1. What is the output that will be printed after execution of the following Java code snippets? Explain why. **(5 Marks)**

```
int p = 5;
System.out.printf("%d", p + 2 * 4);
System.out.printf("%d", p * 2 + 4);
```

Answer:
13, '*' has higher priority than '+', so 2 *4 = 8 then + P = 5, result 13
14, '*' has higher priority than '+', so P * 2 = 10 then 10 + 4, result 14

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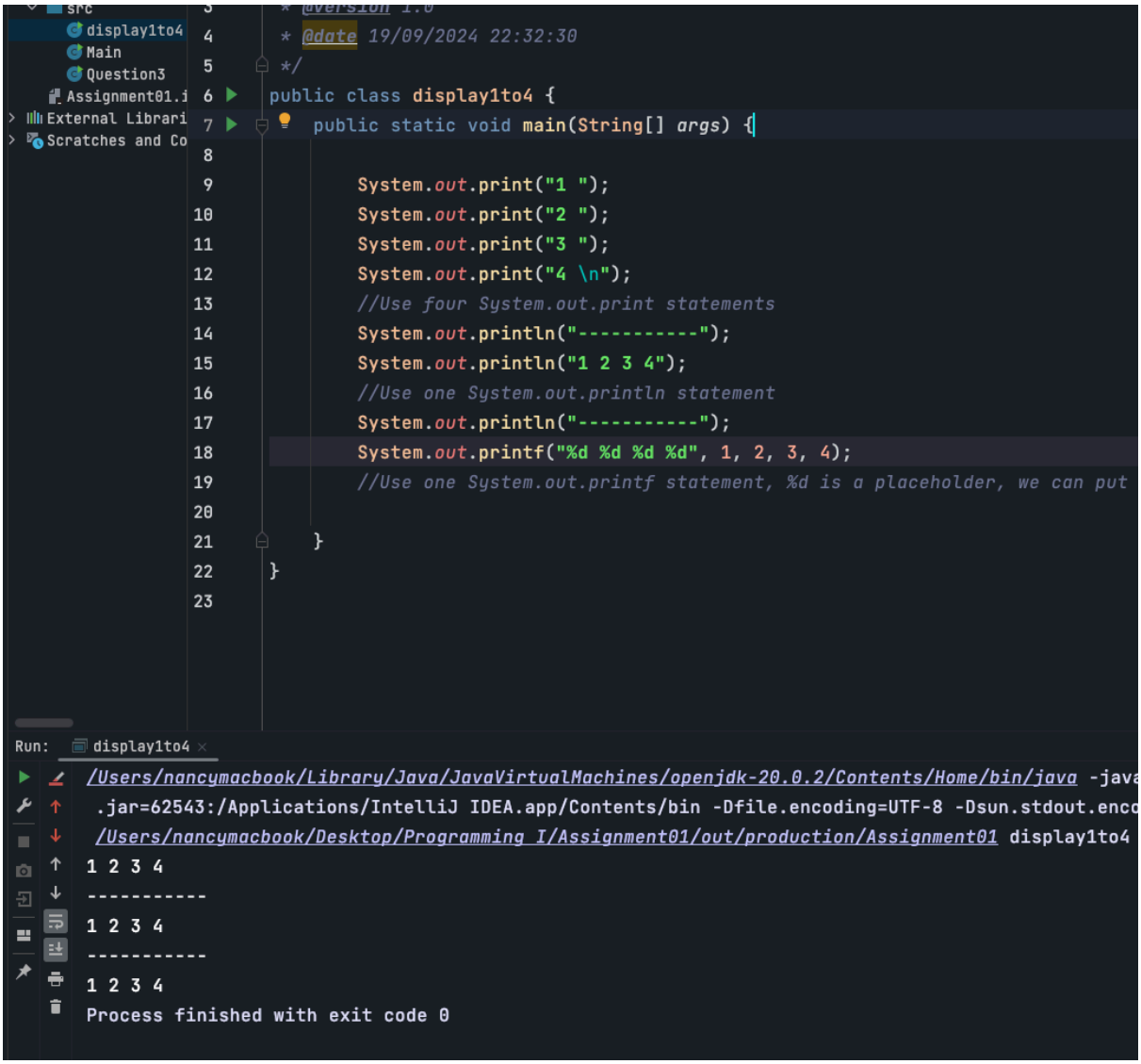
2. Write an application that displays the numbers 1 to 4 on the same line, with each pair of adjacent numbers separated by one space. Use the following techniques: **(6 Marks)**
   1. Use one `System.out.println` statement
   2. Use four `System.out.print` statements
   3. Use one `System.out.printf` statement

