

LAMPIRAN

1. Source Code Halaman Dashboard

```
<?php
require_once 'config/database.php';

if (!isset($_SESSION['username'])) {
    header("Location: login.php");
    exit();
}
?>

<?php include 'includes/header.php'; ?>
<?php include 'includes/navbar.php'; ?>

<div class="container mt-4">
    <div class="row">
        <div class="col-md-12">
            <div class="card">
                <div class="card-header">
                    <h4>Dashboard</h4>
                </div>
                <div class="card-body">
                    <h5>Selamat Datang, <?=
htmlspecialchars($_SESSION['username']) ?></h5>
                    <p>Sistem Prediksi Penjualan
Menggunakan Metode Monte Carlo.</p>

                    <?php
if
($_SESSION['is_admin']): ?>
                        <div class="alert alert-
info">
                            Kamu Login Sebagai admin.
                        </div>
                    <?php endif; ?>

                </div>
            </div>
        </div>
    </div>
</div>
```

```

                                <div class="col-md-4">
                                    <div class="card text-
white bg-primary mb-3">
                                        <div class="card-
header">Data Uji</div>
                                        <div class="card-
body">
                                            <?php
                                                $stmt = $conn-
>prepare("SELECT COUNT(*) as count FROM training_data
WHERE user_id = ?");
                                                $stmt-
>bind_param("i", $_SESSION['user_id']);
                                                $stmt-
>execute();
                                                $result = $stmt-
>get_result();
                                                $count =
$result->fetch_assoc()['count'];
                                                ?>
                                        <h5 class="card-
title"><?= $count ?> Data</h5>
                                        <p class="card-
text">Total Data Uji.</p>
                                            </div>
                                        </div>
                                    </div>
                                </div>
                                <div class="col-md-4">
                                    <div class="card text-
white bg-success mb-3">
                                        <div class="card-
header">Data Perbandingan</div>
                                        <div class="card-
body">
                                            <?php

```



```

?>

<?php include 'includes/header.php'; ?>
<?php include 'includes/navbar.php'; ?>

<div class="container mt-4">
    <div class="row">
        <div class="col-md-12">
            <div class="card">
                <div class="card-header">
                    <h4>Input Data</h4>
                </div>
                <div class="card-body">
                    <?php if
(isset($_SESSION['message'])): ?>
                        <div class="alert alert-
success"><?= $_SESSION['message'] ?></div>
                    <?php
unset($_SESSION['message']); ?>
                    <?php endif; ?>
                    <?php if
(isset($_GET['error'])): ?>
                        <div class="alert alert-
danger"><?=
                        htmlspecialchars($_GET['error'])
                        ?></div>
                    <?php endif; ?>
                    <?php if
(isset($_GET['success'])): ?>
                        <div class="alert alert-
success"><?=
                        htmlspecialchars($_GET['success'])
                        ?></div>
                    <?php endif; ?>

                    <ul class="nav nav-tabs"
id="dataTabs" role="tablist">
                        <li class="nav-item"
role="presentation">

```

```

        <button class="nav-link
active" id="manual-tab" data-bs-toggle="tab" data-bs-
target="#manual" type="button" role="tab">Input
Manual</button>

        </li>
        <li class="nav-item"
role="presentation">
                <button class="nav-link"
id="excel-tab" data-bs-toggle="tab" data-bs-
target="#excel" type="button" role="tab">Import
Excel</button>

                </li>
        </ul>

        <div class="tab-content mt-3"
id="dataTabsContent">
                <div class="tab-pane fade
show active" id="manual" role="tabpanel">
                        <ul class="nav nav-tabs"
id="manualTabs" role="tablist">
                                <li class="nav-item"
role="presentation">
                                        <button
class="nav-link active" id="training-tab" data-bs-
toggle="tab" data-bs-target="#training"
type="button" role="tab">Data Uji</button>
                                </li>
                                <li class="nav-item"
role="presentation">
                                        <button
class="nav-link" id="comparison-tab" data-bs-
toggle="tab" data-bs-target="#comparison"
type="button" role="tab">Data Perbandingan</button>
                                </li>
                        </ul>
                </div>
        </div>

```

```

<div class="tab-content
mt-3" id="manualTabsContent">
    <div class="tab-pane
fade show active" id="training" role="tabpanel">
        <form
action="process/data_process.php" method="post">
            <input
type="hidden" name="data_type" value="training">
            <div
class="row">
                <div
class="col-md-4">
                    <div
class="mb-3">
                        <label for="small_box" class="form-label">Box
Kecil</label>
                        <input type="number" class="form-control"
id="small_box" name="small_box" required min="0">
                    </div>
                </div>
                <div
class="col-md-4">
                    <div
class="mb-3">
                        <label for="medium_box" class="form-label">Box
Sedang</label>
                        <input type="number" class="form-control"
id="medium_box" name="medium_box" required min="0">
                    </div>
                </div>
            </div>
        </form>
    </div>
</div>

