***Assignment PF (Lab 02)***

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***ALGORITHM***

**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.**

**Step 1:** Start.

**Step 2 : read number**

**Step 3:** If number <= 1, then:

**Print “**n is not a prime number.”

**End.**

**Step 4:** For i from 2 to (number-1):

If n % i == 0

Print “not a prime number”

**End**

Else

Print “prime number ”

**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.**

**Step 1 start**

**Step 2 read day number**

**Step3 calculate** dayofweek = (dayNumber ) % 7

**Step4 if** dayofweek == 0, then:

Print "Sunday"

**Else if** dayofweek == 1, then:

Print " Monday"

**Else if** dayofweek == 2, then:

Print "tuesday"

**Else if** dayofweek== 3, then:

* + Print " Wednesday "

**Else if** dayofweek== 4, then:

* + Print "thursday"

**Else if** dayofweek== 5, then:

* + Print " Friday "

**Else if** dayofweekx == 6, then:

* + Print "Saturday"

**Step 5**

**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.**

**Step 1 : Start**

**Step 2 : read two positive integers a,b**

**Step 3 :** calculate the remainder

r = a % b

**Step 4 :** replace a with b and b with r

**Step 5 : repeat step 3 and 4 until b becomes 0**

**Step 6 :** when b = 0,

**Print “**the GCD of given two numbers is”, a

**Step 7 : End**

Initialize product price

**Flowchart**

***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.**

Read product

**Flowchart**

***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.**

payment is equal to price

Print product unavailable

product is available

true

true

false

false

Print invalid payment

Print Collect product

Read

payment

**Flowchart**

***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.**

Read item received

true

true

false

false

Print item delivered

Proceed to delivery

Print proceed to urgent delivery

Sort with respect to

Address ,fragility ,urgency,

is the delivery urgent

Print handle it carefully

is the item fragile

***PSEUDOCODE***

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

START

Read num1

Read num2

read num3

IF (num1 < num2) AND (num1 < num3 )

PRINT "num 1 is the smallest"

ELSE IF num2 < num1 AND num2 < num3

PRINT "num 2 is the smallest"

ELSE

print "num 3 is the smallest"

END

**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 number 1

Input number 2

Input operator

Set product to 0

Set quotient to 0

If operator== \*

Set product to number1\*number2

Print product

Else

Set quotient to number1/number2

Print quotient

end