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Class : IKI

Subject : Web Technology

Topic : Variable Management Exercises through Branching and Arithmetic

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A. THEORY

1. Laravel

Laravel is a robust and easy-to-understand open source PHP framework. It follows the Model-View-Controller design pattern. Laravel reuses existing components from various frameworks to help create web applications. Web applications designed this way are more structured and practical. Laravel offers a variety of features including basic functionality from PHP frameworks such as CodeIgniter, Yii, and other programming languages such as Ruby on Rails. Laravel has a very wide range of features that speed up web development.

2. Routing

The route is a way of creating a request URL for your application. There URLs do not have to map to specific files on a website and are both human-readable and SEO friendly. In Laravel, routes are created inside the routes folder. They are created in the “web.php” file for websites.

3. Controller

A controller is that which controls the behavior of a request. It handles the requests coming from the routes. In Laravel, a controller is in the ‘app/Http/Controllers’ directory. All the controllers that are to be created, should be in this directory.

Command for creating a controller : make: controller, artisan command.

```
php artisan make:controller nameOfControllerThatWantToCreate
```

4. View and Blade template

The view is data that is going to be displayed to the user on their browser and the user can interact with it. It is simply an interface provided to the user for interaction. Laravel used a powerful templating engine called Blade. The extension for this file used here is filename.blade.php. Even though there are some directives and layout format used with a

blade for taking advantage of this templating engine, still it allows us to write plain PHP in the view file.

5. Arithmetic Sequence

The arithmetic sequence formula is used for the calculation of the n th term of an arithmetic progression. The arithmetic sequence is the sequence where the common difference remains constant between any two successive terms. If we want to find any term in the arithmetic sequence then we can use the arithmetic sequence formula.

Formula

$$a_n = a_1 + (n - 1)d$$

a_n = the n^{th} term in the sequence

a_1 = the first term in the sequence

d = the common difference between terms

B. PROBLEMS

Please follow the example exercises in the video to understand the use of branching conditions in mathematical operations and variable management. Use different case studies, as long as it's appropriate.

Provision:

- Input form interface to accommodate input variables.
- Controller to process the input
- Output interface on the application to display the calculation results

C. SOLUTION

- **Input.blade.php code :** contain the form to take input and make a post request to output. This form will contain the data that the user inputted and will be forwarded as a request to controller : pageController.

```
@extends('layout')
@section('project')
<section id="projects">
    <div class="container">
        <div class="row align-items-center mb-1">
            <h2 class="title mb-5">Arithmetic Sequence Program</h2>
```

```

<form class="form" method='POST' action="/output#projects">
  @csrf
  <div class="col">
    <div class="mb-3">
      <label for="1stterm" class="form-label"
for="firstterm">input a :</label>
      <input type="number" class="form-control"
id="firstterm" name ="firstterm" placeholder="1st term (suku pertama)" />
    </div>
    <div class="mb-3">
      <label for="common_difference" class="form-label"
for="common_difference">input b :</label>
      <input type="number" class="form-control"
id="common_difference" name ="common_difference" placeholder="common
difference (beda)" />
    </div>
    <div class="mb-3">
      <label for="numberOfTerms" class="form-label"
for="numberOfTerms">input n :</label>
      <input type="number" class="form-control"
id="numberOfTerms" name ="numberOfTerms" placeholder="number of term
(suku ke-n)" />
    </div>
  </div>
  <input class="btn mineco" type="reset" value="Reset" />
  <button type="submit" class="btn mineco">Submit</button>
</form>
</div>
</div>
<svg xmlns="http://www.w3.org/2000/svg" viewBox="0 0 1440 320">
  <path fill="#fff" fill-opacity="1"
d="M0,96L40,117.3C80,139,160,181,240,202.7C320,224,400,224,480
,202.7C560,181,640,139,720,117.3C800,96,880,96,960,112C1040,128,1120,160,1
200,176C1280,192,1360,192,1400,192L1440,192L1440,320L1400,320C1360,320,128
0,320,1200,320C1120,320,1040,320,960,320C880,320,800,320,720,320C640,320,5
60,320,480,320C400,320,320,320,240,320C160,320,80,320,40,320L0,320Z">
  </path>
</svg>

```

```

</section>
@endsection
<!-- end Project -->

```

- **PageController Code :** display the form to the website and take request data from the form which will be processed and inputted to the output page.

```

<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

class pageController extends Controller
{
    //
    public function input()
    {
        return view('input');
    }

    public function output(Request $request)
    {
        $a = $request->firstterm;
        $b = $request->common_difference;
        $n = $request->numberOfTerms;
        $un = $a + ($n - 1) * $b;
        $arr = array();
        for ($i = 1; $i <= $n; $i++) {
            $num = $a + ($i - 1) * $b;
            $arr[] = $num;
        }
        // dd($request);
        $seq= implode(", ", $arr);
        return view('output')
            ->with('un', $un)
            ->with('seq', $seq) ;
    }
}

```

- **Output.blade.php :** display the output from the controller

```

@extends('layout')
@section('project')
    <section id="projects">
        <div class="container">
            <div class="row align-items-center mb-1">

```

```

        <h2 class="title mb-5">Arithmetic Sequence
Program</h2>

        <form class="form" action=" ">

            <div class="col">
                <div class="mb-3">
                    <label for="arseq" class="form-label">Arithmetic Sequence :</label>
                    <input disabled="true" class="form-control" id="arseq" value="{{ $un }}" />
                </div>
                <div class="mb-3">
                    <label for="Un" class="form-label">Un
: </label>
                    <input disabled="true" class="form-control" id="Un" value="{{ $seq }}" />
                </div>

                <a href="/#projects" class="btn mineco"> back
</a>

            </div>
        </form>
    </div>
</div>
<svg xmlns="http://www.w3.org/2000/svg" viewBox="0 0 1440
320">
    <path
        fill="#fff"
        fill-opacity="1"
        d="M0,96L40,117.3C80,139,160,181,240,202.7C320,224,400
,224,480,202.7C560,181,640,139,720,117.3C800,96,880,96,960,112C1040,128,11
20,160,1200,176C1280,192,1360,192,1400,192L1440,192L1440,320L1400,320C1360
,320,1280,320,1200,320C1120,320,1040,320,960,320C880,320,800,320,720,320C6
40,320,560,320,480,320C400,320,320,320,240,320C160,320,80,320,40,320L0,320
Z"
    ></path>
</svg>
</section>
@endsection
<!-- end Project -->

```

- **Web.php** : contain URL routing to call the necessary function in pageController

```
<?php
```

```

use Illuminate\Support\Facades\Route;
use App\Http\Controllers\pageController;

```

```
Route::get('/', [pageController::class, 'input']);
Route::post('/output', [pageController::class, 'output']);
```

D. RESULT

- First layout (input form)

Arithmetic Sequence Program

input a :

input b :

input n :

Input the data

Arithmetic Sequence Program

input a :

input b :

input n :

- Last layout (output layout)

Arithmetic Sequence Program

Arithmetic Sequence :

Un :