```

```
<div
class="col-md-4">
<div
class="mb-3">
<label for="large_box" class="form-label">Box
Besar</label>
<input type="number" class="form-control"
id="large_box" name="large_box" required min="0">
</div>
</div>
</div>
<button
type="submit" class="btn btn-primary">Save</button>
</form>
</div>
<div class="tab-pane
fade" id="comparison" role="tabpanel">
<form
action="process/data_process.php" method="post">
<input
type="hidden" name="data_type" value="comparison">
<div
class="row">
<div
class="col-md-4">
<div
class="mb-3">
<label for="small_box" class="form-label">Box
Kecil</label>
<input type="number" class="form-control"
id="small_box" name="small_box" required min="0">
```

```
</div>
</div>
<div
class="col-md-4">
<div
class="mb-3">
<label for="medium_box" class="form-label">Box
Sedang</label>
<input type="number" class="form-control"
id="medium_box" name="medium_box" required min="0">
</div>
</div>
<div
class="col-md-4">
<div
class="mb-3">
<label for="large_box" class="form-label">Box
Besars</label>
<input type="number" class="form-control"
id="large_box" name="large_box" required min="0">
</div>
</div>
<button
type="submit" class="btn btn-primary">Save</button>
</form>
</div>
</div>
</div>
```

```

        <div class="tab-pane fade"
id="excel" role="tabpanel">
            <ul class="nav nav-tabs"
id="excelTabs" role="tablist">
                <li class="nav-item"
role="presentation">
                    <button
class="nav-link active" id="excel-training-tab" data-
bs-toggle="tab" data-bs-target="#excel-training"
type="button" role="tab">Data Uji</button>
                </li>
                <li class="nav-item"
role="presentation">
                    <button
class="nav-link" id="excel-comparison-tab" data-bs-
toggle="tab" data-bs-target="#excel-comparison"
type="button" role="tab">Data Perbandingan</button>
                </li>
            </ul>
            <div class="tab-content
mt-3" id="excelTabsContent">
                <div class="tab-pane
fade show active" id="excel-training"
role="tabpanel">
                    <form
action="process/data_process.php" method="post"
enctype="multipart/form-data">
                        <input
type="hidden" name="data_type"
value="excel_training">
                    <div
class="mb-3">
                        <label
for="excel_file" class="form-label">Excel
File</label>

```

```
<input
type="file" class="form-control" id="excel_file"
name="excel_file" accept=".xlsx, .xls" required>
<div
class="form-text">
Format Excel yang benar:
<ul>
<li>Kolom 1: Box Kecil</li>
<li>Kolom 2: Box Sedang</li>
<li>Kolom 3: Box Besar</li>
</ul>
</div>
</div>
<button
type="submit" class="btn btn-primary">Import Data
Uji</button>
</form>
</div>
<div class="tab-pane
fade" id="excel-comparison" role="tabpanel">
<form
action="process/data_process.php" method="post"
enctype="multipart/form-data">
<input
type="hidden" name="data_type"
value="excel_comparison">
<div
class="mb-3">
<label
for="excel_file" class="form-label">Excel
File</label>
```

```
<input
type="file" class="form-control" id="excel_file"
name="excel_file" accept=".xlsx, .xls" required>
<div
class="form-text">

Format Excel yang benar:

<ul>

<li>Kolom 1: Box Kecil</li>

<li>Kolom 2: Box Sedang</li>

<li>Kolom 3: Box Besar</li>

</ul>

</div>
</div>
<button
type="submit" class="btn btn-primary">Import Data
Perbandingan</button>
</form>
</div>
</div>
</div>
</div>
<hr>

<div class="row mt-4">
<div class="col-md-6">
<h5>Data Uji</h5>
<div class="table-
responsive">
<table class="table
table-bordered table-striped">
<thead>
```

```
<tr>
    <th>Box
    Kecil</th>
    <th>Box
    Sedang</th>
    <th>Box
    Besar</th>
    <th>Tanggal Input</th>
    <th>Aksi</th>
</tr>
</thead>
<tbody>
    <?php
    $stmt =
    $conn->prepare("SELECT id, small_box, medium_box,
    large_box, created_at FROM training_data WHERE
    user_id = ? ORDER BY created_at DESC");
    $stmt-
    >bind_param("i", $_SESSION['user_id']);
    $stmt-
    >execute();
    $result =
    $stmt->get_result();
    while ($row
    = $result->fetch_assoc()):
    ?>
    <tr>
        <td><?=
        $row['small_box'] ?></td>
        <td><?=
        $row['medium_box'] ?></td>
        <td><?=
        $row['large_box'] ?></td>
```

```
<td><?=
$row['created_at'] ?></td>
<td>
<a
href="process/delete_data.php?type=training&id=<?=
$row['id'] ?>" class="btn btn-sm btn-danger"
onclick="return confirm('Are you sure?')">Delete</a>
<a
href="#" class="btn btn-sm btn-warning" data-bs-
toggle="modal" data-bs-target="#editTrainingModal<?=
$row['id'] ?>">Edit</a>
</td>
<div
class="modal fade" id="editTrainingModal<?=
$row['id'] ?>" tabindex="-1" aria-
labelledby="editTrainingModalLabel<?= $row['id'] ?>"
aria-hidden="true">
<div
class="modal-dialog">
<div class="modal-content">
<div class="modal-header">
<h5 class="modal-title"
id="editTrainingModalLabel<?= $row['id'] ?>">Edit
Training Data</h5>
<button type="button" class="btn-close" data-bs-
dismiss="modal" aria-label="Close"></button>
</div>
<form action="process/edit_data.php" method="post">
<input type="hidden" name="data_type"
value="training">
```

```
<input type="hidden" name="data_id" value="<?=$row['id'] ?>">

<div class="modal-body">

<div class="row">

<div class="col-md-4">

<div class="mb-3">

<label for="small_box_edit<?=$row['id'] ?>"
class="form-label">Small Box</label>

<input type="number" class="form-control"
id="small_box_edit<?=$row['id'] ?>" name="small_box"
value="<?=$row['small_box'] ?>" required min="0">

</div>

</div>

<div class="col-md-4">

<div class="mb-3">

<label for="medium_box_edit<?=$row['id'] ?>"
class="form-label">Medium Box</label>

<input type="number" class="form-control"
id="medium_box_edit<?=$row['id'] ?>"
name="medium_box" value="<?=$row['medium_box'] ?>"
required min="0">

</div>

</div>
```

```
</div>

<div class="col-md-4">

<div class="mb-3">

<label for="large_box_edit<?=$row['id'] ?>"
class="form-label">Large Box</label>

<input type="number" class="form-control"
id="large_box_edit<?=$row['id'] ?>" name="large_box"
value="<?=$row['large_box'] ?>" required min="0">

</div>

</div>

</div>

</div>

<div class="modal-footer">

<button type="button" class="btn btn-secondary" data-
bs-dismiss="modal">Close</button>

<button type="submit" class="btn btn-primary">Save
Changes</button>

</div>

</form>

</div>

</div>
```

```

</div>
</tr>
<?php
    endwhile; ?>
</tbody>
</table>
</div>
</div>
<div class="col-md-6">
    <h5>Data
    Perbandingan</h5>
    <div class="table-
    responsive">
        <table class="table
        table-bordered table-striped">
            <thead>
                <tr>
                    <th>Box
                    Kecil</th>
                    <th>Box
                    Sedang</th>
                    <th>Box
                    Besar</th>
                    <th>Tanggal Input</th>
                    <th>Aksi</th>
                </tr>
            </thead>
            <tbody>
                <?php
                    $stmt =
                    $conn->prepare("SELECT id, small_box, medium_box,
                    large_box, created_at FROM comparison_data WHERE
                    user_id = ? ORDER BY created_at DESC");

