

## Programming Fundamentals Lab (Assignment #2)

Date: \_\_\_\_\_

- Q: Write pseudocode to find the smallest number among three given variables.  
Implement a decision making structure to compare the variables.

Start

```

set N1, N2 and N3 to 0           ; Note;
// INPUT N1
PRINT ("Enter first number"; READ N1)
// INPUT N2
PRINT ("Enter Second number"; READ N2)
// INPUT N3
PRINT ("Enter Third number"; READ N3)
IF N1 <= N2 AND N1 <= N3 THEN
    PRINT ("The smallest number is" N1)
ELSE IF N2 <= N3 THEN
    PRINT ("The smallest number is" N2)
ELSE
    PRINT ("The smallest number is" N3)
END IF
Stop

```

Assuming the user can enter two same numbers, " $\leq$ " condition is used instead of " $<$ ". For example if user enters 2, 2 and 2, the program would give error if only " $<$ " condition is used but in this pseudocode, the program compares the three numbers on " $\leq$ " condition which gives the output 2 as the smallest no as all the no's are same thus any is smallest. Thus this program effectively outputs the largest no of all three are different but also outputs the smallest if any two or all three numbers are same.



- Date: \_\_\_\_\_
- Q3, Develop pseudocode for a basic calculator that performs multiplication and division.  
The pseudocode should prompt the user for two numbers and an operator, then display the result of the operation.

Start

// Calculator (continues)

SET N1 AND N2 to 0

SET operator to "\*" AND "/"

// Prompt user to INPUT N1

PRINT ("Enter first number"; READ N1)

// Prompt user to INPUT operator

PRINT ("Enter operator for the operation to be performed"; READ operator)

IF operator == "\*" OR "/" THEN

// Prompt user to INPUT N2

PRINT ("Enter second number"; Read N2)

ELSE

PRINT ("Invalid operator/operation") AND return to // Prompt user to INPUT operator.

END IF

IF operator == "\*" THEN

Result = N1 \* N2

ELSE IF operator == "/" THEN

IF N2 = 0

PRINT ("Undefined / Math Error / Error division by zero") AND  
return to // Prompt user to INPUT N2

ELSE

Result = N1 / N2

END IF

STOP



D4; Write an algorithm to determine whether a number is a prime number. The algorithm should iterate through possible divisors and determine if the number has any divisors other than 1 and itself.

- ① Start
  - ② Ask the user to input num
  - ③ If num < 2 Then Print "num is not a prime number"
  - ④ Else If num = 2 Then Print "num is a prime number"
  - ⑤ Else If num > 2 Then
    - ⑥ For count 2 to num - 1
    - ⑦ remainder = num Mod count
    - ⑧ If remainder == 0 Then Print "num is not a prime number"
    - ⑨ Else Print "num is a prime number"
    - ⑩ END IF
  - ⑪ count = count + 1
  - ⑫ NEXT count
  - ⑬ END IF
  - ⑭ Stop
- D5; Create an algorithm that asks the user for a day number (1-365) and outputs the corresponding day of the week, assuming that January 1<sup>st</sup> is a Monday.
- ① Start
  - ② Ask the user for the Day Number
  - ③ If Day Number >= 1 AND Day Number <= 365 THEN
    - ④ SET remainder to (Day Number - 1) Mod 7
    - ⑤ CASE remainder OF
      - ⑥ remainder = 0 : OUTPUT "Monday"
      - ⑦ remainder = 1 : OUTPUT "Tuesday"
      - ⑧ remainder = 2 : OUTPUT "Wednesday"
      - ⑨ remainder = 3 : OUTPUT "Thursday"

