Basics

1. Use System.out.print method to print the same statement in separate lines.

```
Hello, World!
Hello, World!
```

2. Enter any value with several digits after the decimal point and assign it to variable of type double. Display the given value rounded to two decimal places.
3. Display any three strings of characters on one line so that they are aligned to the right edge of the 15-character blocks. How to align strings to the left edge?
4. Enter two values of type int. Display their division casted to the double type and rounded to the third decimal point.
5. *Sum two integer variables initialized with maximal values for that type.
6. Create three variables, one for each type: float, byte and char. Enter values corresponding to those types using Scanner. What values are you able to enter for each type?

Better understanding of methods

1. Write a method that receives 2 string parameters and checks if the second string is contained by the first one. The method will return a boolean. Example: returns true for “The Witcher” and “Witcher”.
2. Write a method that receives 2 parameters, a string and an int, and checks if the int variable is contained by the string. The method will return a boolean. Example: returns true for string “2 apples” and int 2.
3. Write a method that receives 2 integer parameters and check id the first int contains the second int. The method will return a boolean. Example: returns true for 123 and 1.
4. Can the above methods(1,2,3) have the same name?

Flow control, loops and arrays

1. Write an application that will show if entered value is greater, equal or lower than 30.
2. As above but compare two values at the same time. Show if both values are greater, equal or lower than 30. Otherwise show "<>". Example: input: 22, 25 output: lower input: 30, 30 output: equal input: 32, 33 output: greater input: 22, 32 output: <> input: 32, 22 output: <>
3. As above but only one of the values has to be greater than 30. Example: input: 22, 25 output: lower input: 30, 30 output: equal input: 32, 33 output: greater input: 22, 32 output: greater input: 32, 22 output: greater
4. Write an application that for any entered number between 0 and 9 will provide it’s name. For example for “3” program should print “three”.
5. Using nested for loops draw (parents loop iterator should be called “row”, child – “column”):

- triangle,
- *rectangle with diagonals,
- **Christmas tree

6. Write a simple application that will simulate a shopping. Use only if-else flow control. Consider following cases:

- If you would like to buy a bottle of milk – cashier will ask you for a specific amount of money. You have to enter that value and verify if it is same as the cashier asked.
- If you would like to buy a bottle of wine – cashier will ask you if you are an adult and for positive answer ask for a specific amount of money.

7. Write a "divide by" application. User should be able to enter initial value that will be divided in a loop by a new value entered by a user. Division should occur as long, as entered value will be different than 0. Result of division should be rounded to the fourth decimal point and printed to the console.
8. Write a simple "echo" application, that will:

- print back entered string,
- go to the beginning of a loop if user will enter "continue",
- break the loop with a "good bye!" message, if user will enter "quit".

9. Write a program that implements the following operations for integer numbers (test the methods in the main() method):
    1. Add(+)
    2. Subtract(-)
    3. Multiply(*)
    4. Divide(/)
    5. Sqrt

Exercises with arrays

1. Write an application that will find biggest value within array of int variables.
    - check your application using randomly generated array (use Random class),
    - check your application at least 5 times in a loop (generate random array -> print array to the console -> find biggest value -> print biggest value -> manually verify results).
2. Write an application that will find the longest char sequence within an array of type String. Test it in the same way as you have done in the previous exercise. How will you generate random char sequences?
3. Given 2 arrays with integer values check if the arrays are the same(same length and same elements in that order).
    1. First write the code in the main() method.
    2. Check if other 2 arrays are the same - copy the code and adapt it to use these 2 arrays.
    3. Talk about duplicate code.
    4. Extract the code into a method and reuse it.
    5. Talk about code reusability.
4. Write a method that receives an array of long values and returns the array in reverse order.
5. Write a program that does the following(the code should be written in separate methods):
    0. Generated an array with 10 elements random between 0 and 99. (See Random class in java).
    1. Display the generated array.
    2. Display only the odd numbers.
    3. Display only the even numbers.
6. Having an array with integer numbers rearrange the elements to have the positive numbers on the left and the negative numbers on the right. Do not use any sorting methods.

7. Write a program that rotates the array elements 1 position to the right.

Object oriented programming

1. Grocery Shopping

- Create class Product, it should contain at least two fields – name and price.
- Create an empty array of Products – it's size should be at least 5.
- Populate the array with some products - this array represents the menu for the user.
- Simulate the process of doing shopping:
    - ask for a product,
    - add it to the cart (array),
    - change index,
    - if index will be greater than 5 – finish shopping,
    - pay for the products.

2. Petrol Station

- Simulate the process of refueling. Within the while loop ask user if you should continue or finish. For every entered "continue" command you should add a specific amount of petrol and money (both of type double) and view it on the console.
- At the end user should pay for petrol. Consider multiple possibilities, like:
    - The user paid exactly as much as required.
    - The user paid too much (cashier should return the rest of the money).
    - The user paid too little – should be asked for the rest.

3. Personal Trainer.

- Create class Trainee, it should contain fields like: name, stamina, strength.
- You'll simulate both sides – Trainer and Trainee. Within a while loop you will be asked for an exercise to be done. Every exercise should add/reduce stamina/strength.
- Take into account that stamina should not be reduced below 0.
- Consider adding some supplements that will recover the stamina. Supplement should be additional class.

4. *Tic Tac Toe. Remember – keep it simple. You may use two-dimensional array to store the results and empty fields. Prepare a method to view present state of the "board".