```

```

$stmt-
>bind_param("i", $_SESSION['user_id']);
$stmt-
>execute();
$result =
$stmt->get_result();

while ($row
= $result->fetch_assoc()):
?>
<tr>
<td><?=
$row['small_box'] ?></td>
<td><?=
$row['medium_box'] ?></td>
<td><?=
$row['large_box'] ?></td>
<td><?=
$row['created_at'] ?></td>
<td>
<a
href="process/delete_data.php?type=comparison&id=<?=
$row['id'] ?>" class="btn btn-sm btn-danger"
onclick="return confirm('Are you sure?')">Delete</a>
<a
href="#" class="btn btn-sm btn-warning" data-bs-
toggle="modal" data-bs-
target="#editComparisonModal<?=
$row['id']
?>">Edit</a>
</td>
<div
class="modal fade" id="editComparisonModal<?=
$row['id'] ?>" tabindex="-1" aria-
labelledby="editComparisonModalLabel<?=
$row['id']
?>" aria-hidden="true">
<div
class="modal-dialog">

```

```
<div
class="modal-content">

<div class="modal-header">

<h5 class="modal-title"
id="editComparisonModalLabel<?= $row['id'] ?>">Edit
Comparison Data</h5>

<button type="button" class="btn-close" data-bs-
dismiss="modal" aria-label="Close"></button>

</div>

<form action="process/edit_data.php" method="post">

<input type="hidden" name="data_type"
value="comparison">

<input type="hidden" name="data_id" value="<?=
$row['id'] ?>">

<div class="modal-body">

</div>

<div class="modal-footer">

<button type="button" class="btn btn-secondary" data-
bs-dismiss="modal">Close</button>

<button type="submit" class="btn btn-primary">Save
Changes</button>

</div>
```

```

</form>

</div>
</div>
</tr>
<?php
endwhile; ?>
</tbody>
</table>
</div>
</div>
</div>
<!-- Delete All Data Button -->
<div class="mt-4">
<button type="button"
class="btn btn-danger" data-bs-toggle="modal" data-
bs-target="#deleteAllModal">
<i class="bi bi-
trash"></i> Hapus Semua Data
</button>
</div>
<!-- Delete All Modal -->
<div class="modal fade"
id="deleteAllModal" tabindex="-1" aria-
labelledby="deleteAllModalLabel" aria-hidden="true">
<div class="modal-dialog">
<div class="modal-
content">
<div class="modal-
header bg-danger text-white">
<h5
class="modal-title"

