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# R E P O R T

## Chapter 04

### while 문

과목명	웹프로그래밍
분반	1 분반
교수	문 일 영
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제출일	2022년 4월 7일 목요일

## 예제 4-1.

### 소스코드

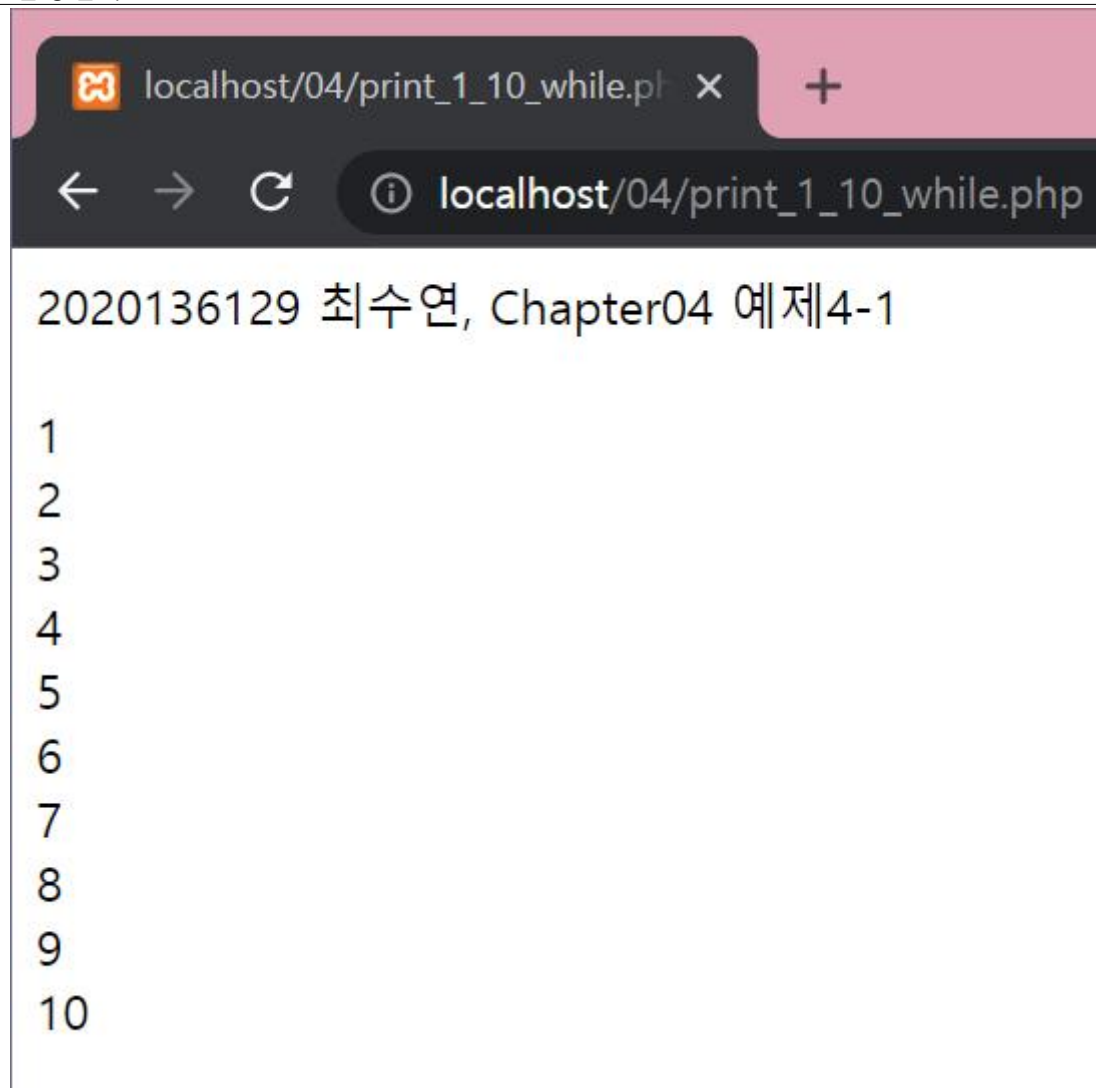
```
<?php
    echo "2020136129 최수연, Chapter04 예제4-1 <br><br>";

    $i = 1;

    while($i <= 10){
        echo "$i<br>";
        $i++;
    }

?>
```

### 실행결과



## 예제 4-2.

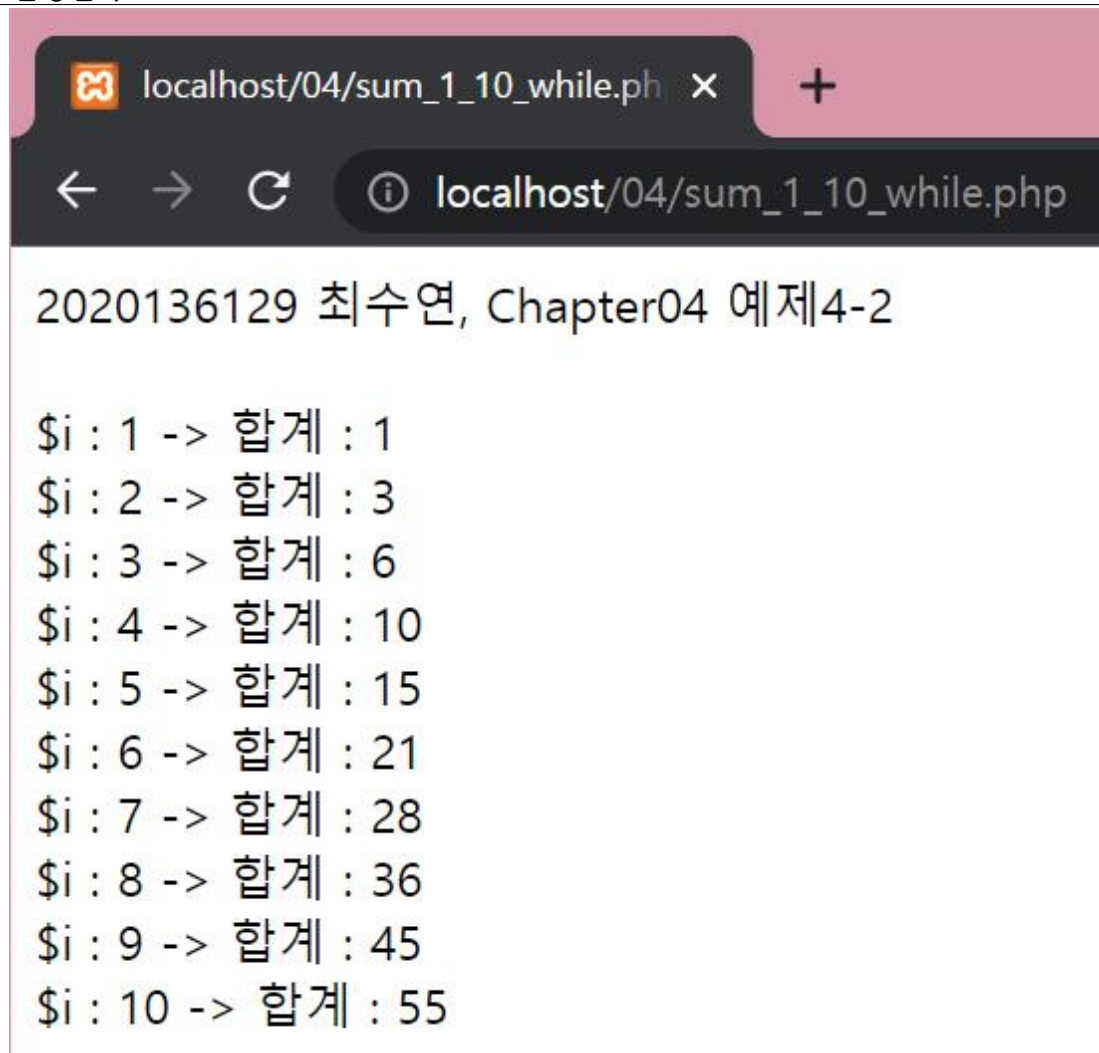
### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 예제4-2 <br><br>";

    $sum = 0;
    $i = 1;

    while($i <= 10){
        $sum = $sum + $i;
        echo "\$i : $i -> 합계 : $sum<br>";
        $i++;
    }
?>
```

### 실행결과



### 예제 4-3.

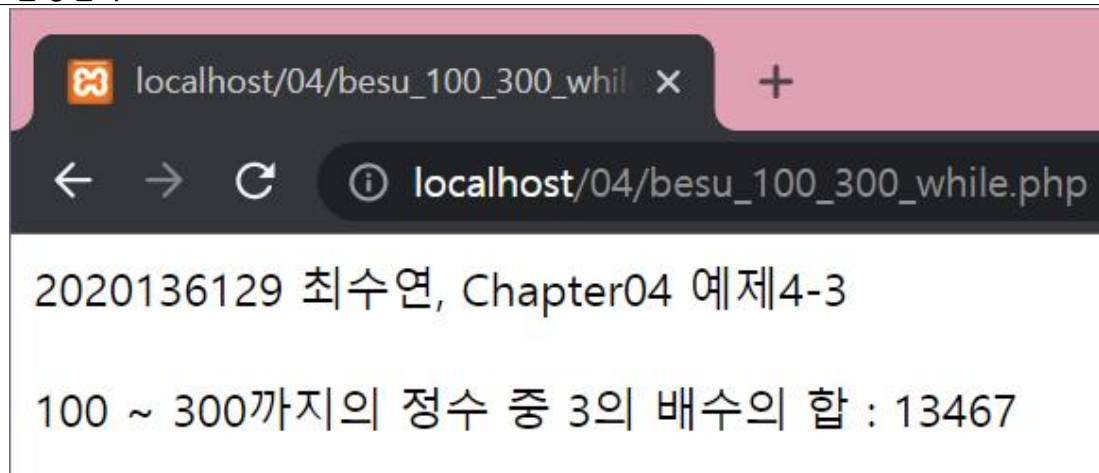
#### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 예제4-3 <br><br>";

    $sum = 0;
    $i = 100;

    while($i <= 300){
        if($i % 3 == 0) $sum = $sum + $i;
        $i++;
    }
    echo "100 ~ 300까지의 정수 중 3의 배수의 합 : $sum";
?>
```

