

## Introduction to programming – Activity 2

### Getting started

- ☐ Double-click on the file *Activity2.R*
- ☐ Make sure your working directory is set to Activity2
- ☐ In the R console, type:  
`source("Activity2.R")`

### Main exercise

This week, you will have to reproduce the star that was printed for you. What happens when you run the Activity2 script? You are missing the star! Last week, you had all the lines of code that you needed to complete the activity. This week, you will have to write some of the code yourself, not just modify it.

- ☐ First, understand what your code is doing. Put the cursor on the first line of code and press **Run**



- ☐ You will see that your cursor moves to the next line of code, so press **Run** again
- ☐ Use the star that was printed to find the x- and y- coordinates for the start (x1, y1) and end (x2, y2) of each line. Each student can do one segment. Record the coordinates below:

|                 |            |            |            |            |
|-----------------|------------|------------|------------|------------|
| Red segment:    | x1 = _____ | y1 = _____ | x2 = _____ | y2 = _____ |
| Blue segment:   | x1 = _____ | y1 = _____ | x2 = _____ | y2 = _____ |
| Black segment:  | x1 = _____ | y1 = _____ | x2 = _____ | y2 = _____ |
| Purple segment: | x1 = _____ | y1 = _____ | x2 = _____ | y2 = _____ |
| Orange segment: | x1 = _____ | y1 = _____ | x2 = _____ | y2 = _____ |

- ☐ Now, each student on the team should take turns to add one line. To do so, you will need to know about the `segment()` function. To find out more, in the **Console**, type:  
`?segments`
- ☐ Because the instructions are a bit complicated when you are new to this, we gave you an example of how to use the function in the code. Note that the line starts with a `#` so it does not do anything in the script. You will have to copy-paste this line, remove the `#`, and modify it to do what you want. The values `x1` and `y1` are the coordinates of the starting point, while `x2` and `y2` are the coordinates of the end point, as you recorded them above. The argument `col` = is the color, and `lwd` = is the width of the line. Your star has line width of 5.  
`segments(x1, y1, x2, y2, col = "color", lwd = 1)`
- ☐ Add segments (total of 5) to your plot until you have the same star!

### Advanced activities – if your group is done early

- ☐ **Change the title of your graph to “We can reproduce this star!”** Find where you can change the title of your graph (hint: you know what it says now, look for that in your code). Write down what argument you had to change below. Note: an argument is a value that you set within a function. It looks like a variable, but it is inside parentheses (e.g. `xlab = “x”`, here `xlab` is the argument and it is found in the `plot( )` function).  

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- ☐ **Change the name of the file that the script saves.** Find where you can change this information in your script (hint: you know how it is called now, look for that in your code).
- ☐ **Change the color (`col =` ) and line type (`lty =` ) of your guiding lines.**
- ☐ **Create a new shape.** Use squared paper to plan the design, and then make it using your script. Maybe start with a square or a triangle?
- ☐ **Revisit last week’s activity if you were not quite done and help others.**