```

```
id="deleteAllModalLabel">Konfirmasi Penghapusan
Data</h5>

        <button
type="button" class="btn-close btn-close-white" data-
bs-dismiss="modal" aria-label="Close"></button>
        </div>
        <div class="modal-
body">
                <p>Anda Yakin
Ingin Menghapus Semua Data?</p>
                <p class="text-
danger fw-bold">Semua Data Berikut Akan Terhapus:</p>
                <ul>
                <li>Semua
Data Uji</li>
                <li>Semua
Data Perbandingan</li>
                <li>Semua
Angka Acak</li>
                <li>Semua
Hasil Simulasi</li>
                </ul>
                <p>Data Yang
Terhapus Tidak Bisa di Kembalikan!</p>
        </div>
        <div class="modal-
footer">
                <button
type="button" class="btn btn-secondary" data-bs-
dismiss="modal">Batal</button>
                <form
action="process/delete_all_data.php" method="post">
                <button
type="submit" class="btn btn-danger">Hapus Semua
Data</button>
                </form>
        </div>
```



```

        $cumulative_prob[$value] = $cumulative;

        $intervals[$value] = [
            'start' => $cumulative - $prob,
            'end' => $cumulative
        ];
    }

    $result = [
        'frequency' => $frequency,
        'probability' => $probability,
        'cumulative_prob' => $cumulative_prob,
        'intervals' => $intervals
    ];
}

return $result;
}

$stmt = $conn->prepare("SELECT small_box, medium_box,
large_box FROM training_data WHERE user_id = ?");
$stmt->bind_param("i", $_SESSION['user_id']);
$stmt->execute();
$result = $stmt->get_result();
$training_data = $result->fetch_all(MYSQLI_ASSOC);

$small_box_data = array_column($training_data,
'small_box');
$medium_box_data = array_column($training_data,
'medium_box');
$large_box_data = array_column($training_data,
'large_box');

$small_box_dist =
calculateDistribution($small_box_data);
$medium_box_dist =
calculateDistribution($medium_box_data);

```

```

$large_box_dist
calculateDistribution($large_box_data);
?>

<?php include 'includes/header.php'; ?>
<?php include 'includes/navbar.php'; ?>

<div class="container mt-4">
    <div class="row">
        <div class="col-md-12">
            <div class="card">
                <div class="card-header">
                    <h4>Hasil Perhitungan</h4>
                </div>
                <div class="card-body">
                    <?php if (count($training_data)
== 0): ?>
                        <div class="alert alert-
warning">Tidak Ada Data Uji. Dimohon Untuk Memasukan
Data Uji Terlebih Dahulu.</div>
                    <?php else: ?>
                        <ul class="nav nav-tabs"
id="boxTabs" role="tablist">
                            <li class="nav-item"
role="presentation">
                                <button class="nav-
link active" id="small-tab" data-bs-toggle="tab"
data-bs-target="#small" type="button" role="tab">Box
Kecil</button>
                            </li>
                            <li class="nav-item"
role="presentation">
                                <button class="nav-
link" id="medium-tab" data-bs-toggle="tab" data-bs-
target="#medium" type="button" role="tab">Box
Sedang</button>
                            </li>

```



```

<th>Interval Akhir</th>

</tr>

</thead>
<tbody>

<?php foreach ($small_box_dist['frequency'] as $value
=> $count): ?>

<tr>

<td><?= $value ?></td>

<td><?= $count ?></td>

<td><?=
number_format($small_box_dist['probability'][$value]
, 4) ?></td>

<td><?=
number_format($small_box_dist['cumulative_prob'][$va
lue], 4) ?></td>

<td><?=
number_format($small_box_dist['intervals'][$value]['
start'], 4) ?></td>

<td><?=
number_format($small_box_dist['intervals'][$value]['
end'], 4) ?></td>

</tr>

<?php endforeach; ?>

</tbody>
</table>
</div>

```

```

        <?php endif; ?>
    </div>

    <div class="tab-pane
fade" id="medium" role="tabpanel">
        <?php if
(empty($medium_box_dist)): ?>
            <div
class="alert alert-info mt-3">Tidak Ada Data Yang
Tersedia Untuk Box Sedang</div>
        <?php else: ?>
            <div
class="table-responsive">
                <table
class="table table-bordered table-striped">
                    <thead
class="table-success">
                        <tr>
                            <th>Jumlah Penjualan</th>
                            <th>Frekuensi</th>
                            <th>Probabilitas</th>
                            <th>Probabilitas Kumulatif</th>
                            <th>Interval Awal</th>
                            <th>Interval Akhir</th>
                        </tr>
                    </thead>
                    <tbody>
                        <?php foreach ($medium_box_dist['frequency'] as
$value => $count): ?>

