

- Experiment 3 -

Create a Java project named Experiment3, and then create classes Exercise1~Exercise5 in the project, and insert your codes into each class you created to implement the following tasks respectively.

1. A palindrome is a left-right symmetrical string, such as "a", "bb", "awa", "toot", "12321", etc. Define a method that can check out whether a string is a palindrome or not. In your main method, call the method you defined to determine whether a string you entered is a palindrome or not, and display the result.

[Sample]

```
Console ✕
Exercise1 (1) [Java Application]
请输入一个字符串: toot
toot是回文!
请输入一个字符串: 212
212是回文!
请输入一个字符串: abcba
abcba是回文!
请输入一个字符串: abc
abc不是回文!
请输入一个字符串:
```

2. Enter a positive integer n that is <21 , output a pattern. Note that your program must use two-dimensional array to accomplish this task. For example: input 4, your program can print the following pattern:

1	2	3	4
8	7	6	5
9	10	11	12
16	15	14	13

[Sample]

```
Console ✕
<terminated> Exercise2 (1) [Java Application]
输入一个小于21的正整数: 5
| 1 2 3 4 5
| 10 9 8 7 6
| 11 12 13 14 15
| 20 19 18 17 16
| 21 22 23 24 25
```

3. Use an $n \times n$ two-dimensional array to complete the following tasks:

Enter a positive integer n that is <21 , and output the following patterns:

n=4	n=5
0 0 2 5	0 0 0 2 5
0 2 5 2	0 0 2 5 2
2 5 2 0	0 2 5 2 0
5 2 0 0	2 5 2 0 0
	5 2 0 0 0

[Sample]

```

Console
<terminated> Exercise3 (1) [Java Application]
输入一个小于21的正整数: 6
0 0 0 0 2 5
0 0 0 2 5 2
0 0 2 5 2 0
0 2 5 2 0 0
2 5 2 0 0 0
5 2 0 0 0 0

```

4. Given a text file d:\numbers.txt, read in all integers from the file and, output all the even numbers to file d:\evens.txt, all the odd numbers to file d:\odds.txt, and all the prime numbers to file d:\primes.txt.

我的电脑 > 新加卷 (D:) >

numbers.txt	2023/3/22 12:14	文本文档	1 KB
evens.txt	2023/3/22 12:42	文本文档	1 KB
odds.txt	2023/3/22 12:42	文本文档	1 KB
primes.txt	2023/3/22 12:42	文本文档	1 KB

5. A non-negative integer in the form of 0, 5, 11, 121, 1221, 12321 is called a "palindrome number". Define a method that can determine whether a given positive integer is a "palindrome number" or not. In your main method, enter a positive integer, and then output whether the number is a "palindrome number" or not.

[Sample]

```

Console
Exercise5 (1) [Java Application]
请输入一个正整数: 0
回文数: 0 Yes!
请输入一个正整数: 5
回文数: 5 Yes!
请输入一个正整数: 11
回文数: 11 Yes!
请输入一个正整数: 121
回文数: 121 Yes!
请输入一个正整数: 1221
回文数: 1221 Yes!
请输入一个正整数: 12321
回文数: 12321 Yes!
请输入一个正整数: 123421
回文数: 123421 No!
请输入一个正整数:

```