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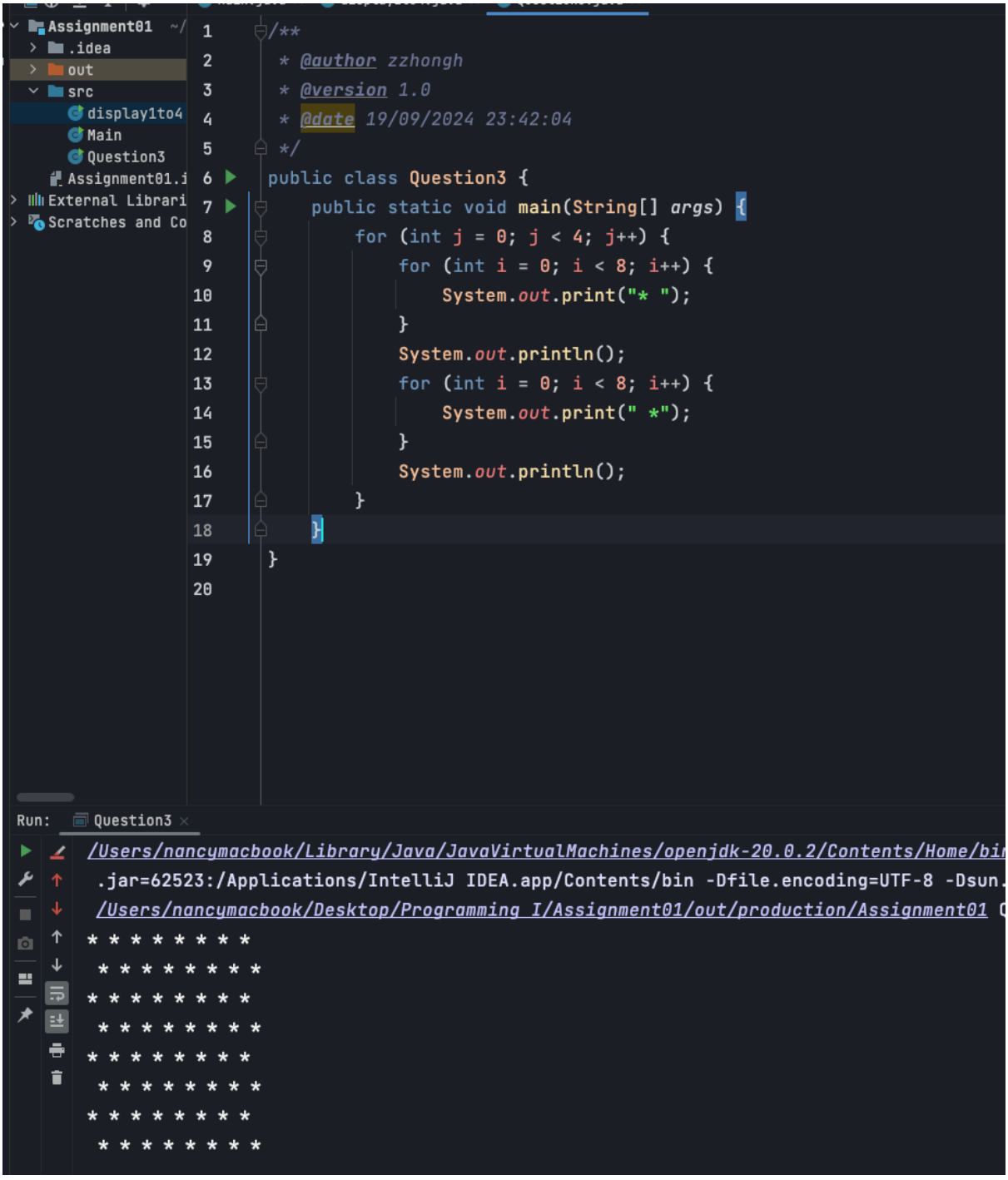
