functions\_question

2024-04-17

# 1. Create a function that takes in a name as a string argument and prints out "Hello name":  
say\_hello <- function(name) {  
 cat("Hello", name, "\n")  
}  
  
say\_hello("Alice")

## Hello Alice

# 2. Create a function that takes in a name as a string argument and returns a string of the form - "Hello name":  
hello\_string <- function(name) {  
 return(paste("Hello", name))  
}  
  
val <- hello\_string("Friends")  
cat("Final String::",val, "\n")

## Final String:: Hello Friends

typeof(val)

## [1] "character"

# 3. Create a function that will return the product of two integers:  
multiply <- function(x, y) {  
 return(x \* y)  
}  
  
result <- multiply(10, 3)  
cat("Product of two integers::", result, "\n")

## Product of two integers:: 30

# 4. Create a function to check the count of numbers:  
count\_numbers <- function(x) {  
 counts <- table(x)  
 return(counts)  
}  
  
x <- c(1, 1, 1, 2, 2, 2, 3, 15, 3)  
all\_count <- count\_numbers(x)  
all\_count

## x  
## 1 2 3 15   
## 3 3 2 1

# 5. Create a function categorize\_age that takes an age (numeric value) as input and returns "Child", "Adult", or "Senior":  
categorize\_age <- function(age) {  
 if (age < 18) {  
 return("Child")  
 } else if (age >= 18 & age <= 64) {  
 return("Adult")  
 } else {  
 return("Senior")  
 }  
}  
result <- categorize\_age(65)  
cat("Category:", result, "\n")

## Category: Senior

# 6. Write a function average\_salary\_by\_age\_group that takes a data frame with columns Age and Salary and returns a new data frame with two columns, AgeGroup and AverageSalary:  
average\_salary\_by\_age\_group <- function(df) {  
 df$AgeGroup <- cut(df$Age, breaks = c(0, 30, 50, Inf), labels = c("Young", "Middle", "Senior"))  
 avg\_salary <- tapply(df$Salary, df$AgeGroup, mean)  
 final\_df <- data.frame(AgeGroup = names(avg\_salary), AverageSalary = avg\_salary)  
 return(final\_df)  
}  
  
# Example data frame  
sample\_df <- data.frame(Age = c(25, 35, 45, 55, 65), Salary = c(50000, 60000, 70000, 80000, 90000))  
  
# Calling the function  
result <- average\_salary\_by\_age\_group(sample\_df)  
result

## AgeGroup AverageSalary  
## Young Young 50000  
## Middle Middle 65000  
## Senior Senior 85000

# 7. Given a data frame df with columns Length and Width representing dimensions of rectangles, write a function area\_rectangle that calculates the area of each rectangle.  
area\_rectangle <- function(row) {  
 row$Area <- row$Length \* row$Width  
 return(row)  
}  
  
# Example data frame  
rect\_df <- data.frame(Length = c(2, 3, 4), Width = c(5, 6, 7))  
new\_df <- lapply(1:nrow(rect\_df), function(i) area\_rectangle(rect\_df[i,]))  
new\_df <- do.call(rbind, new\_df)  
new\_df

## Length Width Area  
## 1 2 5 10  
## 2 3 6 18  
## 3 4 7 28