#### 실행결과



## 예제 4-4.

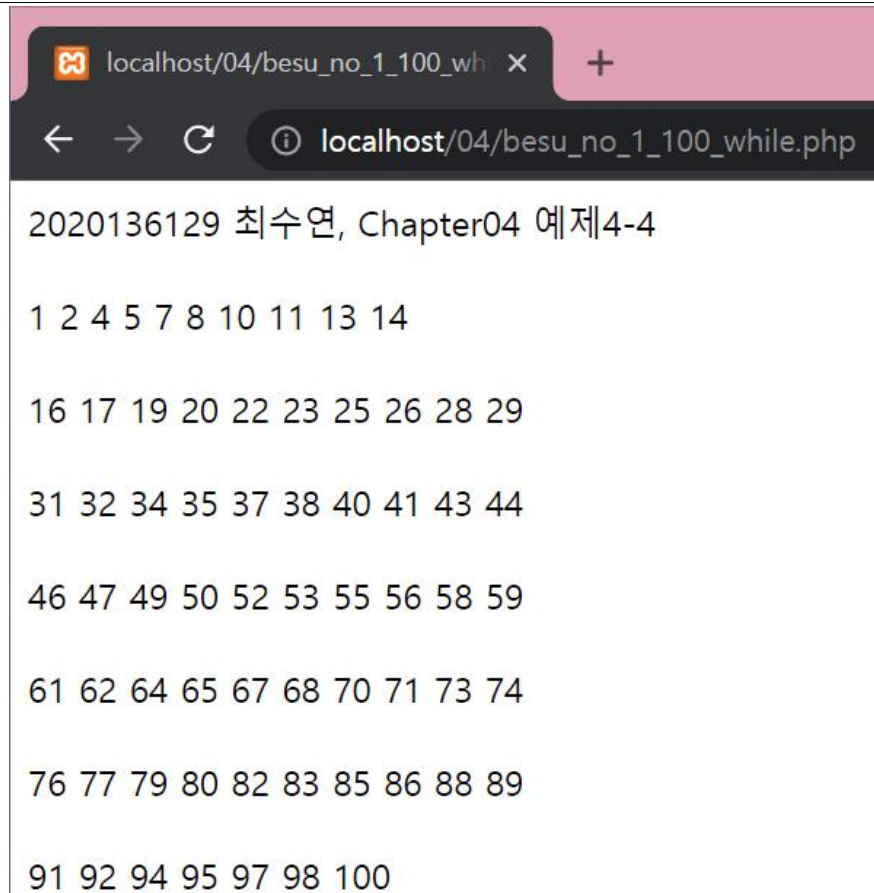
### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 예제4-4 <br><br>";

    $i = 1;
    $count = 0;

    while($i <= 100){
        if($i % 3 != 0){
            echo "$i ";
            $count++;
        }
        if($count % 10 == 0)
            echo "<br>";
        $i++;
    }
?>
```

### 실행결과



## 예제 4-5.

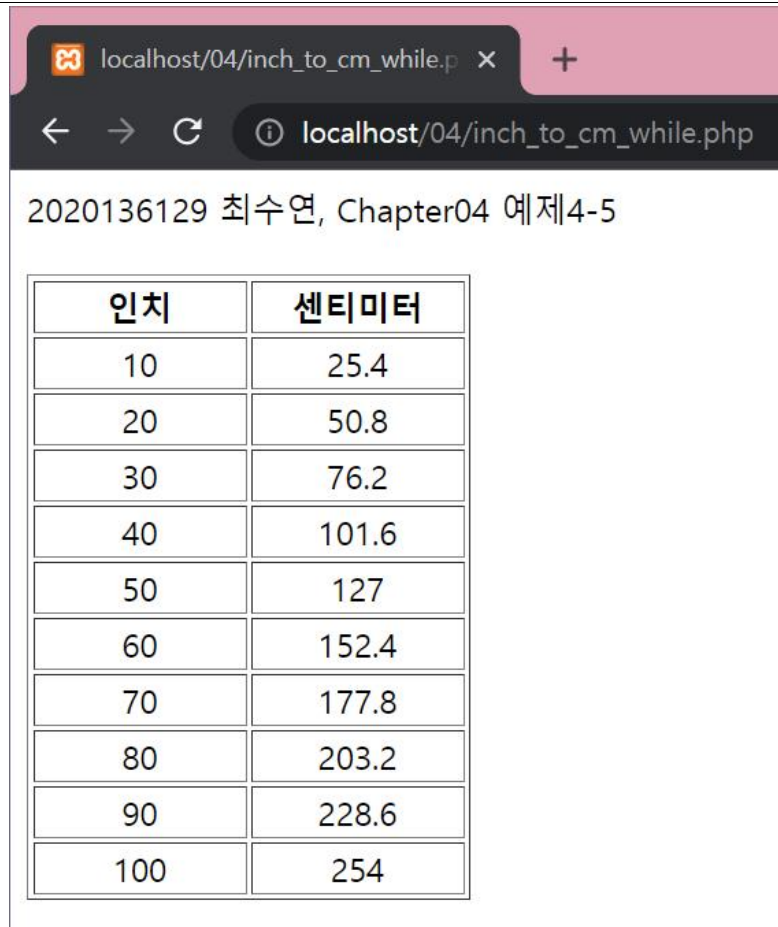
### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 예제4-5 <br><br>";

    $inch = 10;
    echo "<table border = '1'>";
    echo "<tr>";
    echo "<th width='100'>인치</th><th width='100'>센티미터</th>";
    echo "</tr>";

    while($inch <= 100){
        $cm = $inch * 2.54;
        echo "<tr align='center'><td>$inch</td><td>$cm</td></tr>";
        $inch = $inch + 10;
    }
    echo "</table>";
?>
```

### 실행결과



2020136129 최수연, Chapter04 예제4-5

인치	센티미터
10	25.4
20	50.8
30	76.2
40	101.6
50	127
60	152.4
70	177.8
80	203.2
90	228.6
100	254

## 예제 4-6.

### 소스코드

```
<h3>2단 구구단 표 만들기</h3>
<table border="1" width="100">
<?php
    echo "2020136129 최수연, Chapter04 예제4-6 <br><br>";

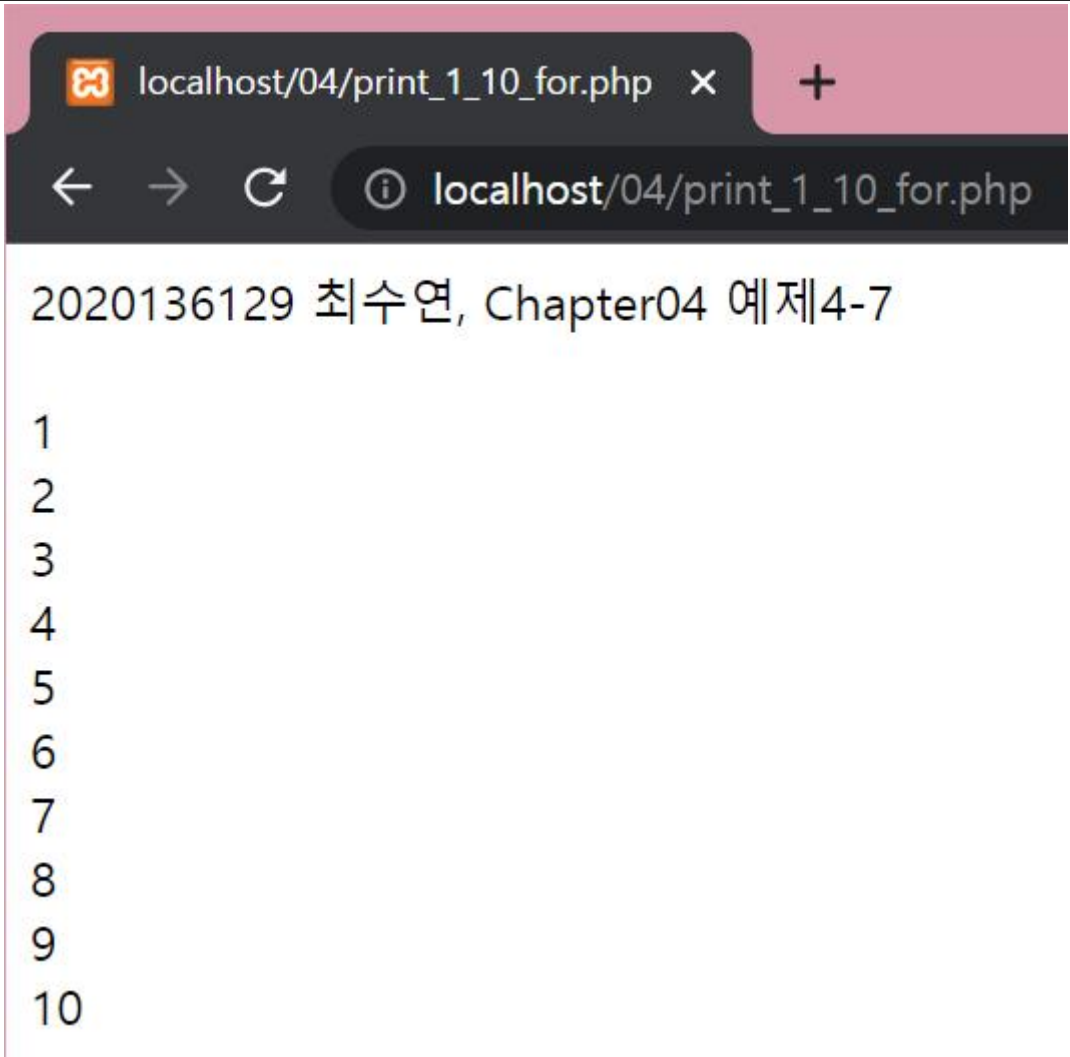
    $a = 2;
    $b = 1;

    while($b <= 9){
        $c = $a * $b;
        echo "<tr><td align='center'>$a x $b = $c</td></tr>";
        $b++;
    }
?>
</table>
```

### 실행결과



## 예제 4-7.

<b>소스코드</b>
<pre>&lt;?php     echo "2020136129 최수연, Chapter04 예제4-7 &lt;br&gt;&lt;br&gt;";      for (\$i = 1; \$i &lt;= 10; \$i++){         echo "\$i&lt;br&gt;";     } ?&gt;</pre>
<b>실행결과</b>




