Date: - **29/01/2021**

Roll No. and Name: - **18BCE219 – Parth Shah**

Course Code and Name: - **2CSDE69 – LAMP Technology**

Practical No.: - **2**

Aim: -

(A) Write a PHP function that check whether user entered two numbers are Amicable numbers or not.

(B) Write a PHP function to check whether user entered number is Automorphic number or not.

(C) Write a PHP function that check whether user entered number is Special number or not.

(D) Write a PHP function that check whether user entered number is Kaprekar number or not.

(E) Write a PHP function that check whether user entered number is Deficient number or not.

Methodology: -

(A) Amicable Numbers

Amicable Numbers

Enter first Number: 220
Enter second Number: 284
Submit

220 and 284 are
Amicable Numbers

Amicable Numbers

Enter first Number: 100
Enter second Number: 200
Submit

100 and 200 are
Not Amicable Numbers

```html
<!DOCTYPE html>
<html>
<body>

<center><h1>Amicable Numbers</h1></center>
<hr width="50%" size='10' noshade><br>
<center>
<form method="post" action="<?php echo $_SERVER['PHP_SELF'];?>">
        Enter first Number: <input type="number" name="fno"><br>
        Enter second Number: <input type="number" name="sno"><br>
    <input type="submit"><br><br>
        <hr width="50%" size='10' noshade><br>
</form>

<?php
// function to find sum of all divisors
function sumofdiv($x) {
        $suma=1;
        for($i=2; $i<=sqrt($x); ++$i) {
                if($x%$i==0) {
                        $suma += $i+($x/$i);
                }
        }
        return $suma;
}

if($_SERVER["REQUEST_METHOD"] == "POST") {

        // taking 2 inputs and storing in variables
        $x = htmlspecialchars($_REQUEST['fno']);
        $y = htmlspecialchars($_REQUEST['sno']);
        if(empty($x) or empty($y)) {
                echo "Please fill both the inputs!<br>";
        }
        else {
                $sumx = sumofdiv($x);
                $sumy = sumofdiv($y);
                echo $x." and ".$y." are <br>";
                echo (($sumx==$y and $sumy==$x)?"Amicable Numbers":"Not Amicable Numbers");
        }
        unset($x);
        unset($y);
}

?>

<script>
if ( window.history.replaceState ) {
  window.history.replaceState( null, null, window.location.href );
}
</script>

</center>
</body>
</html>
```

(B) Automorphic Number

Automorphic Number

Enter Number: 625
Submit

Num = 625 and its square = 390625

625 is Automorphic Number.

Automorphic Number

Enter Number: 605
Submit

Num = 605 and its square = 366025

605 is Not Automorphic Number.

```php
<!DOCTYPE html>
<html>
<body>

<center><h1>Automorphic Number</h1></center>
<hr width="50%" size='10' noshade><br>
<center>
<form method="post" action="<?php echo $_SERVER['PHP_SELF'];?>">
        Enter Number: <input type="number" name="num"><br>
   <input type="submit"><br><br>
        <hr width="50%" size='10' noshade><br>
</form>

<?php

if($_SERVER["REQUEST_METHOD"] == "POST") {

        // taking input and storing in variable
        $n = htmlspecialchars($_REQUEST['num']);
        if(empty($n)) {
                echo "Please fill the input!<br>";
        }
        else {
                $square = $n**2;
                $temp = $n;
                $tempsquare = $square;
                $f=0;
                // finding whether last digits of square are matching or not
                while($temp!=0) {
                        if($temp%10 != $tempsquare%10) {
                                $f=1;
                                break;
                        }
                        $temp = intdiv($temp, 10);
                        $tempsquare = intdiv($tempsquare, 10);
                }

                echo "Num = $n and its square = $square<br><br>";
                echo ($f?"$n is Not":"$n is")." Automorphic Number.<br>";
        }
        unset($n);
}
```

```
?>

<script>
if ( window.history.replaceState ) {
  window.history.replaceState( null, null, window.location.href );
}
</script>

</center>
</body>
</html>
```

(C) Special Number

Enter Number: 59

Submit

59 is a special number.

