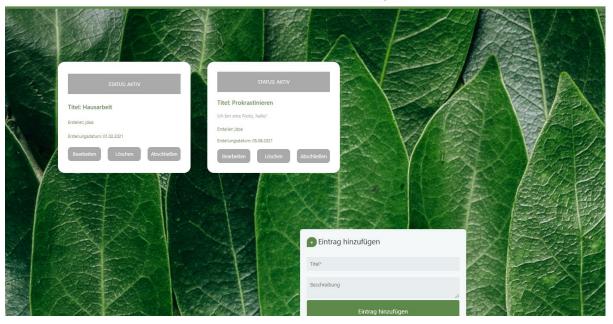
Admin eingeloggt -> sieht alle Tasks

DEINE TO-DO LISTE Hallo admin1!

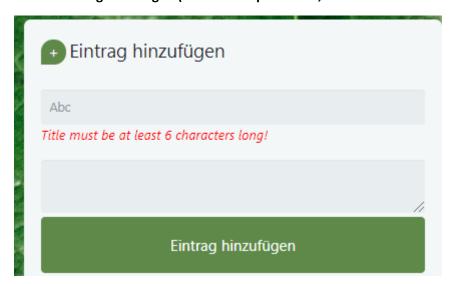


Liste von User jdoe mit reingeladenen Daten -> nur seine Tasks sichtbar

DEINE TO-DO LISTE Hallo jdoe!



Fehler: Eintrag hinzufügen (nur Titel verpflichtend, darum keine Fehler bei Description)



Neuer Eintrag hinzugefügt