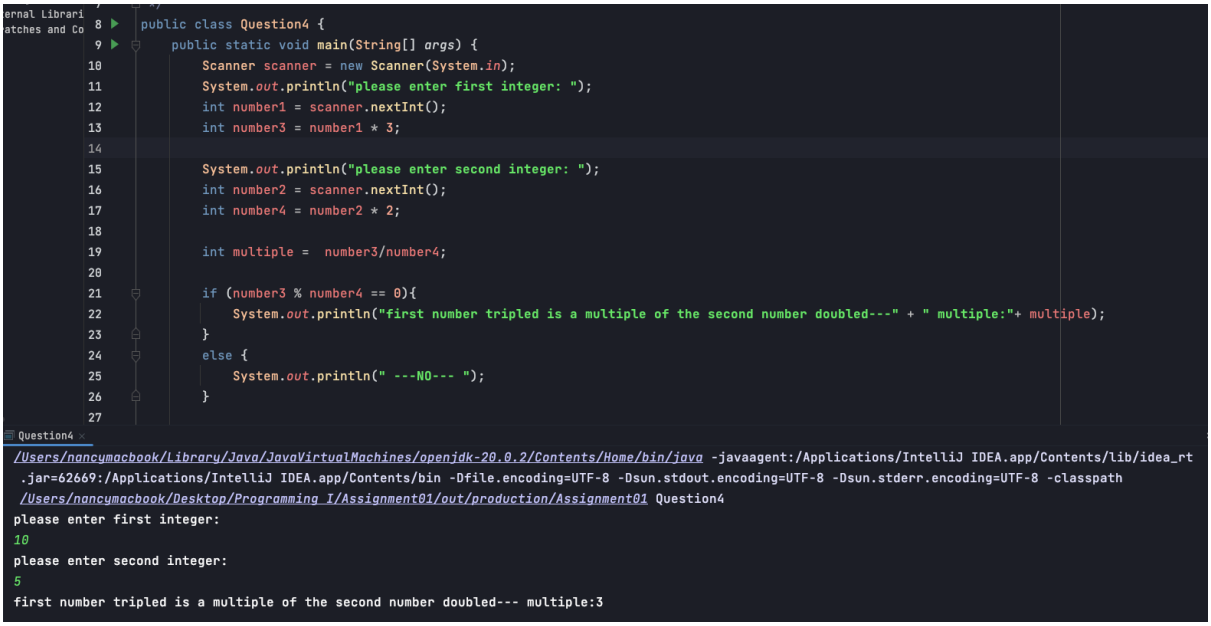
3. Write an application that displays a checkerboard pattern as follows: **(4 Marks)**