Special Number

Enter Number: 82

Submit

82 is not a special number.

```
<!DOCTYPE html>
<html>
<body>

<center><h1>Special Number</h1></center>
<hr width="50%" size='10' noshade><br>
<center>
<form method="post" action="<?php echo $_SERVER['PHP_SELF'];?>">
        Enter Number: <input type="number" name="num"><br>
   <input type="submit"><br><br>
        <hr width="50%" size='10' noshade><br>
</form>

<?php

if($_SERVER["REQUEST_METHOD"] == "POST") {

        // taking input and storing it in variable
        $n = htmlspecialchars($_REQUEST['num']);
        if(empty($n)) {
                echo "Please fill the input!<br>";
        }
        else {
                // finding sum and multiplication of digits of number
                $t = $n;
                $add=0;
                $mul=1;
                while($t>0) {
                        $add += $t%10;
                        $mul *= $t%10;
```

```
                                $t = intdiv($t, 10);
                        }

                        // checking condition for special number
                        if($add+$mul==$n) {
                                echo "$n is a special number.<br>";
                        }
                        else {
                                echo "$n is not a special number.<br>";
                        }
                }
        unset($n);
}

?>

<script>
if ( window.history.replaceState ) {
  window.history.replaceState( null, null, window.location.href );
}
</script>

</center>
</body>
</html>
```

(D) Kaprekar Number

Kaprekar Number

Enter Number: 297
Submit

Number = 297, Its square = 88209
Left sum = 88, Right sum = 209

297 is a Kaprekar number.

```
<!DOCTYPE html>
<html>
<body>

<center><h1>Kaprekar Number</h1></center>
<hr width="50%" size='10' noshade><br>
<center>
<form method="post" action="<?php echo $_SERVER['PHP_SELF'];?>">
        Enter Number: <input type="number" name="num"><br>
   <input type="submit"><br><br>
        <hr width="50%" size='10' noshade><br>
</form>

<?php
```
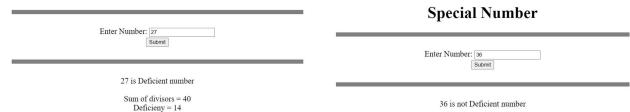
```php
if($_SERVER["REQUEST_METHOD"] == "POST") {

        // taking input and storing it in variable
        $n = htmlspecialchars($_REQUEST['num']);
        if(empty($n)) {
                echo "Please fill the input!<br>";
        }
        else {
                // first counting number of digits in number
                $square = $n**2;
                $t = $square;
                $count = 0;
                while($t>0) {
                        $count++;
                        $t = intdiv($t, 10);
                }

                // finding left part and right part of square of number
                $right = 0;
                $left = 0;
                $pow = 1;
                $count = intdiv($count+1, 2);

                // for right part
                while($count--) {
                        $right += ($square%10)*$pow;
                        $square = intdiv($square, 10);
                        $pow *= 10;
                }
                $pow = 1;

                // for left part
                while($square>0) {
                        $left += ($square%10)*$pow;
                        $square = intdiv($square, 10);
                        $pow *= 10;
                }
                echo "Number = $n, Its square = ".($n**2)."<br>";
                echo "Left sum = $left, Right sum = $right<br><br>";

                // checking condition of Kaprekar number
                if($left+$right==$n) {
                        echo "$n is a Kaprekar number.<br>";
                }
                else {
                        echo "$n is not a Kaprekar number.<br>";
                }
        }
        unset($n);
}

?>

<script>
```

```
if ( window.history.replaceState ) {
  window.history.replaceState( null, null, window.location.href );
}
</script>

</center>
</body>
</html>
```

(E) Deficient Number

<center>**Special Number**</center>

Enter Number: 27
Submit

27 is Deficient number

Sum of divisors = 40
Deficieny = 14

<center>**Special Number**</center>

Enter Number: 36
Submit

36 is not Deficient number

```
<!DOCTYPE html>
<html>
<body>

<center><h1>Special Number</h1></center>
<hr width="50%" size='10' noshade><br>
<center>
<form method="post" action="<?php echo $_SERVER['PHP_SELF'];?>">
        Enter Number: <input type="number" name="num"><br>
   <input type="submit"><br><br>
        <hr width="50%" size='10' noshade><br>
</form>

<?php

if($_SERVER["REQUEST_METHOD"] == "POST") {

        // taking input and storing it in variable
        $n = htmlspecialchars($_REQUEST['num']);
        if(empty($n)) {
                echo "Please fill the input!<br>";
        }
        else {
                // finding sum of all divisors of number
                $suma = 0;
                for($i=1; $i<=sqrt($n); ++$i) {
                        if($n%$i==0) {
                                if($i!=($n/$i))
                                        $suma += $i+($n/$i);
                                else
                                        $suma += $i;
                        }
```

```
                }

                // checking condition of deficient number
                if($suma<2*$n) {
                        echo "$n is Deficient number<br><br>Sum of divisors = $suma<br>Deficieny = ".(2*$n-
$suma)."<br>";
                }
                else {
                        echo "$n is not Deficient number<br>";
                }
        }
        unset($n);
}

?>

<script>
if ( window.history.replaceState ) {
  window.history.replaceState( null, null, window.location.href );
}
</script>

</center>
</body>
</html>
```

Conclusion: -

From this practical, I have learnt how to define variables, loops in PHP,
conditions in PHP, implement user defined functions in PHP, etc. and
performed certain programs like checking whether the number taken as
input from user has certain property or not.