## 예제 4-8.

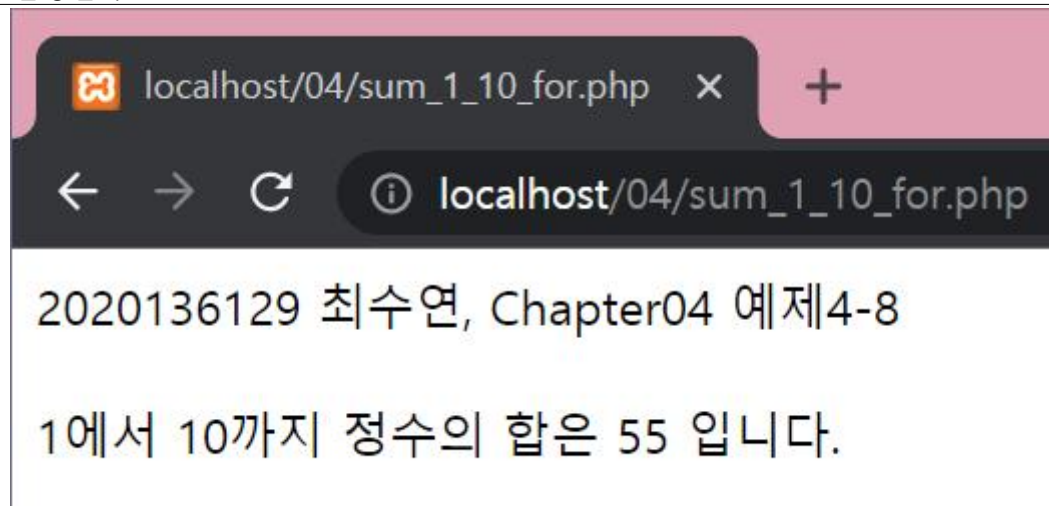
### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 예제4-8 <br><br>";

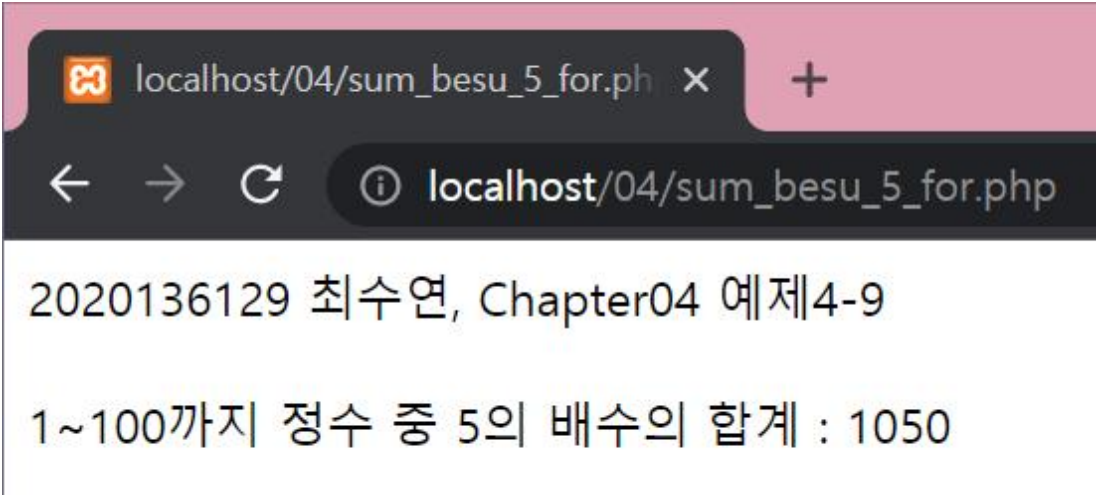
    $sum = 0;

    for ($a = 1; $a <= 10; $a++){
        $sum = $sum + $a;
    }
    echo ("1에서 10까지 정수의 합은 $sum 입니다.<br>");
?>
```

### 실행결과



## 예제 4-9.

소스코드
<pre>&lt;?php     echo "2020136129 최수연, Chapter04 예제4-9 &lt;br&gt;&lt;br&gt;";      \$sum = 0;      for (\$i = 1; \$i &lt;= 100; \$i++){         if(\$i % 5 == 0)             \$sum = \$sum + \$i;     }     echo "1~100까지 정수 중 5의 배수의 합계 : \$sum"; ?&gt;</pre>
실행결과


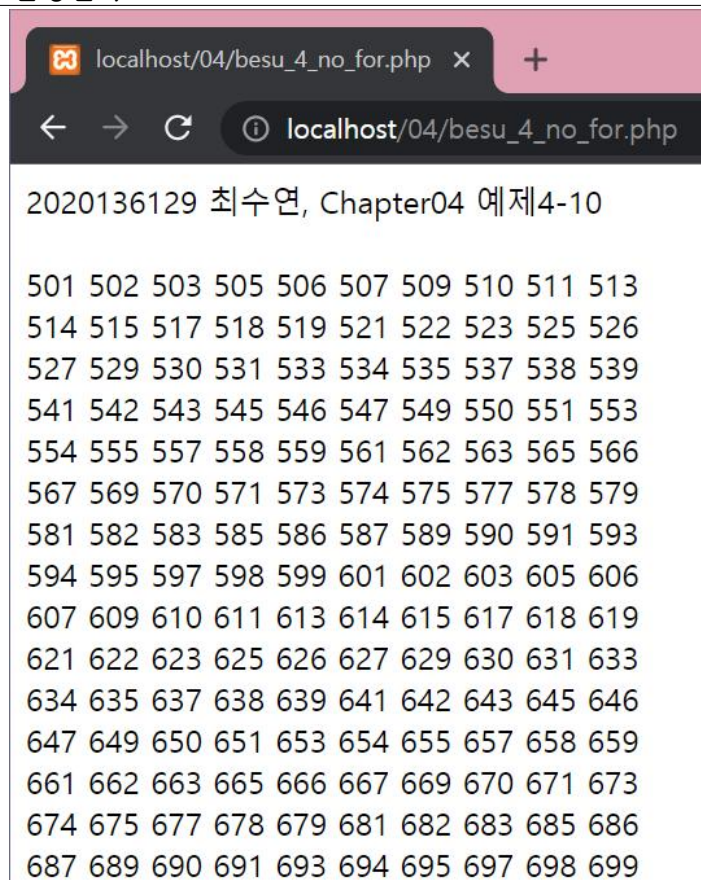
## 예제 4-10.

### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 예제4-10 <br><br>";

    $count = 0;
    $ok = true;
    for ($i = 500; $i <= 700; $i++){
        if($i % 4 != 0){
            echo $i." ";
            $count++;
            $ok = true;
        }
        if ($count != 0 && $count % 10 == 0 && $ok == true){
            echo "<br>";
            $ok = false;
        }
    }
?>
```

### 실행결과



2020136129 최수연, Chapter04 예제4-10

501 502 503 505 506 507 509 510 511 513  
514 515 517 518 519 521 522 523 525 526  
527 529 530 531 533 534 535 537 538 539  
541 542 543 545 546 547 549 550 551 553  
554 555 557 558 559 561 562 563 565 566  
567 569 570 571 573 574 575 577 578 579  
581 582 583 585 586 587 589 590 591 593  
594 595 597 598 599 601 602 603 605 606  
607 609 610 611 613 614 615 617 618 619  
621 622 623 625 626 627 629 630 631 633  
634 635 637 638 639 641 642 643 645 646  
647 649 650 651 653 654 655 657 658 659  
661 662 663 665 666 667 669 670 671 673  
674 675 677 678 679 681 682 683 685 686  
687 689 690 691 693 694 695 697 698 699

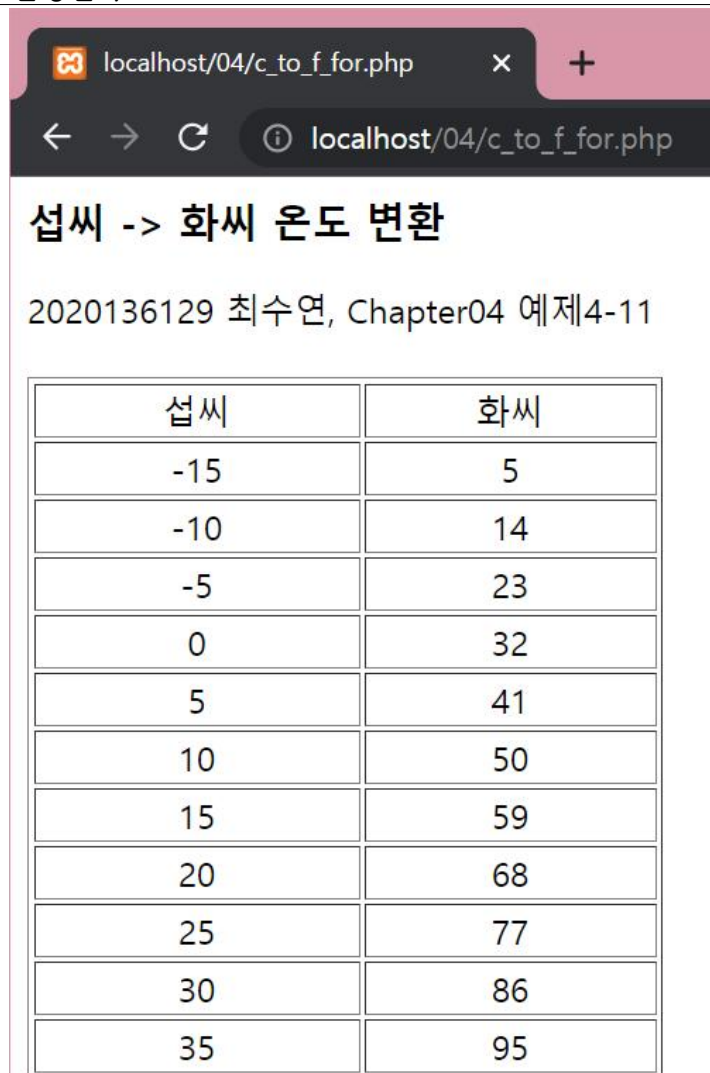
## 예제 4-11.

