# Load required library

library(dplyr)

# Load the dataset

bmi\_data <- read.csv("bmi.csv")

# Define a function for macronutrient recommendations based on weight and height

calculate\_macros <- function(weight, height, bmi\_class) {

# Calculate Basal Metabolic Rate (BMR) as a base for macronutrient needs

bmr <- 10 \* weight + 6.25 \* (height \* 100) - 5 \* 30 # Assuming age = 30 for simplicity

if (bmi\_class == "Underweight") {

protein <- round(1.5 \* weight, 1) # 1.5g per kg body weight

carbs <- round(0.6 \* bmr, 1) # 60% of BMR as carbs

fats <- round(0.25 \* bmr, 1) # 25% of BMR as fats

} else if (bmi\_class == "Normal") {

protein <- round(1.2 \* weight, 1) # 1.2g per kg body weight

carbs <- round(0.5 \* bmr, 1) # 50% of BMR as carbs

fats <- round(0.3 \* bmr, 1) # 30% of BMR as fats

} else if (bmi\_class == "Overweight") {

protein <- round(1.0 \* weight, 1) # 1.0g per kg body weight

carbs <- round(0.4 \* bmr, 1) # 40% of BMR as carbs

fats <- round(0.35 \* bmr, 1) # 35% of BMR as fats

} else if (bmi\_class == "Obese Class 1" || bmi\_class == "Obese Class 2" || bmi\_class == "Obese Class 3") {

protein <- round(1.2 \* weight, 1) # 1.2g per kg body weight

carbs <- round(0.3 \* bmr, 1) # 30% of BMR as carbs

fats <- round(0.4 \* bmr, 1) # 40% of BMR as fats

} else {

protein <- carbs <- fats <- NA # Unknown case

}

return(c(protein = protein, carbs = carbs, fats = fats))

}

# Apply macronutrient recommendations based on weight, height, and BMI class

bmi\_data <- bmi\_data %>%

rowwise() %>%

mutate(

Macros = list(calculate\_macros(Weight, Height, BmiClass)),

Protein\_g = Macros["protein"],

Carbohydrates\_g = Macros["carbs"],

Fats\_g = Macros["fats"]

) %>%

select(-Macros)

# View the updated dataset

head(bmi\_data)

# Save the recommendations to a new CSV file

write.csv(bmi\_data, "bmi\_with\_diet\_macros.csv", row.names = FALSE)

# Output message

cat("Diet macronutrient plans have been successfully added and saved to 'bmi\_with\_diet\_macros.csv'.")