Challenge-5

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Questions

Question-1: Local Variable Shadowing 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.

Solutions:

```
# Enter code here
x<-5
local_variable<-function(x){
  x<-10}
x
```

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

```
print(local_variable(x))
```

```
## [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:

```
# Enter code here
total<-10
add_to_total<-function(x){
 total<-total+x
  return(total)}
total<-add_to_total(5)
total<-add_to_total(10)
total<-add_to_total(15)
total
```

```
## [1] 40
```

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:

```
# Enter code here
total<-100
new_total<<-function(x){
  total<<-total+x
  return(total)}
new_total(5)
```

```
## [1] 105
```

```
new_total(10)
```

```
## [1] 115
```

```
new_total(30)
```

```
## [1] 145
```

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:

```
# Enter code here
outer_function<-function(x){
  x<-5
  inner_function<-function(){
    print(x)}
  inner_function()}

outer_function(x)
```

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

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:

```
# Enter code here
library('magick')
```

```
## Warning: package 'magick' was built under R version 4.2.3
```

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

```
create_meme<-function(meme_text){
frink <- image_read("https://jeroen.github.io/images/frink.png")
  image_with_text<-image_annotate(frink, meme_text, size = 30,color = "green")
  return(image_with_text)}
create_meme("Hello")
```

Question-6: Text Analysis Game Develop a text analysis game in which the user inputs a sentence, and the R function provides statistics like the number of words, characters, and average word length. Reward the user with a "communication skill level" based on their input.

Solutions:

```r
# Enter code here
text_analysis_game <- function() {
  sentence<-readline("Enter a sentence: ")
  number_of_words <- lengths(strsplit(sentence, ' '))
  number_of_characters <- nchar(sentence)
  average_word_length <- mean(number_of_characters /number_of_words)
  communication_skill_level<-ifelse(number_of_words & number_of_characters & average_word_length >= 10,
                                    "Good!","Poor!")
  print(paste0("Communication skill level: ", communication_skill_level, " Your sentence has ",
               number_of_words, " words, ",
               number_of_characters, " characters and your sentence's average word length is ",
               average_word_length))
}

text_analysis_game()
```

```
## Enter a sentence:
## [1] "Communication skill level: Poor! Your sentence has 0 words, 0 characters and your sentence’s av
```