### 소스코드

```
<h3>섭씨 -> 화씨 온도 변환</h3>
<table border="1" width="300">
  <tr align="center"><td width="150">섭씨</td><td>화씨</td></tr>
  <?php
    echo "2020136129 최수연, Chapter04 예제4-11 <br><br>";

    for ($c = -15; $c <= 35; $c = $c + 5){
      $f = $c * 9 / 5 + 32;
      echo ("<tr align='center'><td>$c</td><td>$f</td></tr>");
    }
  ?>
</table>
```

### 실행결과



localhost/04/c\_to\_f\_for.php

### 섭씨 -> 화씨 온도 변환

2020136129 최수연, Chapter04 예제4-11

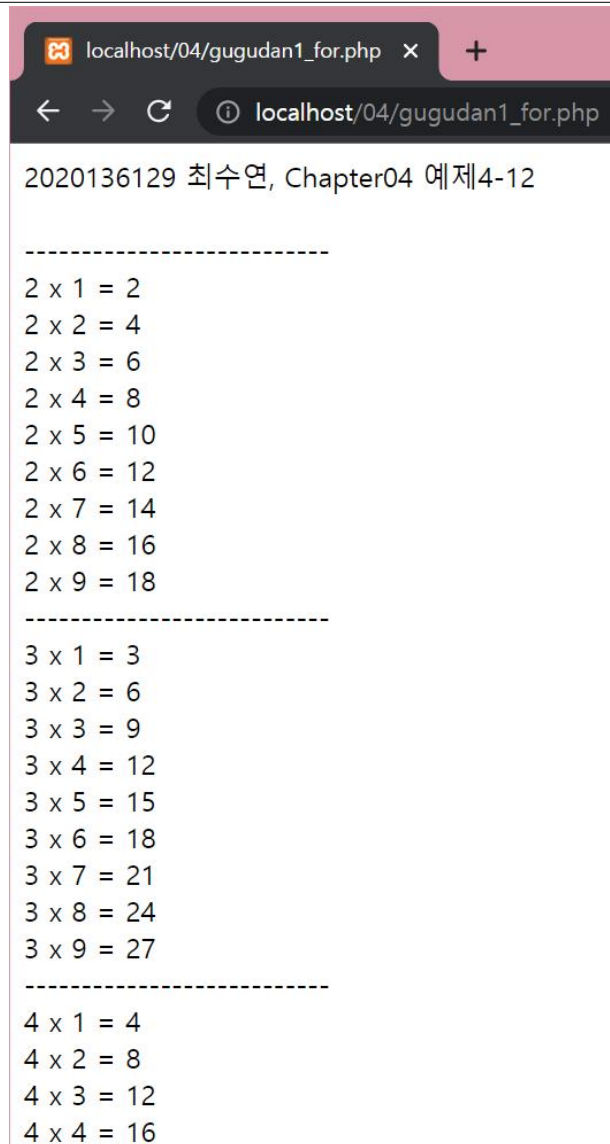
섭씨	화씨
-15	5
-10	14
-5	23
0	32
5	41
10	50
15	59
20	68
25	77
30	86
35	95

## 예제 4-12.

### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 예제4-12 <br><br>";
    echo ("----- <br>");
    for ($a = 2; $a <= 9; $a++){
        for ($b = 1; $b <= 9; $b++){
            $c = $a * $b;
            echo("$a x $b = $c <br>");
        }
        echo ("----- <br>");
    }
?>
```

### 실행결과



localhost/04/gugudan1\_for.php × +

← → ↻ ⓘ localhost/04/gugudan1\_for.php

2020136129 최수연, Chapter04 예제4-12

-----

2 x 1 = 2  
2 x 2 = 4  
2 x 3 = 6  
2 x 4 = 8  
2 x 5 = 10  
2 x 6 = 12  
2 x 7 = 14  
2 x 8 = 16  
2 x 9 = 18

-----

3 x 1 = 3  
3 x 2 = 6  
3 x 3 = 9  
3 x 4 = 12  
3 x 5 = 15  
3 x 6 = 18  
3 x 7 = 21  
3 x 8 = 24  
3 x 9 = 27

-----

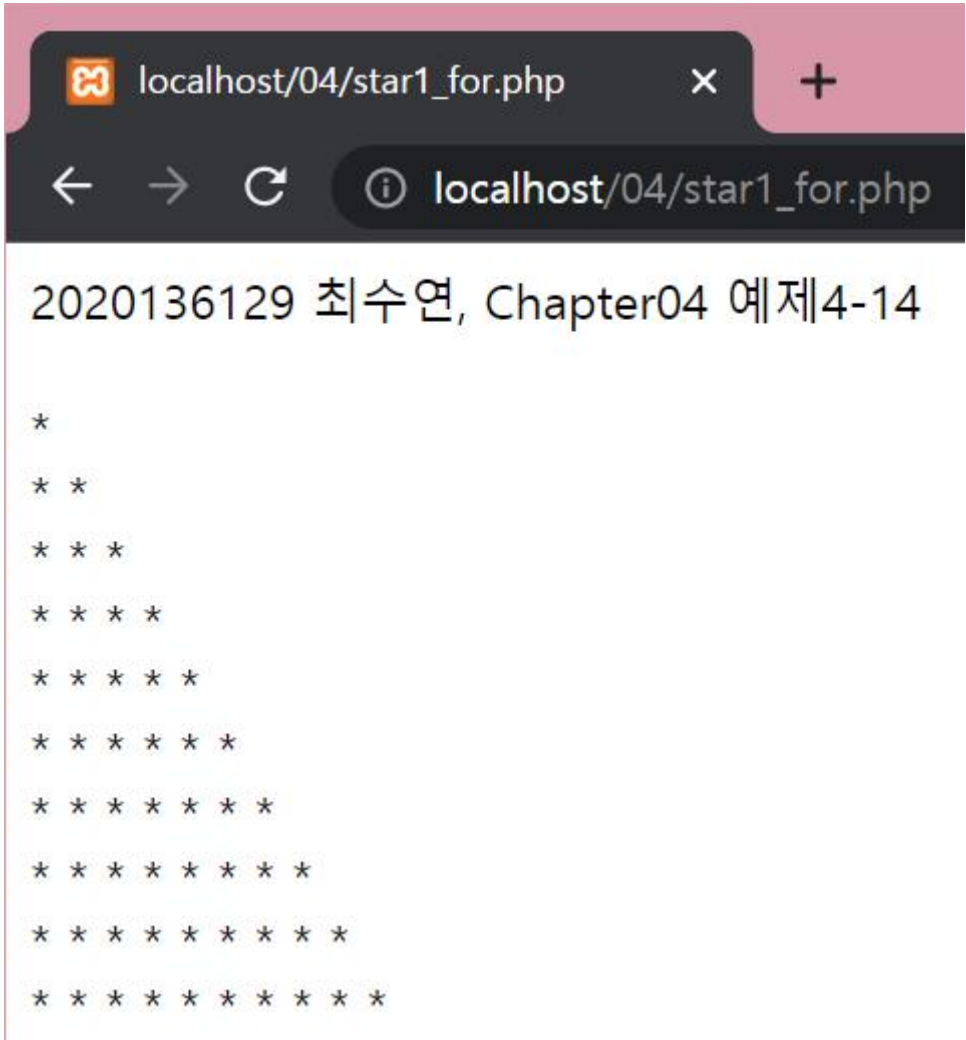
4 x 1 = 4  
4 x 2 = 8  
4 x 3 = 12  
4 x 4 = 16

## 예제 4-13.

소스코드
<pre>&lt;style&gt;     table {border-collapse: collapse; width: 600px;}     td {border: solid 1px gray; text-align: center; padding: 5px;} &lt;/style&gt; &lt;h3&gt;- 구구단 표&lt;/h3&gt; &lt;table&gt;     &lt;tr&gt;         &lt;td&gt;2단&lt;/td&gt;         &lt;td&gt;3단&lt;/td&gt;         &lt;td&gt;4단&lt;/td&gt;         &lt;td&gt;5단&lt;/td&gt;         &lt;td&gt;6단&lt;/td&gt;         &lt;td&gt;7단&lt;/td&gt;         &lt;td&gt;8단&lt;/td&gt;         &lt;td&gt;9단&lt;/td&gt;     &lt;/tr&gt; &lt;?php     echo "2020136129 최수연, Chapter04 예제4-13 &lt;br&gt;&lt;br&gt;";     for (\$b=1; \$b &lt;= 9; \$b++) {         echo "&lt;tr&gt;";         for(\$a = 2; \$a &lt;= 9; \$a++){             \$c = \$a * \$b;             echo "&lt;td&gt;{\$a}x{\$b}={\$c}&lt;/td&gt;";         }         echo "&lt;/tr&gt;";     } ?&gt; &lt;/table&gt;</pre>
실행결과

localhost/04/gugudan2_for.php × +							
← → ↻ ⓘ localhost/04/gugudan2_for.php							
<b>- 구구단 표</b>							
2020136129 최수연, Chapter04 예제4-13							
2단	3단	4단	5단	6단	7단	8단	9단
2x1=2	3x1=3	4x1=4	5x1=5	6x1=6	7x1=7	8x1=8	9x1=9
2x2=4	3x2=6	4x2=8	5x2=10	6x2=12	7x2=14	8x2=16	9x2=18
2x3=6	3x3=9	4x3=12	5x3=15	6x3=18	7x3=21	8x3=24	9x3=27
2x4=8	3x4=12	4x4=16	5x4=20	6x4=24	7x4=28	8x4=32	9x4=36
2x5=10	3x5=15	4x5=20	5x5=25	6x5=30	7x5=35	8x5=40	9x5=45
2x6=12	3x6=18	4x6=24	5x6=30	6x6=36	7x6=42	8x6=48	9x6=54
2x7=14	3x7=21	4x7=28	5x7=35	6x7=42	7x7=49	8x7=56	9x7=63
2x8=16	3x8=24	4x8=32	5x8=40	6x8=48	7x8=56	8x8=64	9x8=72
2x9=18	3x9=27	4x9=36	5x9=45	6x9=54	7x9=63	8x9=72	9x9=81

## 예제 4-14.

소스코드
<pre>&lt;?php     echo "2020136129 최수연, Chapter04 예제4-14 &lt;br&gt;&lt;br&gt;";      for (\$a = 1; \$a &lt;= 10; \$a++){         for (\$b = 1; \$b &lt;= \$a; \$b++){             echo("* ");         }         echo "&lt;br&gt;";     }  ?&gt;</pre>
실행결과




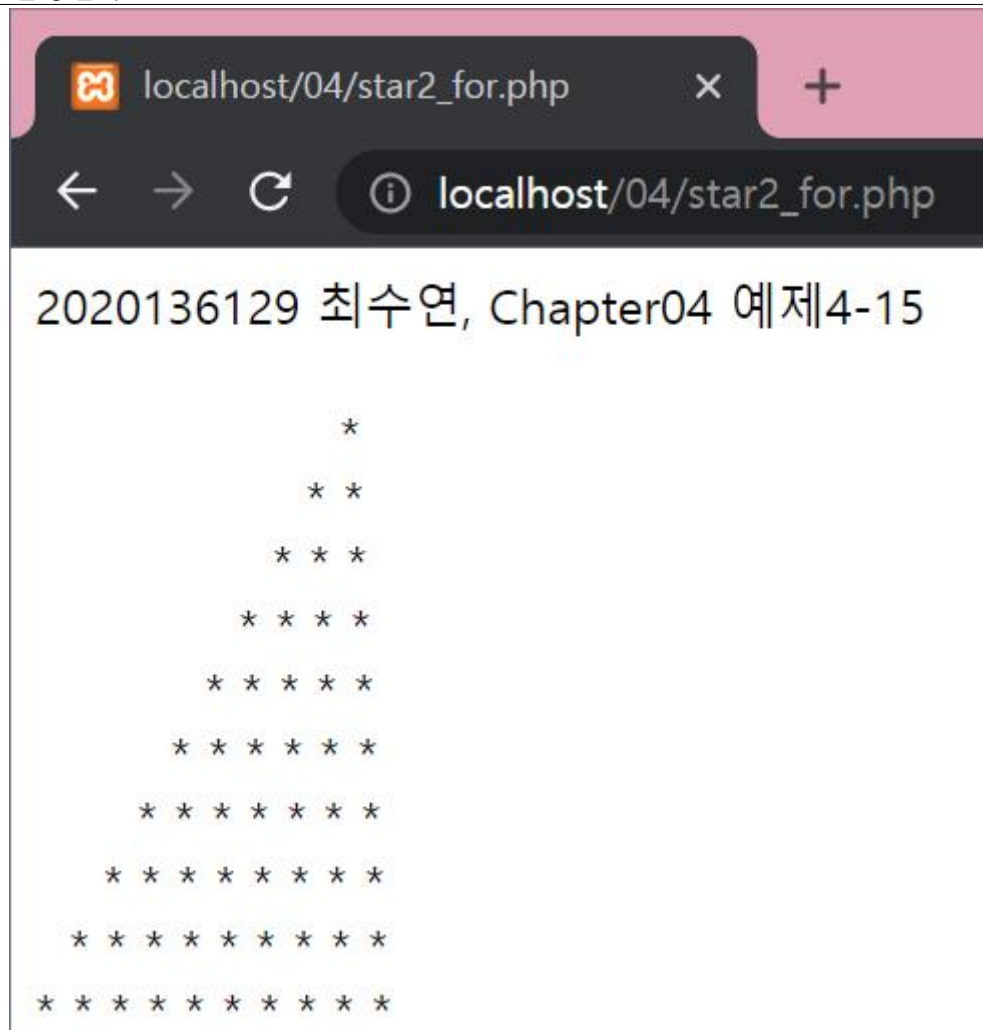
## 예제 4-15.

### 소스코드

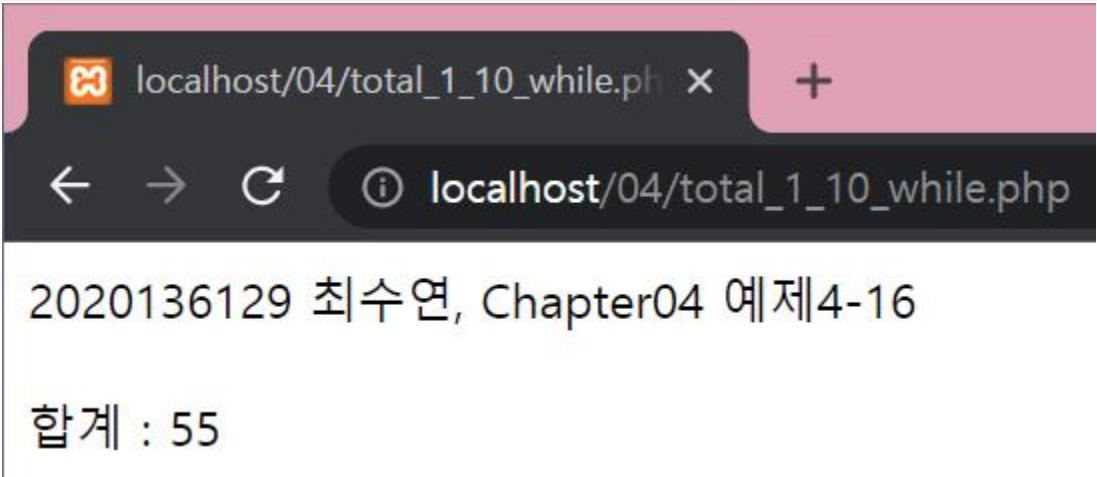
```
<?php
    echo "2020136129 최수연, Chapter04 예제4-15 <br><br>";