```

```
<tr>

<td><?= $value ?></td>

<td><?= $count ?></td>

<td><?=
number_format($medium_box_dist['probability'][$value
], 4) ?></td>

<td><?=
number_format($medium_box_dist['cumulative_prob'][$v
alue], 4) ?></td>

<td><?=
number_format($medium_box_dist['intervals'][$value][
'start'], 4) ?></td>

<td><?=
number_format($medium_box_dist['intervals'][$value][
'end'], 4) ?></td>

</tr>

<?php endforeach; ?>
</tbody>
</table>
</div>
<?php endif; ?>
</div>

<div class="tab-pane
fade" id="large" role="tabpanel">
<?php if
(empty($large_box_dist)): ?>
```



```

if (!isset($_SESSION['username'])) {
    header("Location: login.php");
    exit();
}

$stmt = $conn->prepare("SELECT COUNT(*) as count FROM
training_data WHERE user_id = ?");
$stmt->bind_param("i", $_SESSION['user_id']);
$stmt->execute();
$result = $stmt->get_result();
$straining_count = $result->fetch_assoc()['count'];

if (isset($_POST['generate'])) {
    $stmt = $conn->prepare("DELETE FROM
random_numbers WHERE user_id = ?");
    $stmt->bind_param("i", $_SESSION['user_id']);
    $stmt->execute();

    for ($i = 0; $i < $straining_count; $i++) {
        $small_random = round(mt_rand() /
mt_getrandmax(), 4);
        $medium_random = round(mt_rand() /
mt_getrandmax(), 4);
        $large_random = round(mt_rand() /
mt_getrandmax(), 4);

        $stmt = $conn->prepare("INSERT INTO
random_numbers
                                (user_id,
small_random, medium_random, large_random)
                                VALUES (?, ?, ?, ?)");
        $stmt->bind_param("iddd",
$_SESSION['user_id'], $small_random, $medium_random,
$large_random);
        $stmt->execute();
    }
}

```

```

        $_SESSION['message'] = "Angka Acak Berhasil di
Generate!";
        header("Location: random_numbers.php");
        exit();
    }

    $stmt = $conn->prepare("SELECT id, small_random,
medium_random, large_random FROM random_numbers WHERE
user_id = ? ORDER BY id");
    $stmt->bind_param("i", $_SESSION['user_id']);
    $stmt->execute();
    $result = $stmt->get_result();
    $random_numbers = $result->fetch_all(MYSQLI_ASSOC);
    ?>

    <?php include 'includes/header.php'; ?>
    <?php include 'includes/navbar.php'; ?>

    <div class="container mt-4">
        <div class="row">
            <div class="col-md-12">
                <div class="card">
                    <div class="card-header">
                        <h4>Angka Acak</h4>
                    </div>
                    <div class="card-body">
                        <?php if
(isset($_SESSION['message'])): ?>
                            <div class="alert alert-
success"><?= $_SESSION['message'] ?></div>
                        <?php
unset($_SESSION['message']); ?>
                            <?php endif; ?>

                        <?php if ($training_count == 0):
?>

```

```

        <div class="alert alert-
warning">Tidak Ada Data Uji Yang Tersedia, Dimohon
untuk input data terlebih dahulu.</div>
        <?php else: ?>
            <form method="post">
                <button type="submit"
name="generate" class="btn btn-primary mb-3">
                    <i class="bi bi-
dice-5"></i> Generate Angka Acak
                </button>
                <?php if
(count($random_numbers) > 0): ?>
                    <button
type="submit" name="generate" class="btn btn-warning
mb-3">
                        <i class="bi bi-
arrow-repeat"></i> Regenerate Angka Acak
                    </button>
                <?php endif; ?>
            </form>
            <?php if
(count($random_numbers) > 0): ?>
                <ul class="nav nav-tabs"
id="randomTabs" role="tablist">
                    <li class="nav-item"
role="presentation">
                        <button
class="nav-link active" id="small-random-tab" data-
bs-toggle="tab" data-bs-target="#small-random"
type="button" role="tab">
                            Box Kecil
                        </button>
                    </li>
                    <li class="nav-item"
role="presentation">

```

```

        <button
class="nav-link" id="medium-random-tab" data-bs-
toggle="tab" data-bs-target="#medium-random"
type="button" role="tab">
        Box Sedang
    </button>
</li>
<li class="nav-item"
role="presentation">
        <button
class="nav-link" id="large-random-tab" data-bs-
toggle="tab" data-bs-target="#large-random"
type="button" role="tab">
        Box Besar
    </button>
</li>
</ul>
<div class="tab-content
mt-3" id="randomTabsContent">
        <div class="tab-pane
fade show active" id="small-random" role="tabpanel">
            <div
class="table-responsive">
                <table
class="table table-bordered table-striped">
                    <thead
class="table-primary">
                        <tr>
                            <th>No</th>
                            <th>Angka Acak</th>
                        </tr>
                    </thead>
                    <tbody>

```

```

<?php foreach ($random_numbers as $index => $number):
?>
<tr>

<td><?= $index + 1 ?></td>

<td><?= number_format($number['small_random'], 4)
?></td>

</tr>

<?php endforeach; ?>
</tbody>
</table>
</div>
</div>
<div class="tab-pane
fade" id="medium-random" role="tabpanel">
<div
class="table-responsive">
<table
class="table table-bordered table-striped">
<thead
class="table-success">
<tr>
<th>No</th>
<th>Angka Acak</th>

</tr>

</thead>
<tbody>