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



4. Write an application that reads two integers, determines whether the first number tripled is a multiple of the second number doubled, and prints the result. **(5 Marks)**

YES



```
public class Question4 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("please enter first integer: ");
        int number1 = scanner.nextInt();
        int number3 = number1 * 3;

        System.out.println("please enter second integer: ");
        int number2 = scanner.nextInt();
        int number4 = number2 * 2;

        int multiple =  number3/number4;

        if (number3 % number4 == 0){
            System.out.println("first number tripled is a multiple of the second number doubled---" + " multiple:"+ multiple);
        }
        else {
            System.out.println(" ---NO--- ");
        }
```

```
Question4
/Users/nancymacbook/Library/Java/JavaVirtualMachines/openjdk-20.0.2/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt
.jar=62669:/Applications/IntelliJ IDEA.app/Contents/bin -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -classpath
/Users/nancymacbook/Desktop/Programming I/Assignment01/out/production/Assignment01 Question4
please enter first integer:
10
please enter second integer:
5
first number tripled is a multiple of the second number doubled--- multiple:3
```

NO

```
*/
public class Question4 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("please enter first integer: ");
        int number1 = scanner.nextInt();
        int number3 = number1 * 3;

        System.out.println("please enter second integer: ");
        int number2 = scanner.nextInt();
        int number4 = number2 * 2;

        int multiple =  number3/number4;

        if (number3 % number4 == 0){
            System.out.println("first number tripled is a multiple of the second number doubled---" + " multiple:"+ multiple);
        }
        else {
            System.out.println(" ---NO--- ");
        }
```

```
Question4
/Users/nancymacbook/Library/Java/JavaVirtualMachines/openjdk-20.0.2/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt
.jar=62674:/Applications/IntelliJ IDEA.app/Contents/bin -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -classpath
/Users/nancymacbook/Desktop/Programming I/Assignment01/out/production/Assignment01 Question4
please enter first integer:
9
please enter second integer:
4
 ---NO---
```

5. **(Statistics for the Great Pyramid of Giza)** The Great Pyramid of Giza is considered an engineering marvel of its time. Use the web to get statistics related to the Great Pyramid of Giza and find the estimated number of stones used to build it, the average weight of each stone, and the number of years it took to build. *Use approximated values if you are in doubt, does not have to be accurate.* Create an application that calculates an estimate of how much, by weight, of the pyramid was built each year, each hour, and each minute as it was being built. The application should input the following information: **(10 Marks)**
   - Estimated number of stones used.
   - Average weight of each stone.
   - Number of years taken to build the pyramid (assuming a year comprises 365 days).

```java
public class Question5 {
    public static void main(String[] args) {
        /**
         * number of stones used to build it---2.3 million large blocks
         * the average weight of each stone---weighing 6 million tonnes in total.On average, most blocks weigh around 2.5 tons
         * the number of years it took to build---Built 2600 BC,[3] over a period of about 27 years
         */

        Scanner scanner = new Scanner(System.in);

        System.out.println("Please enter Estimated number of stones used: ");// 2,300,000
        int stone = scanner.nextInt();
        // allow user to enter the amount of stones used , should be 2300000

        System.out.println("Please enter the average weight of each stone: ");// 2.5 tons
        double averWeight = scanner.nextDouble();
        // allow user to enter  average weight of each stone, should be 2.5

        System.out.println("Please enter number of years it took to build: ");//27
        int year = scanner.nextInt();
        // allow user to enter built years

        double totalWeight = stone * averWeight;

        // Calculate estimates

        double weightByYear = totalWeight / year;
        System.out.println("Great Pyramid of Giza built " + weightByYear + " tons every year");

        double weightByDay = totalWeight / (year * 365);
        System.out.println("Great Pyramid of Giza built " + weightByDay + " tons every day");

        double weightByHour = totalWeight / (year * 365 * 24);
        System.out.println("Great Pyramid of Giza built " + weightByHour + " tons every hour");

        double weightByMin = totalWeight / (year * 365 * 24 * 60);
        System.out.println("Great Pyramid of Giza built " + weightByMin + " tons every minute");
    }
}
```

Output:

```
Please enter Estimated number of stones used:
2300000
Please enter the average weight of each stone:
2.5
Please enter number of years it took to build:
27
Great Pyramid of Giza built 212962.96296296295 tons every year
Great Pyramid of Giza built 583.4601725012684 tons every day
Great Pyramid of Giza built 24.310840520886185 tons every hour
Great Pyramid of Giza built 0.40518067534810304 tons every minute

Process finished with exit code 0
```