Practical Activity 1

Elly Ochieng K’

2024-10-31

## R Markdown  
# Calculate distance between two points  
x1 <- 2  
y1 <- 5  
x2 <- 7  
y2 <- 8  
  
distance <- sqrt((x2 - x1)^2 + (y2 - y1)^2)  
print(distance)

## [1] 5.830952

# Evaluate an expression  
x <- 1  
expression\_result <- 5 + 4 \* (x - 2 / x)  
print(expression\_result)

## [1] 1

# Conditional expressions and calculations  
x <- 7.5  
y <- 3  
  
# Arithmetic operations  
sum\_xy <- x + y  
product\_xy <- x \* y  
  
# Relational comparisons  
is\_x\_greater\_than\_y <- x > y  
is\_x\_less\_than\_or\_equal\_to\_y <- x <= y  
  
# Mathematical functions  
sqrt\_x <- sqrt(abs(x))  
log\_x <- log(abs(x))  
exp\_x <- exp(x)  
  
print(sum\_xy)

## [1] 10.5

print(product\_xy)

## [1] 22.5

print(is\_x\_greater\_than\_y)

## [1] TRUE

print(is\_x\_less\_than\_or\_equal\_to\_y)

## [1] FALSE

print(sqrt\_x)

## [1] 2.738613

print(log\_x)

## [1] 2.014903

print(exp\_x)

## [1] 1808.042

# Rep function examples  
result\_a <- rep(c(2, 3, 5), times = 4:2)  
result\_b <- rep(c(4, 3, 2), each = 4)  
result\_c <- rep(c(3, 1, 1, 5, 7), length.out = 50)  
result\_d <- c(rep(3, 4), rep(1, 4), rep(1, 4), rep(5, 4), rep(7, 4))  
  
print(result\_a)

## [1] 2 2 2 2 3 3 3 5 5

print(result\_b)

## [1] 4 4 4 4 3 3 3 3 2 2 2 2

print(result\_c)

## [1] 3 1 1 5 7 3 1 1 5 7 3 1 1 5 7 3 1 1 5 7 3 1 1 5 7 3 1 1 5 7 3 1 1 5 7 3 1 1  
## [39] 5 7 3 1 1 5 7 3 1 1 5 7

print(result\_d)

## [1] 3 3 3 3 1 1 1 1 1 1 1 1 5 5 5 5 7 7 7 7

# Interest calculations  
interest\_7\_5 <- 1000 \* ((1 + 0.075)^5 - 1)  
interest\_3\_5 <- 1000 \* ((1 + 0.035)^5 - 1)  
interest\_seq <- 1000 \* ((1 + 0.075)^seq(1, 10) - 1)  
  
print(interest\_7\_5)

## [1] 435.6293

print(interest\_3\_5)

## [1] 187.6863

print(interest\_seq)

## [1] 75.0000 155.6250 242.2969 335.4691 435.6293 543.3015 659.0491  
## [8] 783.4778 917.2387 1061.0316