    for ($a = 1; $a <= 10; $a++){
        for ($b = 9; $b >= $a; $b--){
            echo "&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;";
        }
        for ($c = 1; $c <= $a; $c++){
            echo "* ";
        }
        echo "<br>";
    }
?>
```

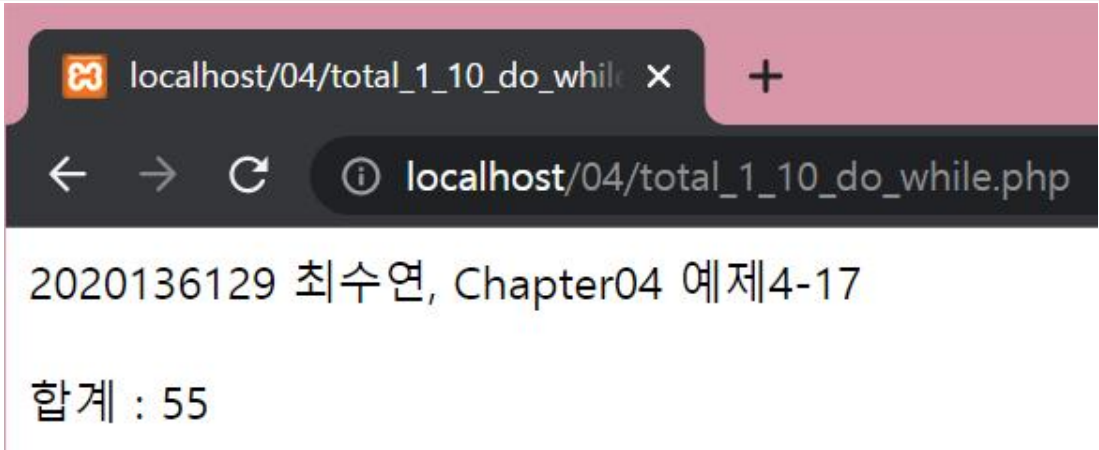
### 실행결과



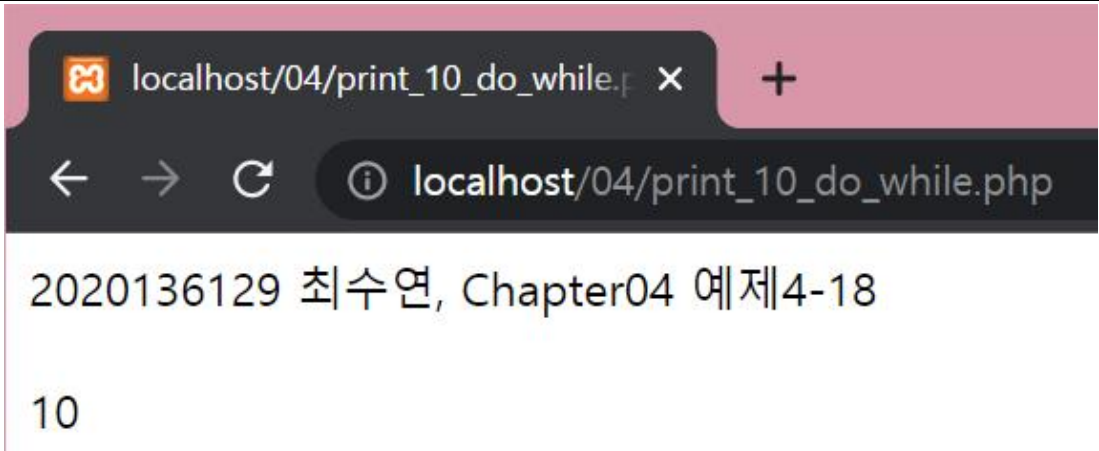
## 예제 4-16.

소스코드
<pre>&lt;?php     echo "2020136129 최수연, Chapter04 예제4-16 &lt;br&gt;&lt;br&gt;";      \$i = 1;     \$sum = 0;      while (\$i &lt;= 10) {         \$sum = \$sum + \$i;         \$i++;     }     echo "합계 : \$sum"; ?&gt;</pre>
실행결과


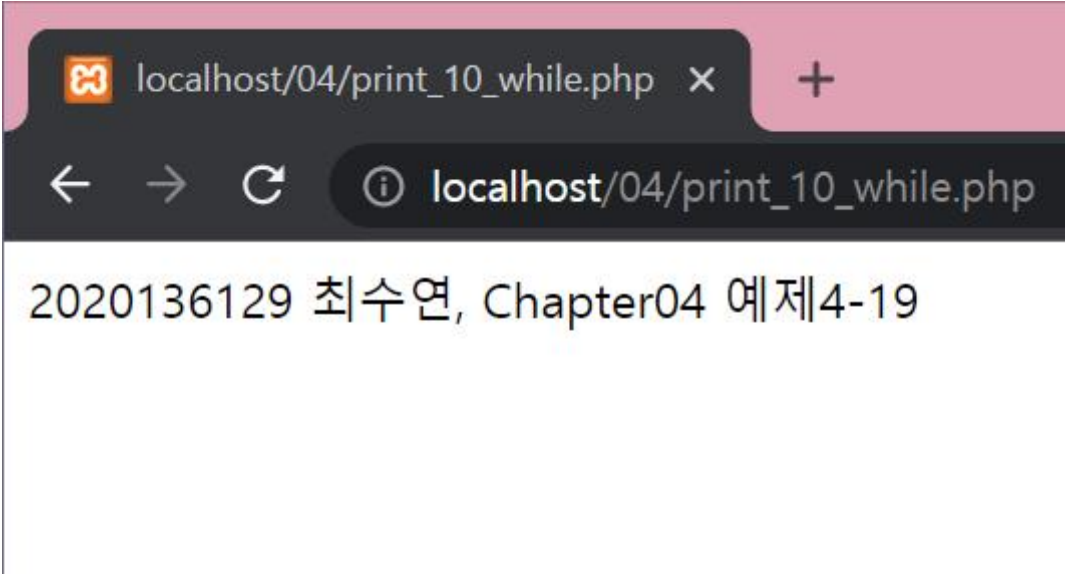
## 예제 4-17.

소스코드
<pre>&lt;?php     echo "2020136129 최수연, Chapter04 예제4-17 &lt;br&gt;&lt;br&gt;";      \$i = 1;     \$sum = 0;      do {         \$sum = \$sum + \$i;         \$i++;     }while (\$i &lt;= 10);     echo "합계 : \$sum";  ?&gt;</pre>
실행결과


## 예제 4-18.

소스코드
<pre>&lt;?php     echo "2020136129 최수연, Chapter04 예제4-18 &lt;br&gt;&lt;br&gt;";      \$i = 10;      do {         print \$i;     }while (\$i &lt;= 1); ?&gt;</pre>
실행결과


## 예제 4-19.

소스코드
<pre>&lt;?php     echo "2020136129 최수연, Chapter04 예제4-19 &lt;br&gt;&lt;br&gt;";      \$i = 10;      while (\$i &lt;= 1){         print \$i;     } ?&gt;</pre>
실행결과


## 연습문제 1.

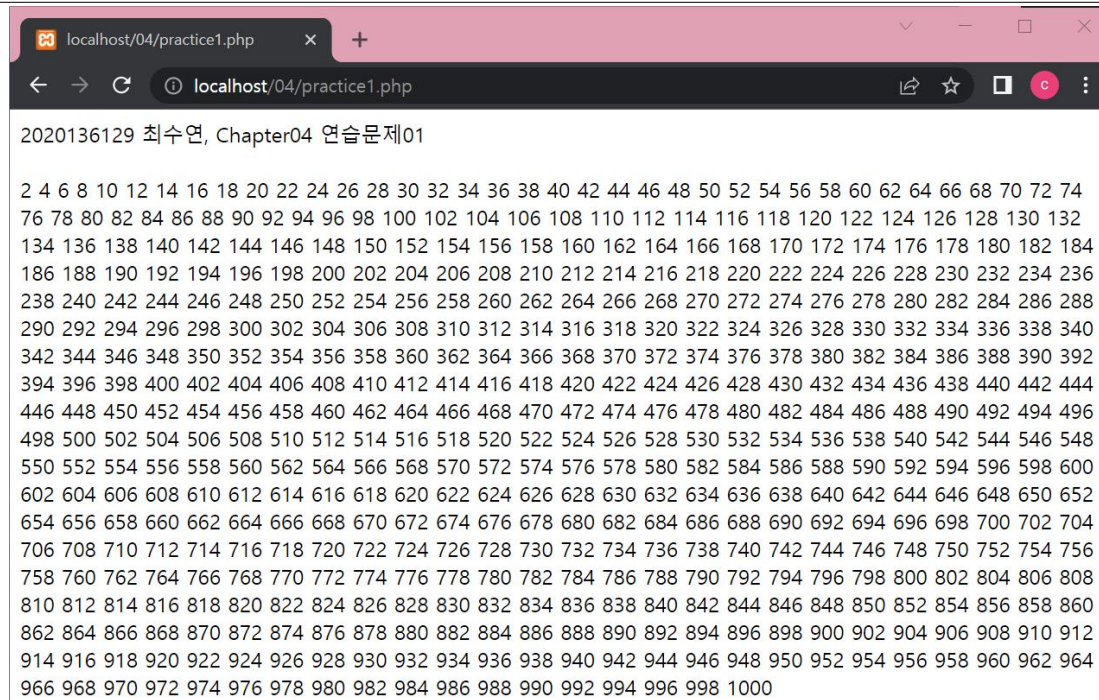
### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 연습문제01 <br><br>";

    $num = 1;

    while ($num <= 1000){
        if ($num % 2 == 0)
            echo "$num ";
        $num++;
    }
?>
```

