Challenge Sheet

You are not expected or required to solve these problems. These problems are designed for students who want a fun, extra challenge to test their skills on harder programming problems. Have fun!

1. One of the tools we use to memorize basic multiplication results is a multiplication table. Write a static method named `multTable` that produces the following output using for loops for structure to create a multiplication table for the numbers 1, 2, and 3.

```
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>
```

2. Modify your `multTable` method from the previous exercise so that it labels the rows and columns with the numbers being multiplied. Your modified method should produce the following output:

```
x  | 1   | 2   | 3   |
---|-----|-----|-----|
1  | 1   | 2   | 3   |
2  | 2   | 4   | 6   |
3  | 3   | 6   | 9   |
```
Solutions

1.

```java
public static void multTable() {
    for (int i = 1; i <= 3; i++) {
        for (int j = 1; j <= 3; j++) {
            System.out.print(" _____ ");
        }
        System.out.println();
    }
    for (int j = 1; j <= 3; j++) {
        System.out.print("|     | ");
    }
    System.out.println();
    for (int j = 1; j <= 3; j++) {
        System.out.print("|  "+(i*j)+"  |");
    }
    System.out.println();
    for (int j = 1; j <= 3; j++) {
        System.out.print("|_____| ");
    }
    System.out.println();
}
```

2.

```java
public static void multTable() {
    System.out.print(" x ");
    for (int i = 1; i <= 3; i++) {
        System.out.print("|  "+i+"  |");
    }
    System.out.println();
    for (int i = 1; i <= 3; i++) {
        System.out.print("---");
        for (int j = 1; j <= 3; j++) {
            System.out.print(" _____ ");
        }
        System.out.println();
    }
    System.out.print(" ");
    System.out.print("|     | ");
    for (int j = 1; j <= 3; j++) {
        System.out.print("|  "+(i*j)+"  |");
    }
    System.out.println();
    System.out.print(" ");
    System.out.print("|_____| ");
    for (int j = 1; j <= 3; j++) {
        System.out.print("|_____| ");
    }
    System.out.println();
}
```