**Computer Science 101**

Examples:

1. Find the sum of all elements of array. (Pseudocode For Loop Example)

Array

BEGIN

Number i=0, n=5, sum=0

ARRAY numbers={65,45,10,7,125}

FOR i=0 to N-1 STEP 1 DO

Sum = sum + numbers[i]

ENDFOR

OUTPUT “Sum of numbers in the array”+sum

END

1. Pseudocode for Deciding Whether or Not to Take a Shower and Shampoo Hair

BEGIN

// Define variables

String currentDay // The current day of the week (e.g., "Monday")

Time currentTime // The current time (in hours and minutes, e.g., 8:00)

// Determine if it's the right time to shower

IF currentTime >= 7:30 AND currentTime <= 9:30 THEN

Boolean shouldShower = TRUE

ELSE

Boolean shouldShower = FALSE

ENDIF

// Determine if it's the right day to shampoo

IF currentDay == "Monday" OR currentDay == "Wednesday" OR currentDay == "Friday" THEN

Boolean shouldShampoo = TRUE

ELSE

Boolean shouldShampoo = FALSE

ENDIF

// Output decisions

IF shouldShower THEN

OUTPUT "You should take a shower."

IF shouldShampoo THEN

OUTPUT "You should shampoo your hair."

ELSE

OUTPUT "You should not shampoo your hair."

ENDIF

ELSE

OUTPUT "You should not take a shower right now."

ENDIF

END

1. Write an algorithm in pseudocode for sizing a Window Air Conditioner unit (size is in BTU). Window air conditioners typically have cooling capacities ranging from 5,000 to 12,500 British Thermal Units (BTUs). As a rule of thumb, an air conditioner needs 20 BTU for each square foot of living space but there are other considerations such as the height of your ceiling and the size of your windows and doorways. To measure your room, multiply the length of the room by the width. Energy Star recommends that you make adjustments for the following circumstances:
2. • If the room is heavily shaded, reduce capacity by 10 percent.
3. • If the room is very sunny, increase capacity by 10 percent.
4. • If more than two people regularly occupy the room, add 600 BTUs for each additional person.
5. • If the unit is used in a kitchen, increase capacity by 4,000 BTUs.
6. • Test your program for a very sunny 12 by 16 feet master room occupied by a couple.

BEGIN

// Define variables

Number length = 12 // Length of the room in feet

Number width = 16 // Width of the room in feet

Number roomArea = length \* width // Calculate room area in square feet

Number baseBTU = roomArea \* 20 // Base BTU calculation (20 BTU per square foot)

// Define additional variables for conditions

IF HeavilyShaded = FALSE

IF VerySunny = TRUE

Number numberOfPeople = 2

Boolean isKitchen = FALSE

// Adjust BTU based on room conditions

IF isHeavilyShaded THEN

baseBTU = baseBTU \* 0.9 // Reduce BTU by 10% for heavily shaded rooms

ENDIF

IF isVerySunny THEN

baseBTU = baseBTU \* 1.1 // Increase BTU by 10% for very sunny rooms

ENDIF

IF numberOfPeople > 2 THEN

Number extraPeople = numberOfPeople - 2

Number additionalBTU = extraPeople \* 600 // Add 600 BTUs for each additional person

baseBTU = baseBTU + additionalBTU

ENDIF

IF isKitchen THEN

baseBTU = baseBTU + 4000 // Add 4,000 BTUs if the unit is used in a kitchen

ENDIF

// Output the final BTU requirement

OUTPUT "Final recommended BTU for the air conditioner: " + baseBTU

END