### 실행결과



2020136129 최수연, Chapter04 연습문제01

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74  
76 78 80 82 84 86 88 90 92 94 96 98 100 102 104 106 108 110 112 114 116 118 120 122 124 126 128 130 132  
134 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 174 176 178 180 182 184  
186 188 190 192 194 196 198 200 202 204 206 208 210 212 214 216 218 220 222 224 226 228 230 232 234 236  
238 240 242 244 246 248 250 252 254 256 258 260 262 264 266 268 270 272 274 276 278 280 282 284 286 288  
290 292 294 296 298 300 302 304 306 308 310 312 314 316 318 320 322 324 326 328 330 332 334 336 338 340  
342 344 346 348 350 352 354 356 358 360 362 364 366 368 370 372 374 376 378 380 382 384 386 388 390 392  
394 396 398 400 402 404 406 408 410 412 414 416 418 420 422 424 426 428 430 432 434 436 438 440 442 444  
446 448 450 452 454 456 458 460 462 464 466 468 470 472 474 476 478 480 482 484 486 488 490 492 494 496  
498 500 502 504 506 508 510 512 514 516 518 520 522 524 526 528 530 532 534 536 538 540 542 544 546 548  
550 552 554 556 558 560 562 564 566 568 570 572 574 576 578 580 582 584 586 588 590 592 594 596 598 600  
602 604 606 608 610 612 614 616 618 620 622 624 626 628 630 632 634 636 638 640 642 644 646 648 650 652  
654 656 658 660 662 664 666 668 670 672 674 676 678 680 682 684 686 688 690 692 694 696 698 700 702 704  
706 708 710 712 714 716 718 720 722 724 726 728 730 732 734 736 738 740 742 744 746 748 750 752 754 756  
758 760 762 764 766 768 770 772 774 776 778 780 782 784 786 788 790 792 794 796 798 800 802 804 806 808  
810 812 814 816 818 820 822 824 826 828 830 832 834 836 838 840 842 844 846 848 850 852 854 856 858 860  
862 864 866 868 870 872 874 876 878 880 882 884 886 888 890 892 894 896 898 900 902 904 906 908 910 912  
914 916 918 920 922 924 926 928 930 932 934 936 938 940 942 944 946 948 950 952 954 956 958 960 962 964  
966 968 970 972 974 976 978 980 982 984 986 988 990 992 994 996 998 1000

## 연습문제 2.

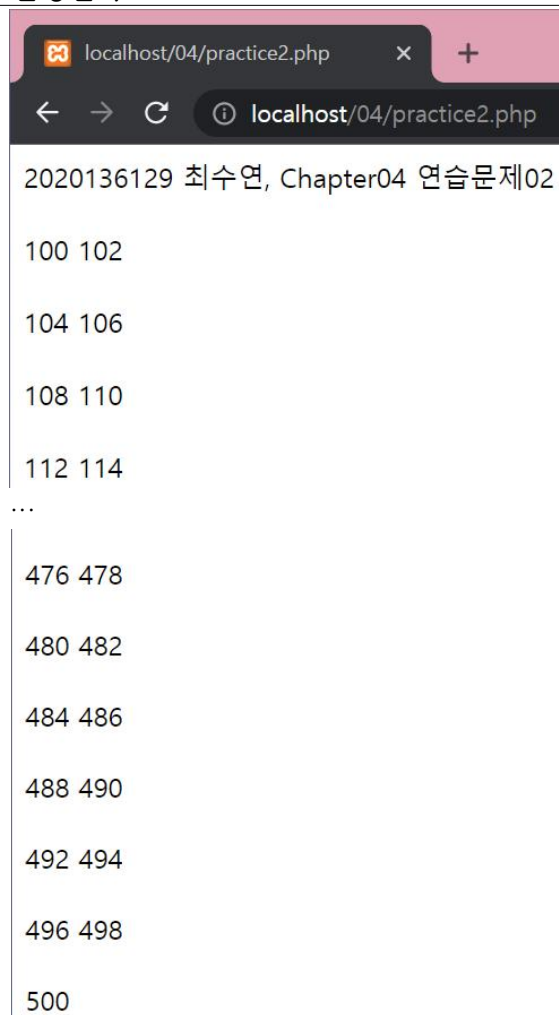
### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 연습문제02 <br><br>";

    $count = 0;

    for($num = 100; $num <= 500; $num++){
        if($num % 2 == 0){
            echo "$num ";
            $count++;
        }
        if($count % 2 == 0)
            echo "<br>";
    }
?>
```

### 실행결과



localhost/04/practice2.php

2020136129 최수연, Chapter04 연습문제02

100 102

104 106

108 110

112 114

...

476 478

480 482

484 486

488 490

492 494

496 498

500

### 연습문제 3.

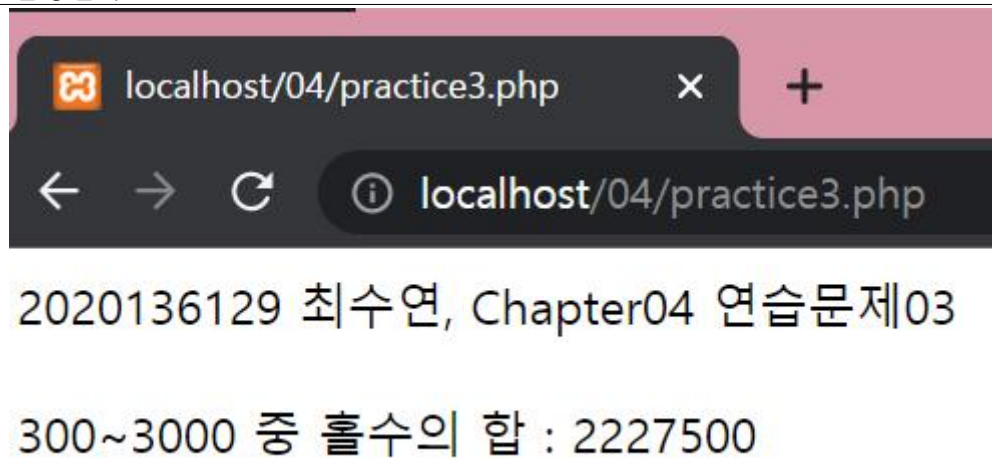
#### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 연습문제03 <br><br>";

    $num = 300;
    $sum = 0;

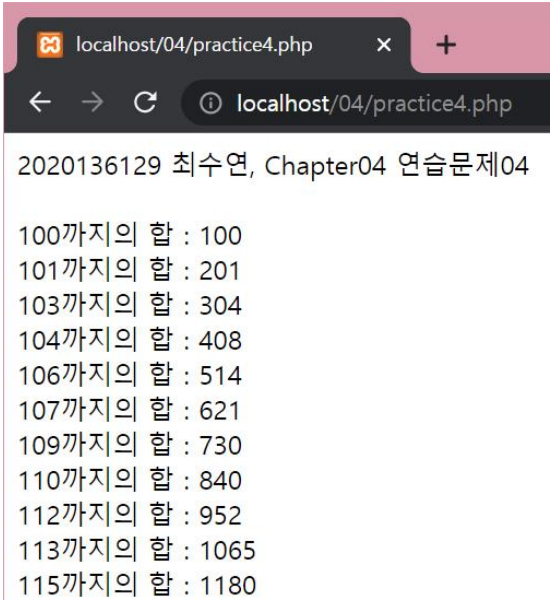
    while ($num <= 3000) {
        if($num%2 == 1)
            $sum = $sum + $num;
        $num++;
    }
    echo "300~3000 중 홀수의 합 : $sum";
?>
```

