Module 12 Assignment

Scott Pitcher

3/31/2024

```r
# Function 1 ####
## Purpose: To calculate the portion of one's carbon emissions dedicated to  ####
## Inputs: distance traveled, mode of transport, and efficiency####
## Outputs: estimated carbon emissions in kg####

calculateTransportEmissions <- function(distance, transportMode, efficiency) {
  # Define emission factors for different transport modes (kg CO2 per liter of fuel or per passenger-km
  emissionFactors <- c(car = 2.31, bus = 0.104, airplane = 0.255) # Example values; adjust based on res

  # Calculate emissions based on mode
  if (transportMode %in% c("car", "airplane")) {
    # For cars and airplanes, emissions are based on efficiency (liters per 100 km or emissions factor)
    emissions <- (distance / 100) * efficiency * emissionFactors[transportMode]
  } else if (transportMode == "bus") {
    # For buses, assume efficiency is passenger-km per liter, calculate emissions per passenger
    emissions <- distance * emissionFactors[transportMode]
  } else {
    stop("Unsupported transport mode")
  }

  return(emissions) # Returns emissions in kg of CO2 equivalent
}

# Please note the values used are rough estimates, may need to be refined on further research


# Function 2 ####
## Purpose: calculate domestic water usage####
## Inputs: number of people in the household, usage type####
## Outputs: total usage of water in liters####

calculateDomesticWaterUsage <- function(numberOfPeople, usageType) {
  # Define average water usage (in liters) per person per day for different activities
  averageUsage <- c(drinking = 2, bathing = 80, cooking = 5) # Example values; adjust based on research

  # Check if the usageType is valid
  if (!usageType %in% names(averageUsage)) {
    stop("Unsupported usage type")
  }

  # Calculate total water usage
  totalUsage <- numberOfPeople * averageUsage[usageType]
```

```r
  return(totalUsage) # Returns water usage in liters per day
}
```