```

```

<?php foreach ($random_numbers as $index => $number):
?>
<tr>

<td><?= $index + 1 ?></td>

<td><?= number_format($number['medium_random'], 4)
?></td>

</tr>

<?php endforeach; ?>
</tbody>
</table>
</div>
</div>
<div class="tab-pane
fade" id="large-random" role="tabpanel">
<div
class="table-responsive">
<table
class="table table-bordered table-striped">
<thead
class="table-info">
<tr>
<th>No</th>
<th>Angka Acak</th>

</tr>

</thead>
<tbody>

```

```

<?php foreach ($random_numbers as $index => $number):
?>
<tr>

<td><?= $index + 1 ?></td>

<td><?= number_format($number['large_random'], 4)
?></td>

</tr>

<?php endforeach; ?>
</tbody>
</table>
</div>
</div>
</div>
<div class="mt-3">
<a
href="simulation.php" class="btn btn-success">
<i class="bi bi-calculator"></i> Jalankan Simulasi
</a>
</div>
<?php else: ?>
<div class="alert alert-info">Click "Generate Angka Acak" Untuk Membangkitkan
Angka Acak.</div>
<?php endif; ?>
<?php endif; ?>
</div>
</div>
</div>
</div>
</div>

```

```
<?php include 'includes/footer.php'; ?>
```

5. Source Code Halaman Hasil Simulasi

```
<?php
require_once 'config/database.php';

if (!isset($_SESSION['username'])) {
    header("Location: login.php");
    exit();
}

function calculateDistribution($data) {
    $result = [];

    if (count($data) > 0) {
        $frequency = array_count_values($data);
        ksort($frequency);

        $total_records = count($data);
        $probability = [];
        $cumulative_prob = [];
        $intervals = [];

        $cumulative = 0;
        foreach ($frequency as $value => $count) {
            $prob = $count / $total_records;
            $probability[$value] = $prob;

            $cumulative += $prob;
            $cumulative_prob[$value] = $cumulative;

            $intervals[$value] = [
                'start' => $cumulative - $prob,
                'end' => $cumulative
            ];
        }
    }
}
```

```

    }

    $result = [
        'frequency' => $frequency,
        'probability' => $probability,
        'cumulative_prob' => $cumulative_prob,
        'intervals' => $intervals
    ];
}

return $result;
}

function runSimulation($training_data,
    $random_numbers, $comparison_data, $box_type) {
    $simulation_results = [];
    $abs_errors = [];
    $sq_errors = [];
    $ape_errors = [];

    $training_values = array_column($training_data,
        $box_type);
    $distribution = calculateDistribution($training_values);

    if (empty($distribution['intervals'])) {
        return [
            'mad' => 0,
            'mse' => 0,
            'mape' => 0,
            'results' => []
        ];
    }

    $min_count = min(
        count($random_numbers),
        count($comparison_data)

```

```

);

for ($i = 0; $i < $min_count; $i++) {
    $random_key = str_replace('_box', '_random',
$box_type);
    $random = $random_numbers[$i][$random_key] ??
0;

    $simulated_value = 0;

    foreach ($distribution['intervals'] as $value
=> $interval) {
        if ($random >= $interval['start'] &&
$random < $interval['end']) {
            $simulated_value = $value;
            break;
        }
    }

    $actual_value =
$comparison_data[$i][$box_type] ?? 0;
    $error = $actual_value - $simulated_value;
    $abs_error = abs($error);
    $sq_error = pow($error, 2);
    $ape_error = ($actual_value != 0) ?
($abs_error / $actual_value) * 100 : 0;

    $simulation_results[] = [
        'training' => $training_values[$i %
count($training_values)] ?? 0,
        'random' => $random,
        'simulated' => $simulated_value,
        'actual' => $actual_value,
        'error' => $error,
        'abs_error' => $abs_error,
        'sq_error' => $sq_error,
        'ape_error' => $ape_error

```

```

];

    $abs_errors[] = $abs_error;
    $sq_errors[] = $sq_error;
    $ape_errors[] = $ape_error;
}

    $metrics = [
        'mad' => count($abs_errors) > 0 ?
array_sum($abs_errors) / count($abs_errors) : 0,
        'mse' => count($sq_errors) > 0 ?
array_sum($sq_errors) / count($sq_errors) : 0,
        'mape' => count($ape_errors) > 0 ?
array_sum($ape_errors) / count($ape_errors) : 0,
        'results' => $simulation_results
    ];

    return $metrics;
}

    $training_data = [];
    $random_numbers = [];
    $comparison_data = [];

    $stmt = $conn->prepare("SELECT small_box, medium_box,
large_box FROM training_data WHERE user_id = ? ORDER
BY created_at");
    $stmt->bind_param("i", $_SESSION['user_id']);
    $stmt->execute();
    $result = $stmt->get_result();
    $training_data = $result->fetch_all(MYSQLI_ASSOC);

    $stmt = $conn->prepare("SELECT small_random,
medium_random, large_random FROM random_numbers WHERE
user_id = ? ORDER BY id");
    $stmt->bind_param("i", $_SESSION['user_id']);
    $stmt->execute();