#### 실행결과





## 연습문제 4.

소스코드	
<pre> &lt;?php     echo "2020136129 최수연, Chapter04 연습문제04 &lt;br&gt;&lt;br&gt;";      \$sum = 0;      for (\$num = 100; \$num &lt;= 900; \$num++) {         if(\$num%3 != 0){             \$sum = \$sum + \$num;             echo "{\$num}까지의 합 : \$sum&lt;br&gt;";         }     }  ?&gt; </pre>	
실행결과	
	<pre> 883까지의 합 : 256924 884까지의 합 : 257808 886까지의 합 : 258694 887까지의 합 : 259581 889까지의 합 : 260470 890까지의 합 : 261360 892까지의 합 : 262252 893까지의 합 : 263145 895까지의 합 : 264040 896까지의 합 : 264936 898까지의 합 : 265834 899까지의 합 : 266733 </pre>

## 연습문제 5.

### 소스코드

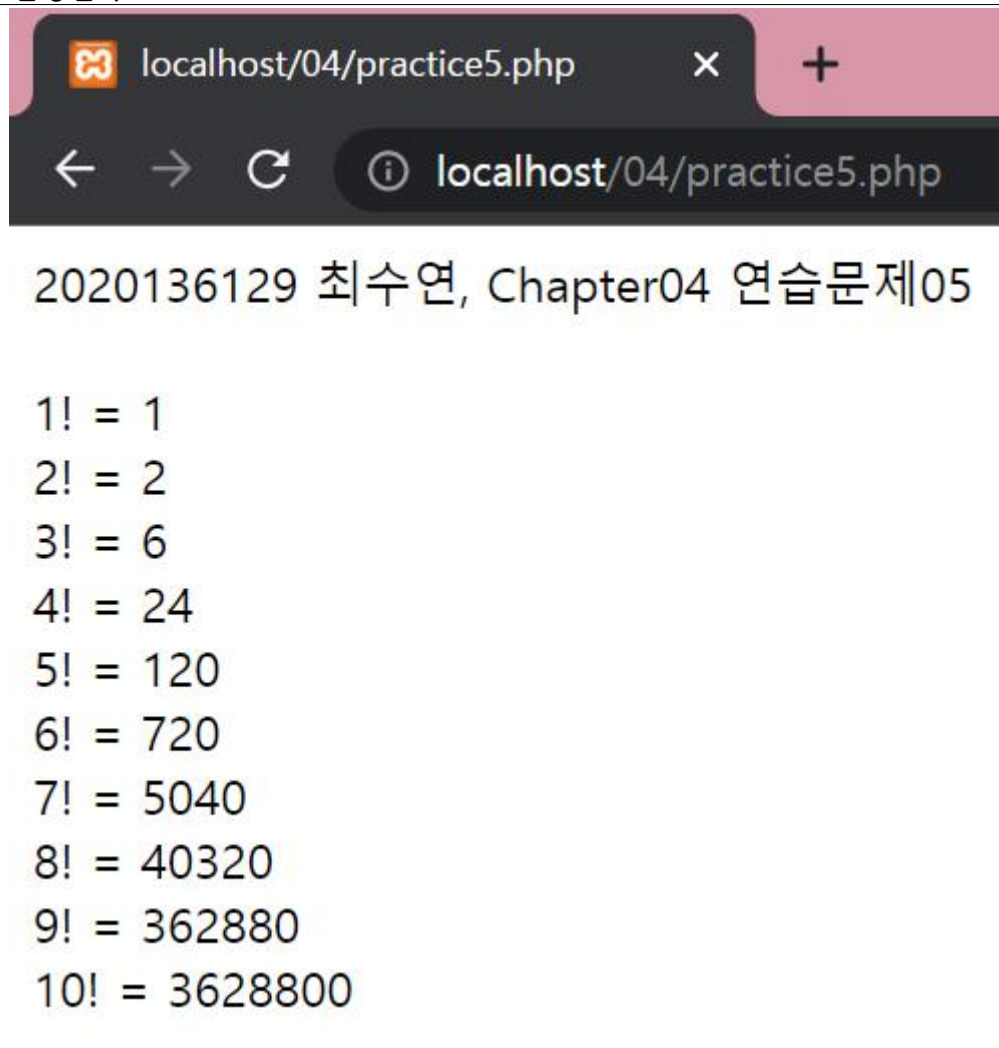
```
<?php
    echo "2020136129 최수연, Chapter04 연습문제05 <br><br>";

    $sum = 1;

    for ($a = 1; $a <= 10; $a++) {
        for ($b = $a; $b >= $a; $b--){
            $sum = $sum * $b;
        }
        echo "{$a}! = $sum<br>";
    }

?>
```

### 실행결과



## 연습문제 6.

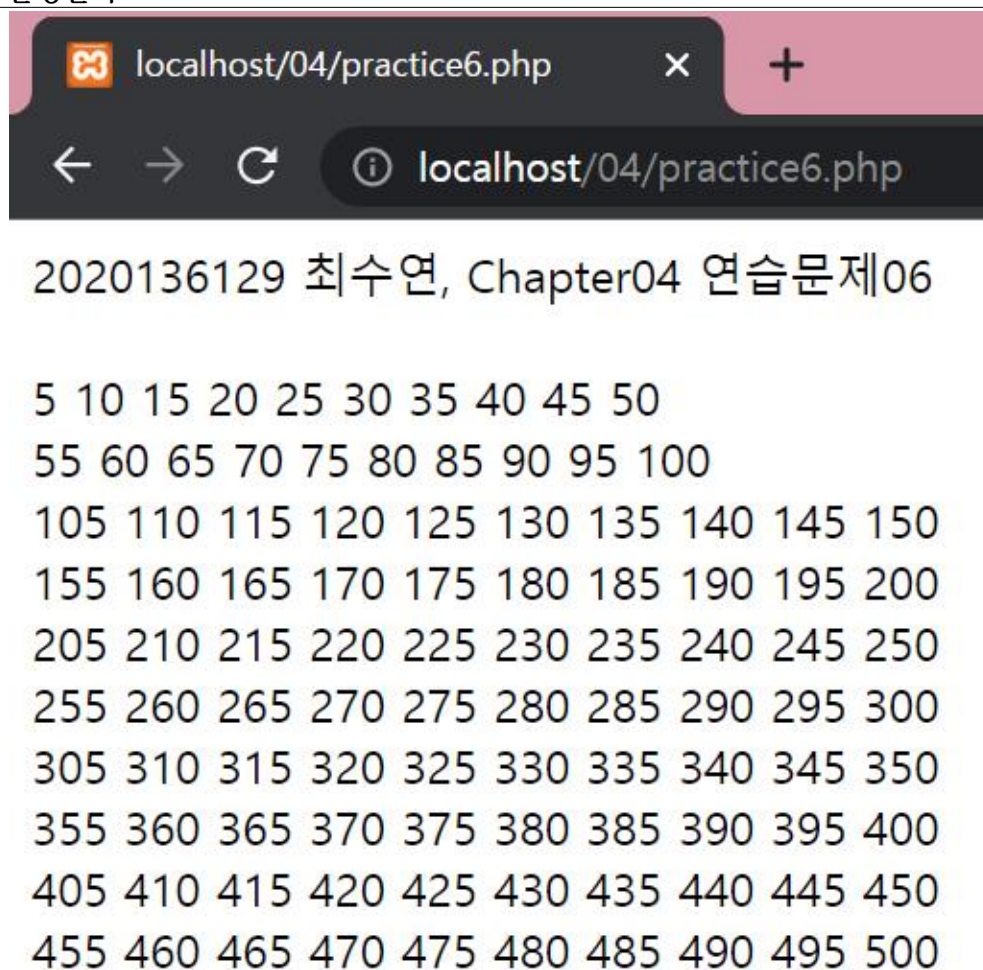
### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 연습문제06 <br><br>";

    $count = 0;

    for($num = 1; $num <= 500; $num++){
        if($num % 5 == 0){
            echo "$num ";
            $count++;
            if($count % 10 == 0)
                echo "<br>";
        }
    }
?>
```

### 실행결과



2020136129 최수연, Chapter04 연습문제06

5 10 15 20 25 30 35 40 45 50  
55 60 65 70 75 80 85 90 95 100  
105 110 115 120 125 130 135 140 145 150  
155 160 165 170 175 180 185 190 195 200  
205 210 215 220 225 230 235 240 245 250  
255 260 265 270 275 280 285 290 295 300  
305 310 315 320 325 330 335 340 345 350  
355 360 365 370 375 380 385 390 395 400  
405 410 415 420 425 430 435 440 445 450  
455 460 465 470 475 480 485 490 495 500

## 연습문제 7.

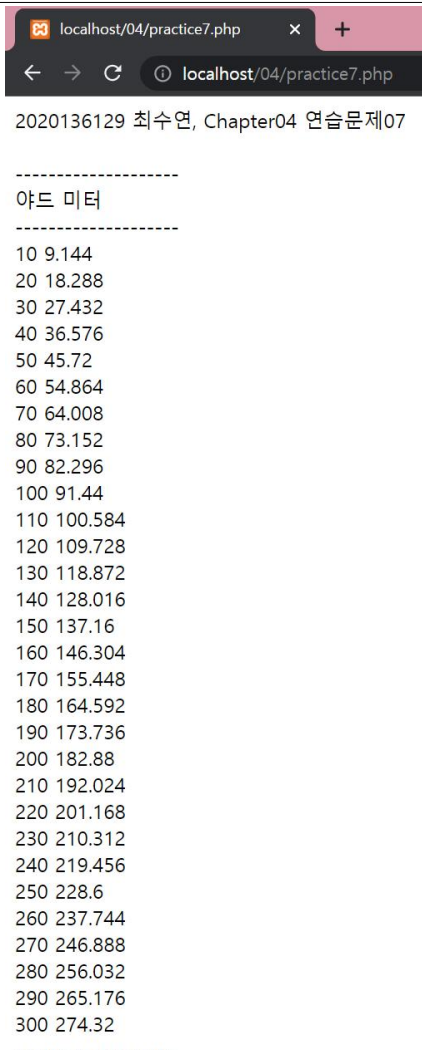
### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 연습문제07 <br><br>";

    echo "-----<br>";
    echo "야드 미터<br>";
    echo "-----<br>";

    for($yard = 10; $yard <= 300; $yard = $yard + 10){
        $meter = $yard * 0.9144;
        echo "$yard $meter<br>";
    }
    echo "-----<br>";
?>
```

