Introduction to programming – Activity 1

Getting started

- ☐ Double-click on the file *Activity1.R*
- ☐ Make sure your working directory is set to Activity1
- ☐ In the R console, type:
```
source("Activity1.R")
```

Main exercise

- ☐ On the picture that comes up, notice a red dot. Your task is to move this red dot on the person's nose. To do so, you need to rely on the x- and y-coordinates!
- ☐ In the window called *Activity1.R*, find a variable called `x_position` and `y_position`:
```
x_position <- 2
y_position <- 4
```
- ☐ Change these values to try to bring the dot on the person's nose. **Save your changes.**
- ☐ Again, type:
```
source("Activity1.R")
```
- ☐ The dot should have moved. Is it on the nose? If not, repeat the changes until the dot is on the person's nose. Do the best you can and don't forget you can use decimals (e.g. 2.3).
- ☐ Once you have succeeded, give someone else a chance to try.

New student

- ☐ Now, we have a problem: you already know what values to use for the red dot to go on the nose!
- ☐ First, change the picture you will be using.
- ☐ In the window called *Activity1.R*, find a variable called `fname`:
```
fname = "MarieCurie.png"
```
- ☐ Look in the Activity1 folder for another .png file. Copy the name of the file to replace `MarieCurie.png`. Make sure the color of the text stays the same – it is a way to help you spot forgotten punctuation!
- ☐ Type:
```
source("Activity1.R")
```
- ☐ Follow the instructions under **Main exercise** to move the dot.

Advanced activities – if everyone in your group is done early

For these activities, you will need to change values below the line that says:

```
############### Do not modify anything below this line ###############
```

☐ **Double the number of tick marks.** Let's say we wanted more guiding lines to help us be more precise. How would we do that? Everywhere you see the value 10 in your code, change it to a 20 (there should be 7 spots). Don't forget to save changes, then type `source("Activity1.R")`. Can you spot everything that changed? Write the changes down below.

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☐ **Change the color of the dot.** The red dot makes everyone look like a clown. Instead, open the file **R_colors.pdf** and pick the name of your favorite color from the chart. In the code, find where we specify the color of the dot (hint: look at the comments; remember we are drawing a circle and the color right now is `"red"`). When you find the command that draws the circle, change the word `red` for the name of the color you chose. Write down your favorite R color below.

_____

☐ **Make the circle cover the person's face.** The circle we have is quite small. Let's increase its size to hide the person's face (hint: the size of the dot is 0.2 in the original script and the size of the circle should be specified at the time we draw it). What size of dot worked for your picture? Write it down below.

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☐ **Change the title of your graph.** 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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