Challenge-5

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Questions

```
library(tidyverse)
```

Question-1: Local Variable Shadowing   Solutions:

Create an R function that defines a global variable called `x` with a value of 5. Inside the function, declare a local variable also named `x` with a value of 10. Print the value of `x` both inside and outside the function to demonstrate shadowing.

```
x <-5
function_1 <- function() {

  x <- 10
  print(x)
}

print(x)
```

```
## [1] 5
```

```
function_1()
```

```
## [1] 10
```

Question-2: Modify Global Variable Create an R function that takes an argument and adds it to a global variable called `total`. Call the function multiple times with different arguments to accumulate the values in `total`.

Solutions:

```
total <- 3
function_2 <- function(x) {
  total <<- x + total
}

function_2(10)
print(total)
```

```
## [1] 13
```

```
function_2(5)
print(total)
```

```
## [1] 18
```

```
function_2(33)
print(total)
```

```
## [1] 51
```

Question-3: Global and Local Interaction Write an R program that includes a global variable `total` with an initial value of 100. Create a function that takes an argument, adds it to `total`, and returns the updated `total`. Demonstrate how this function interacts with the global variable.

Solutions:

```
total = 100
add<-3

new_total <- function(add) {

  total <<- add + total
}

new_total(3)
total
```

```
## [1] 103
```

Question-4: Nested Functions Define a function `outer_function` that declares a local variable `x` with a value of 5. Inside `outer_function`, define another function `inner_function` that prints the value of `x`. Call both functions to show how the inner function accesses the variable from the outer function's scope.

Solutions:

```
outer_function <- function() {

  x <- 5
  inner_function <- function() {
    print(x)

  }
  inner_function()
}

outer_function()
```

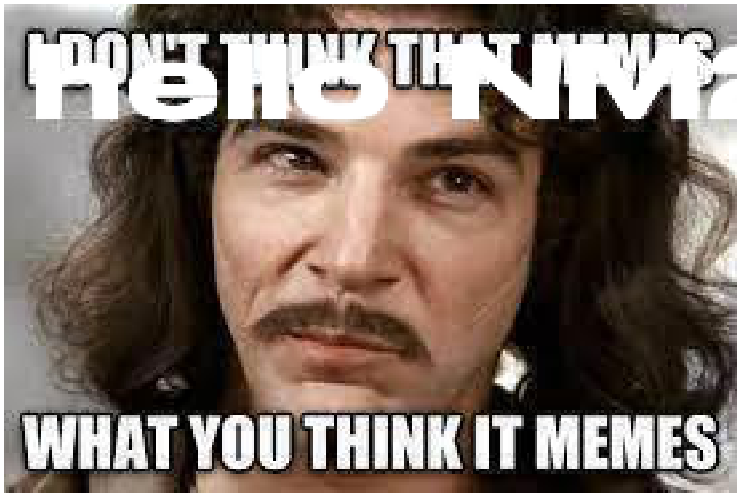
Question-5: Meme Generator Function Create a function that takes a text input and generates a humorous meme with the text overlaid on an image of your choice. You can use the `magick` package for image manipulation. You can find more details about the commands offered by the package, with some examples of annotating images here: https://cran.r-project.org/web/packages/magick/vignettes/intro.html

Solutions:

```r
library(magick)
```

```
## Linking to ImageMagick 6.9.12.93
## Enabled features: cairo, fontconfig, freetype, heic, lcms, pango, raw, rsvg, webp
## Disabled features: fftw, ghostscript, x11
```

```r
generate_meme <- function(text, image_path, output_path) {

  img <- image_read('download.jpeg')


  text_color <- "white"
  font_size <- 40
  text_position <- "+10+10"


  img <- image_annotate(img, text, size = font_size, color = text_color, location = text_position)

  image_write(img, path = output_path, format = "jpeg")
  image_annotate(img, text, size = font_size, color = text_color, location = text_position)
}

generate_meme("hello NM2207", "download.jpeg", "download.jpeg")
```



```
<br>

#### Question-6: Text Analysis Game

Develop a text analysis game in which the user inputs a sentence, and the R function provides statistic
```

Solutions:

```
‘‘‘r
text_analysis_game <- function() {

  cat("Welcome to the Text Analysis Game!\n")
  sentence <- readline(prompt = "Enter a sentence: ")


  words <- strsplit(sentence, " ")[[1]]
  num_words <- length(words)
  num_chars <- nchar(sentence)
  avg_word_length <- num_chars / num_words


  cat("\nText Statistics:\n")
  cat("Number of words:", num_words, "\n")
  cat("Number of characters:", num_chars, "\n")
  cat("Average word length:", round(avg_word_length, 2), "\n")

  if (avg_word_length < 4) {
    skill_level <- "Novice Communicator"
  } else if (avg_word_length >= 4 && avg_word_length < 6) {
    skill_level <- "Intermediate Communicator"
  } else {
    skill_level <- "Advanced Communicator"
  }

  cat("\nCommunication Skill Level:", skill_level, "\n")
}


text_analysis_game()
```