1. 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.

Package Received

Is package fragile?

yes

Send to special headling area

no

Is delivery urgent?

Sort package

yes

Mark as urgent

no

Load into the vehicle

Deliver

pakage

2. 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.

Proceed to payment

Is product valid?

User select

product

NO

Invalid product

yes

Insufficient payment

Is payment sufficient?

NO

Dispense product

YES

1. Write pseudocode to find the smallest number among three given variables. Implement a

decision-making structure to compare the variables.

START

Input num1,num2,num3;

If (num1<num2 and num1<num3);

Print(“num1 is smallest”);

Else if (num2<num3 and num2<num1);

Print(“num2 is smallest”);

Else ;

Print(“num3 is smallest”)

END

2. 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

Input num1, num2;

Input operator;

If operator == “\*”;

Print (“multiplication =”, num1\*num2);

Else if operator == “/”;

Print (“division =”, num1/num2);

Else;

Print (“invalid operator”); END

1. 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.

* Ask user to input a number “n”
* If n is less than or equal to 1 then show it is prime
* If n is equal to 2 then show it is prime
* If n is greater than 2 and its even then show it is not prime
* If n is greater than or equal to 3 and it is not divisible by any number other than 1 and itself then show it is prime

2. 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.

* Ask user to input day\_number which is between 0 to 365 including 0 and 365
* Assign index to each day of week like Monday[0],Tuesday[1] and so onto Sunday[6]
* Now apply (day\_number -1)%7 . this will gives us an remainder
* Now this remainder will be equal to the index and with the of this index it will show what day of the week is this.

3. 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.

* Ask user to input two number ‘a’ and ‘b’
* ‘a’ and ‘b’ should be non-negative number
* ‘a’ and ‘b’ both should not be zero if they are then GCD is undefined
* If one of ‘a’ or ‘b’ is zero than other number is GCD
* The GCD of two numbers ‘a’ and ‘b’ is the same as the GCD of ‘b’ and the remainder of the division of ‘a’ by ‘b’(a % b).
* This principle is applied repeatedly until one of the numbers becomes zero. The non-zero number at this point is the GCD.