```

```

$result = $stmt->get_result();
$random_numbers = $result->fetch_all(MYSQLI_ASSOC);

$stmt = $conn->prepare("SELECT small_box, medium_box,
large_box FROM comparison_data WHERE user_id = ? ORDER
BY created_at");
$stmt->bind_param("i", $_SESSION['user_id']);
$stmt->execute();
$result = $stmt->get_result();
$comparison_data = $result->fetch_all(MYSQLI_ASSOC);

$small_box_results = runSimulation($training_data,
$random_numbers, $comparison_data, 'small_box');
$medium_box_results = runSimulation($training_data,
$random_numbers, $comparison_data, 'medium_box');
$large_box_results = runSimulation($training_data,
$random_numbers, $comparison_data, 'large_box');

if (count($random_numbers) > 0 &&
count($comparison_data) > 0) {
    $stmt = $conn->prepare("INSERT INTO
simulation_results
(user_id, small_mad,
small_mse, small_mape,
medium_mad, medium_mse,
medium_mape,
large_mad, large_mse,
large_mape)
VALUES (?, ?, ?, ?, ?, ?,
?, ?, ?, ?)");
    $stmt->bind_param("idddddddd",
        $_SESSION['user_id'],
        $small_box_results['mad'],
        $small_box_results['mse'],
        $small_box_results['mape'],
        $medium_box_results['mad'],
        $medium_box_results['mse'],

```

```

        $medium_box_results['mape'],
        $large_box_results['mad'],
        $large_box_results['mse'],
        $large_box_results['mape']
    );
    $stmt->execute();
}
?>

<?php include 'includes/header.php'; ?>
<?php include 'includes/navbar.php'; ?>

<div class="container mt-4">
    <div class="row">
        <div class="col-md-12">
            <div class="card">
                <div class="card-header">
                    <h4>Hasil Simulasi</h4>
                </div>
                <div class="card-body">
                    <?php if (count($training_data)
== 0 || count($random_numbers) == 0 ||
count($comparison_data) == 0): ?>
                        <div class="alert alert-
warning">
                            <?php if
(count($training_data) == 0): ?>
                                <p>Tidak Ada Data Uji
Yang Tersedia, Dimohon Untuk Input Data Uji Terlebih
Dahulu.</p>
                            <?php endif; ?>
                            <?php if
(count($random_numbers) == 0): ?>
                                <p>Tidak Ada Angka
Acak Yang Tersedia, Dimohon Untuk Generate Angka Acak
Terlebih Dahulu.</p>
                            <?php endif; ?>

```

```

        <?php                                     if
(count($comparison_data) == 0): ?>
        <p>Tidak Ada Data
Perbandingan Yang Tersedia, Dimohon Untuk Input Data
Perbandingan Terlebih Dahulu.</p>
        <?php endif; ?>
    </div>
    <?php else: ?>
        <ul class="nav nav-tabs"
id="simulationTabs" role="tablist">
            <li class="nav-item"
role="presentation">
                <button class="nav-
link active" id="small-sim-tab" data-bs-toggle="tab"
data-bs-target="#small-sim" type="button"
role="tab">
                    Box Kecil
                </button>
            </li>
            <li class="nav-item"
role="presentation">
                <button class="nav-
link" id="medium-sim-tab" data-bs-toggle="tab" data-
bs-target="#medium-sim" type="button" role="tab">
                    Box Sedang
                </button>
            </li>
            <li class="nav-item"
role="presentation">
                <button class="nav-
link" id="large-sim-tab" data-bs-toggle="tab" data-
bs-target="#large-sim" type="button" role="tab">
                    Box Besar
                </button>
            </li>
        </ul>

```

```

        <div class="tab-content mt-
3" id="simulationTabsContent">
            <div class="tab-pane
fade show active" id="small-sim" role="tabpanel">
                <?php if
(empty($small_box_results['results'])): ?>
                    <div
class="alert alert-info">Tidak ada Hasil Simulasi
Tersedia Untuk Box Kecil</div>
                <?php else: ?>
                    <div
class="table-responsive">
                        <table
class="table table-bordered table-striped">
                            <thead
class="table-primary">
                                <tr>
                                    <th>No</th>
                                    <th>Data Uji</th>
                                    <th>Angka Acak</th>
                                    <th>Simulasi</th>
                                    <th>Data Perbandingan</th>
                                    <th>Error</th>
                                    <th>MAD/MAE</th>
                                    <th>MSE</th>
                                    <th>MAPE (%)</th>
                                </tr>

