FLOWCHARTS:

**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.**

Receive Package

Start

Check if package is labelled

false

true

Verify details

Check if package is urgent delivery

Check if package is fragile

no false

true true

end

Deliver packages

Prepare for dispatch

Sort in fragile items

Sort in urgent items

**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.**

Check if product is available

Input product

Start

false

true

Check if payment is sufficient

Input payment

false

End

Dispense the product

true

PSEUDO CODE:

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

1. Input a ,b ,c
2. If a<b AND b<c

Print “ a is smallest”

1. Else If b<c AND b<a

Print “ b is smallest”

1. Else

Print “c is the smallest “

1. End

**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.**

1. Input a, b, operator
2. If operator is ‘\*’

Set result =a\*b

1. Else if operator is ‘/’

Set result = a/b

1. Else

Print “invalid operator”

1. Print result

ALGORITHM:

**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. Input number by user (num)
2. If n<=1 return false (not prime)
3. loop i=1 to i<=num (iterate over each number till the number user has entered)
4. If (num % i ==0)
5. Then increment 1 in count
6. If count >=2 then

Display it’s not a prime number

1. Else

Display it’s a prime number

**Create an algorithm that asks the user for a day number (1-365) and outputs the corresponding day of the week, assuming that January 1st is a Monday.**

1. Ask the user to enter a number between 1 and 365
2. Calculate the day of the week using formula: (daynumber +6) mod 7

Day number is user input

1. 0=Sunday
2. 1=Monday
3. 2= Tuesday’
4. 3=Wednesday
5. 4=Thursday
6. 5=Friday
7. 6=Saturday
8. Output / display the corresponding day of the week

**Develop an algorithm for a program that takes two numbers as input and finds the Greatest**

**Common Divisor (GCD) of the two numbers using the Euclidean algorithm.**

1. Input two numbers num1, num2
2. If num2 is 0, return num 1 ( gcd of num1 and 0 is a)
3. Calculate r=num1 mod num2 (remainder of num 1 divided by num2)
4. Replace num1 with num2 and num2 with r
5. Repeat steps till b is 0
6. Gcd is the last non zero remainder