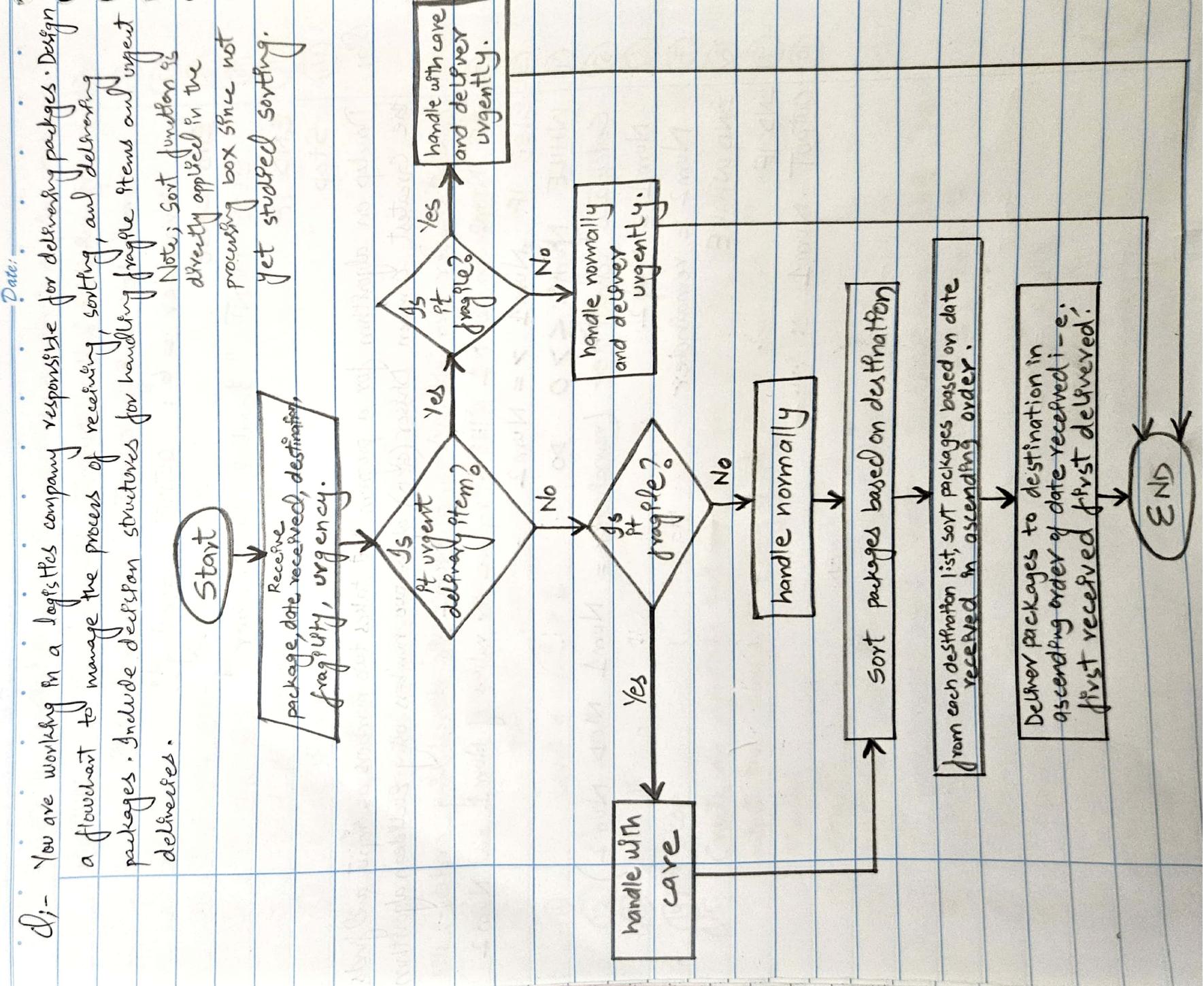




Date:

- ⑩ remainder = 4 : OUTPUT "Friday"  
⑪ remainder = 5 : OUTPUT "Saturday"  
⑫ remainder = 6 : OUTPUT "Sunday"  
END CASE  
ELSE PRINT "Invalid Day Number"  
END IF  
⑬ Stop
- Q6; Develop an algorithm for a program that takes two numbers as input and finds the Greatest Common Divisor (GCD) of the two numbers using Euclidean algorithm
- ① Ask the user for Num1 and Num2 in descending order; stop  
② IF Num2 > Num1 THEN replace the values of Num1 and Num2  
③ ELSE IF Num1 > Num2  
④ WHILE Num2 <> 0 DO  
⑤ Calculate remainder (remainder = Num1 MOD Num2)  
⑥ Num1 = Num2  
⑦ Num2 = remainder  
⑧ END WHILE  
⑨ END IF  
⑩ OUTPUT Num1

- Q:- You are working in a logistics company responsible for delivering packages. Design a flowchart to manage the process of receiving, sorting, and delivering packages. Include decision structures for handling fragile items and urgent deliveries.





Date:

Q; Imagine you are automating the process of a vending machine. Create a flowchart that includes decision points for user input, selecting products, accepting payment, and dispensing the correct item. Include error handling for invalid inputs and insufficient funds.

Date: \_\_\_\_\_

d; Imagine you are automating the process of a vending machine. Create a flowchart that includes decision points for user input, selecting products, accepting payment, and dispensing the correct item. Include error handling for invalid inputs and insufficient funds.