```

```

</thead>
<tbody>

<?php foreach ($small_box_results['results'] as
$index => $row): ?>

<tr>

<td><?=$index + 1 ?></td>

<td><?=$row['training'] ?></td>

<td><?= number_format($row['random'], 4) ?></td>

<td><?=$row['simulated'] ?></td>

<td><?=$row['actual'] ?></td>

<td><?= number_format($row['error'], 2) ?></td>

<td><?= number_format($row['abs_error'], 2) ?></td>

<td><?= number_format($row['sq_error'], 2) ?></td>

<td><?= number_format($row['ape_error'], 2) ?></td>

</tr>

<?php endforeach; ?>

</tbody>
</table>
</div>

<div class="row
mt-4">

<div
class="col-md-4">
```

```
<div
class="card text-white bg-primary mb-3">
<div
class="card-header">MAD Box Kecil</div>
<div
class="card-body">
<h2
class="card-title"><?=
number_format($small_box_results['mad'], 2) ?></h2>
</div>
</div>
<div
class="col-md-4">
<div
class="card text-white bg-success mb-3">
<div
class="card-header">MSE Box Kecil</div>
<div
class="card-body">
<h2
class="card-title"><?=
number_format($small_box_results['mse'], 2) ?></h2>
</div>
</div>
<div
class="col-md-4">
<div
class="card text-white bg-info mb-3">
<div
class="card-header">MAPE Box Kecil</div>
<div
class="card-body">
```

```

<h2 class="card-title"><?=
number_format($small_box_results['mape'], 2)
?>%</h2>

</div>

</div>

</div>

</div>

<?php endif; ?>

</div>

<div class="tab-pane
fade" id="medium-sim" role="tabpanel">
<?php if
(empty($medium_box_results['results'])): ?>
<div
class="alert alert-info">Tidak Ada Hasil Simulasi
Tersedia Untuk Box Sedang</div>
<?php else: ?>
<div
class="table-responsive">
<table
class="table table-bordered table-striped">
<thead
class="table-success">
<tr>
<th>No</th>
<th>Data Uji</th>
<th>Angka Acak</th>
<th>Simulasi</th>
<th>Data Perbandingan</th>

```

```

<th>Error</th>

<th>MAD/MAE</th>

<th>MSE</th>

<th>MAPE (%)</th>

</tr>
</thead>
<tbody>

<?php foreach ($medium_box_results['results'] as
$index => $row): ?>
<tr>

<td><?= $index + 1 ?></td>

<td><?= $row['training'] ?></td>

<td><?= number_format($row['random'], 4) ?></td>

<td><?= $row['simulated'] ?></td>

<td><?= $row['actual'] ?></td>

<td><?= number_format($row['error'], 2) ?></td>

<td><?= number_format($row['abs_error'], 2) ?></td>

<td><?= number_format($row['sq_error'], 2) ?></td>

<td><?= number_format($row['ape_error'], 2) ?></td>

</tr>

```

```
<?php endforeach; ?>
</tbody>
</table>
</div>
<div class="row
mt-4">
<div
class="col-md-4">
<div
class="card text-white bg-primary mb-3">
<div
class="card-header">MAD Box Sedang</div>
<div
class="card-body">
<h2 class="card-title"><?=
number_format($medium_box_results['mad'], 2) ?></h2>
</div>
</div>
</div>
<div
class="col-md-4">
<div
class="card text-white bg-success mb-3">
<div
class="card-header">MSE Box Sedang</div>
<div
class="card-body">
<h2 class="card-title"><?=
number_format($medium_box_results['mse'], 2) ?></h2>
</div>
</div>
```

```

</div>
<div
class="col-md-4">
<div
class="card text-white bg-info mb-3">
<div
class="card-header">MAPE Box Sedang</div>
<div
class="card-body">
<h2 class="card-title"><?=
number_format($medium_box_results['mape'], 2)
?>%</h2>
</div>
</div>
</div>
</div>
<?php endif; ?>
</div>
<div class="tab-pane
fade" id="large-sim" role="tabpanel">
<?php if
(empty($large_box_results['results'])): ?>
<div
class="alert alert-info">Tidak Ada Hasil Simulasi
Tersedia Untuk Box Besar</div>
<?php else: ?>
<div
class="table-responsive">
<table
class="table table-bordered table-striped">
<thead
class="table-info">
<tr>

```

```

<th>No</th>

<th>Data Uji</th>

<th>Angka Acak</th>

<th>Simulasi</th>

<th>Data Perbandingan</th>

<th>Error</th>

<th>MAD/MAE</th>

<th>MSE</th>

<th>MAPE (%)</th>

</tr>
</thead>
<tbody>
<?php foreach ($large_box_results['results'] as
$index => $row): ?>
<tr>

<td><?= $index + 1 ?></td>

<td><?= $row['training'] ?></td>

<td><?= number_format($row['random'], 4) ?></td>

<td><?= $row['simulated'] ?></td>

<td><?= $row['actual'] ?></td>

```

```

<td><?= number_format($row['error'], 2) ?></td>

<td><?= number_format($row['abs_error'], 2) ?></td>

<td><?= number_format($row['sq_error'], 2) ?></td>

<td><?= number_format($row['ape_error'], 2) ?></td>

</tr>

<?php endforeach; ?>
</tbody>
</table>
</div>
<div class="row
mt-4">
<div
class="col-md-4">
<div
class="card text-white bg-primary mb-3">
<div
class="card-header">MAD Box Besar</div>
<div
class="card-body">
<h2 class="card-title"><?=
number_format($large_box_results['mad'], 2) ?></h2>
</div>
</div>
</div>
<div
class="col-md-4">
<div
class="card text-white bg-success mb-3">

```



```
<?php include 'includes/footer.php'; ?>
```

