Programming fundamentals Assignment Lab :02

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.

SORTING CAREFULLY

SORTING NORMALLY

IF PACKAGE IS FRAGILE

INPUT PACKAGES

AMSMOO

NO

YES

IF DELIEVERY IS URGENT

DELIEVER NORMAL

NO

YES

DELIEVER URGENT

3. 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 NUM 1;

ENTER OPERATOR;

INPUT NUM 2;

IF (OPERATOR IS \*) {

PRINT (NUM1\*NUM2);

ELSE IF (OPERATOR IS /) {

PRINT (NUM1/NUM2);

END IF;

}

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.

START

INPUT NUMBER = N;

WHILE (N<INPUT) {

IF N IS DIVIDED BY 2 AND REMAINDER IS 0:

THE NUMBER IS NOT A PRIME;

ELSE NUMBER IS PRIME;

} N=N+1

END

}

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.

START

ASK USER TO INPUT ANY NUMBER BETWEEN (1 -365);

DIVIDE THE NUMBER BY 7 USING DIVISION OPERATOR;

IF REMAINDER IS 1;

THE DAY WILL BE MONDAY;

IF REMAINDER IS 2;

THE DAY WILL BE TUESDAY;

IF REMAINDER IS 3;

THE DAY WILL BE WEDNESDAY;

IF REMAINDER IS 4;

THE DAY WILL BE THURSDAY;

IF REMAINDER IS 5;

THE DAY WILL BE FRIDAY;

IF REMAINDER IS 6;

THE DAY WILL BE SATURDAY;

IF REMAINDER IS 7;

THE DAY WILL BE SUNDAY;’

END

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

Start

Input two numbers a, b

While b is not equal to 0 so

Temp= b

b=a mod b

a=temp

output: a which will be GCD

End

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

Start

Set num 1,num 2 , num 3;

If

num 1 < num2 and num1 < num 3;

print num 1 is smallest;

else if

num 2 < num 1 and num 2 < num 3;

print num 2 is smallest;

else

print num 3 is smallest;

end

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.

SELECT PRODUCT

IF PRODUCT AVAILABLE

NO

PRINT ERROR

YES

INPUT PAYMENT­­

IF PAYMENT IS ENOUGH

NO

YES

TAKE OUT PRODUCT