### 실행결과



localhost/04/practice7.php

← → ↻ ⓘ localhost/04/practice7.php

2020136129 최수연, Chapter04 연습문제07

-----

야드 미터

-----

10 9.144  
20 18.288  
30 27.432  
40 36.576  
50 45.72  
60 54.864  
70 64.008  
80 73.152  
90 82.296  
100 91.44  
110 100.584  
120 109.728  
130 118.872  
140 128.016  
150 137.16  
160 146.304  
170 155.448  
180 164.592  
190 173.736  
200 182.88  
210 192.024  
220 201.168  
230 210.312  
240 219.456  
250 228.6  
260 237.744  
270 246.888  
280 256.032  
290 265.176  
300 274.32

-----

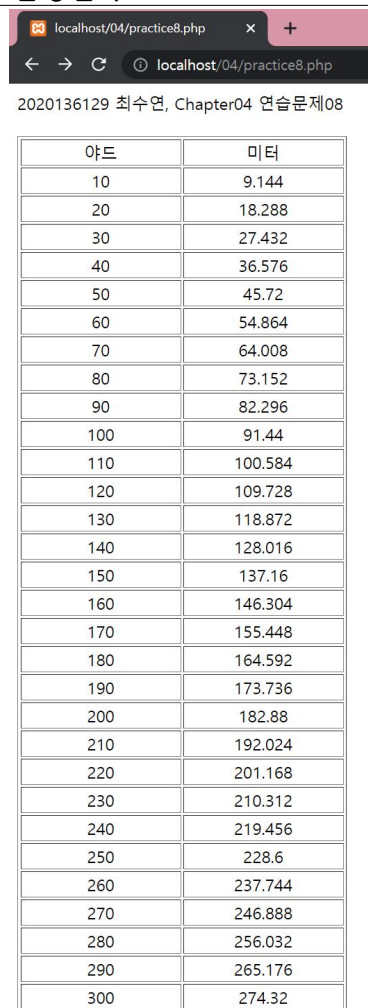
## 연습문제 8.

### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 연습문제08 <br><br>";

    echo "<table border = 1>";
    echo "<tr align = center><td width=150>야드</td><td width=150>미터</td>
</tr>";
    for($yard = 10; $yard <= 300; $yard = $yard + 10){
        $meter = $yard * 0.9144;
        echo "<tr align = center>";
        echo "<td>$yard</td><td>$meter</td>";
        echo "</tr>";
    }
    echo "</table>";
?>
```

### 실행결과



야드	미터
10	9.144
20	18.288
30	27.432
40	36.576
50	45.72
60	54.864
70	64.008
80	73.152
90	82.296
100	91.44
110	100.584
120	109.728
130	118.872
140	128.016
150	137.16
160	146.304
170	155.448
180	164.592
190	173.736
200	182.88
210	192.024
220	201.168
230	210.312
240	219.456
250	228.6
260	237.744
270	246.888
280	256.032
290	265.176
300	274.32

## 연습문제 9.

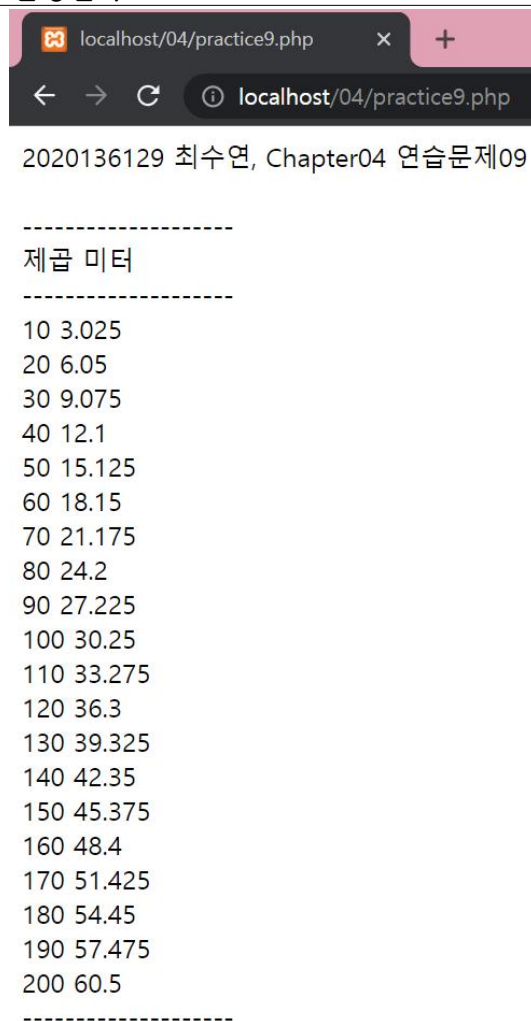
### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 연습문제09 <br><br>";

    echo "-----<br>";
    echo "제공 미터<br>";
    echo "-----<br>";

    for($squareMeter = 10; $squareMeter <= 200; $squareMeter = $squareMe
ter + 10){
        $pyeong = $squareMeter * 0.3025;
        echo "$squareMeter $pyeong<br>";
    }
    echo "-----<br>";
?>
```

### 실행결과



localhost/04/practice9.php

← → ↻ ⓘ localhost/04/practice9.php

2020136129 최수연, Chapter04 연습문제09

-----

제공 미터

-----

10 3.025  
20 6.05  
30 9.075  
40 12.1  
50 15.125  
60 18.15  
70 21.175  
80 24.2  
90 27.225  
100 30.25  
110 33.275  
120 36.3  
130 39.325  
140 42.35  
150 45.375  
160 48.4  
170 51.425  
180 54.45  
190 57.475  
200 60.5

-----

## 추가문제 1.

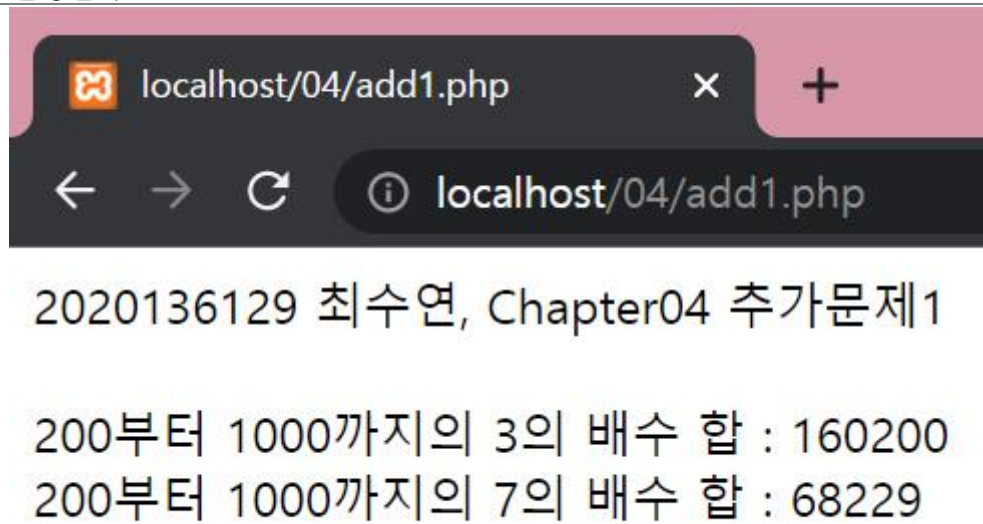
### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 추가문제1 <br><br>";

    $sum = 0;
    for($a = 200; $a <= 1000; $a++){
        if($a % 3 == 0){ //3으로 나누어떨어지면 3의 배수
            $sum = $sum + $a;
        }
    }
    echo "200부터 1000까지의 3의 배수 합 : $sum <br>";

    $sum2 = 0;
    for($b = 200; $b <= 1000; $b++){
        if($b % 7 == 0){ //7로 나누어떨어지면 7의 배수
            $sum2 = $sum2 + $b;
        }
    }
    echo "200부터 1000까지의 7의 배수 합 : $sum2 <br>";
?>
```

### 실행결과



## 추가문제 2.

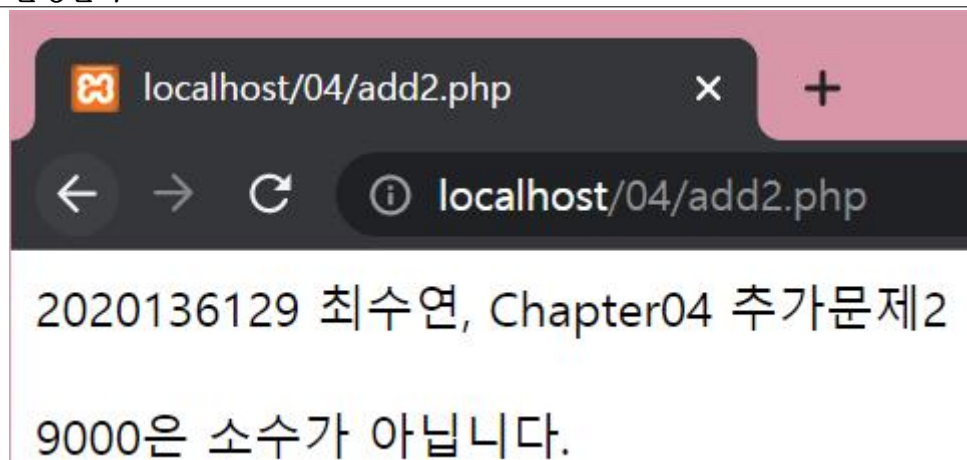
### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 추가문제2 <br><br>";

    $num = 9000;
    $count = 0;

    for ($i = 2; $i < $num; $i++) { //i가 2부터 num 전까지 수로 나뉘지면 소수
가 아님
        if($num % $i == 0)
            $count++;
    }
    if($num > 1 && $count == 0) //1보다 작으면 소수가 아님
        echo "{$num}은 소수가 맞습니다.<br>";
    else
        echo "{$num}은 소수가 아닙니다.<br>";
?>
```

### 실행결과





### 추가문제 3.

#### 소스코드

```
<?php
    echo "2020136129 최수연, Chapter04 추가문제3 <br><br>";

    $a = 100;
    echo "정수 a: {$a}<br>";
    $b = 20;
    echo "정수 b: {$b}<br>";
    $GCD = 0;      //최대공약수
    $LCM = 0;      //최소공배수

    while ($b > 0){ //b가 0보다 클 때까지 반복문 실행, 최대공약수 구하기
        $tmp = $b;
        $b = $a % $b;
        $a = $tmp;
        $GCD = $a;
    }
    $a = 100;
    $b = 20;
    $LCM = ($a * $b) / $GCD; //최소공배수 구하기
    echo "최대공약수는 {$GCD}이며, 최소공배수는 {$LCM}입니다.<br>";
?>
```

#### 실행결과

