

高级语言程序设计

上机报告1

习题2-3

题目

尝试将下表中的浮点数相除运算结果填写完整。进一步考虑，如果将除法运算换为求余运算，那么这张表应该如何填写？

表格略

（附加要求：写程序打印出所有应填入表格的结果，并在上机报告中提供完整的表格。）

思路

初始化一个包含所涉及的Float值的List后两重循环即可得到整张表格
若要更改为取余，代码 Table.java 19:48 修改为取余符号即可

运行结果

程序输出markdown表格

```
→ java com.frank.course.App
|被除数\除数|1.0|-1.0|0.0|-0.0|Infinity|-Infinity|NaN|
|-|-|-|-|-|-|-|-|
|**1.0**|1.0|-1.0|Infinity|-Infinity|0.0|-0.0|NaN|
|**-1.0**|-1.0|1.0|-Infinity|Infinity|-0.0|0.0|NaN|
|**0.0**|0.0|-0.0|NaN|NaN|0.0|-0.0|NaN|
|**-0.0**|-0.0|0.0|NaN|NaN|-0.0|0.0|NaN|
|**Infinity**|Infinity|-Infinity|Infinity|-Infinity|NaN|NaN|NaN|
|**-Infinity**|-Infinity|Infinity|-Infinity|Infinity|NaN|NaN|NaN|
|**NaN**|NaN|NaN|NaN|NaN|NaN|NaN|NaN|
```

经markdown格式化后表格如下：

被除数\除数	1.0	-1.0	0.0	-0.0	Infinity	-Infinity	NaN
1.0	1.0	-1.0	Infinity	-Infinity	0.0	-0.0	NaN
-1.0	-1.0	1.0	-Infinity	Infinity	-0.0	0.0	NaN

被除数\除数	1.0	-1.0	0.0	-0.0	Infinity	-Infinity	NaN
0.0	0.0	-0.0	NaN	NaN	0.0	-0.0	NaN
-0.0	-0.0	0.0	NaN	NaN	-0.0	0.0	NaN
Infinity	Infinity	-Infinity	Infinity	-Infinity	NaN	NaN	NaN
-Infinity	-Infinity	Infinity	-Infinity	Infinity	NaN	NaN	NaN
NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

习题2-19

题目

吸血鬼数字是指位数为偶数的数字，可以由一堆数字相乘得到，这对数字各包含乘积的一半位数的数字，数字选取后可任意排序。例如，下列数字都是“吸血鬼数字”：

$1260 = 21 \times 60$
 $1827 = 21 \times 87$
 $2181 = 27 \times 81$

写出一个程序，找出4位数的所有吸血鬼数字。

思路

由于所有的吸血鬼数字都是两个两位数的乘积，那么只需要

```
Set<Integer> res = new HashSet<Integer>();
for (Integer i = 10; i < 100; i++)
    for (Integer j = 10; j < 100; j++) {
        String str_i = i.toString(), str_j = j.toString();
        if (sameChars(Integer.toString(i * j), str_i + str_j))
            res.add(i*j);
    }
```

即可生成所有的吸血鬼数

运行结果

```
→ java com.frank.course.App
6880
1395
1827
1530
2187
1435
1260
7 vampire integers in total
```

附录

```
→ mvn test
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.frank.course:Course >-----
[INFO] Building Course 1.0-WHATEVER
略
[INFO] Running com.frank.course.chapter_1.TableTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.027 s - in com.frank.course.ch
[INFO] Running com.frank.course.chapter_1.VampireTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0 s - in com.frank.course.chapte
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 2, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 6.338 s
[INFO] Finished at: 2019-10-23T03:13:17+08:00
[INFO] -----
```