

Exercises: Loops

Code Reading

1. What is the output of the following program?

```
String alpha = "abcdefg";  
  
for(int i = 3; i < alpha.length(); i++) {  
    System.out.println(alpha.charAt(i));  
}
```

2. What is the output of the following program?

```
int i = 9;  
  
while (i < 21) {  
    System.out.println(i);  
    i += i / 4;  
}
```

3. What is the output of the following program?

```
String alpha = "Yet another sentence another example to read";

while(alpha.indexOf(' ') > -1) {

    String word = alpha.substring(0, alpha.indexOf(' '));

    if (word.length() > 6) {
        System.out.print(word + " ");
    } else {
        for(int i = 0; i < word.length(); i++) {
            System.out.print("_");
        }

        System.out.print(" ");
    }

    alpha = alpha.substring(alpha.indexOf(' ') + 1, alpha.length());
}
```

4. What is the output of the following program?

```
int value = 2;

do {

    if (value == 2 || value == 6) {
        System.out.println("*");
    } else if (value == 3 || value == 9 || value == 10) {
        System.out.print(value + " ");
    } else {
        System.out.print((value*2) + " ");
    }

    value++;

} while (value < 10);
```


10. Write a loop that prints the first 10 multiples of some given number n (you may assume that n has been defined). For example, if n is 3, your loop should print 3, 6, 9, ..., 24, 27, 30.

11. Write a loop that sums together the numbers 1 through 10 and prints the result at the end of the loop.

12. Write a loop that calculates $10!$ (10 factorial, defined as $10! = 10 * 9 * 8 * \dots * 2 * 1$) and prints the result at the end of the loop.

13. Write a program that prints a block of stars with the same width/height, as defined in the variable `int widthHeight`. Below is an example for `widthHeight = 5`.

```
*****  
*****  
*****  
*****  
*****
```

14. Write a program that prints a patchwork of stars with the same width/height, as define in the variable `int widthHeight`. The very first printed character should always be a star. Below is an example for `widthHeight = 5`.

```
* * *  
 * *  
* * *  
 * *  
* * *
```