

PF Lab Assignment (2) NO _____ Date _____

Q1:- Write an algorithm to determine whether a number is a prime number. The algorithm should iterate through possible divisors & determine if the no. has any divisors other than '1'.

- ① Ask the user to give any number 'n'.
- ② If $n = 1$, then it is composite.
- ③ Else, divide n by x (2, 3, 4, ..., y), where $y = n/2$.
- ④ If $n \% x = 0$, then n is composite.
- ⑤ If $n \% x \neq 0$, then n is prime.
- ⑥ Display whether n is prime or not.

Q2:- Create an algorithm that asks the user for a day (1-365) & outputs the corresponding day of the week, assuming that Jan 1st is Monday.

- ① Ask the user to take number of any day (1-365) as n .
- ② Ask the user to assume that January 1st is a Monday.
- ③ Ask user to divide n by 7.
- ④ Ask user to assume that remainder '0' corresponds to Monday, '1' to Tuesday, '2' to Wednesday and so on.
- ⑤ Display what day the given date corresponds to.

Q3:- Develop an algorithm for a program that takes two numbers as input & finds the Greatest Common Divisor (GCD) of the two no's using Euclidean algorithm.

- ① Ask the user to take two numbers.
- ② Ask the user to divide greater number by smaller number.
- ③ Ask the user to divide previous divisor with remainder.
- ④ Ask the user to loop step ③ until remainder is zero.
- ⑤ The last dividend is the Greatest Common Divisor (GCD) of the two numbers.
- ⑥ Display the GCD.

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Q1:- ... smallest no. among three variables. Implement a decision-making structure to compare the variables.

① START

②

③

// Input / Output

④

Input variable a

⑤

Input variable b

⑥

Input variable c

⑦

⑧

// Process steps

⑨

Check which variable is smallest.

⑩

⑪

// Conditional statements

⑫

IF $a < b$ AND $a < c$ THEN

⑬

PRINT "a is smallest"

⑭

ELSE IF $b < a$ AND $b < c$ THEN

⑮

PRINT "b is smallest"

⑯

ELSE IF $c < a$ AND $c < b$ THEN

⑰

PRINT "c is smallest"

⑱

⑲

END

Q2 ~~NO~~ Create pseudocode to subtract two no.s without using the '-' operator.
(Hint: use addition & complement techniques).

① START

② // Input / Output

③ INPUT number 1 'x'

④ INPUT number 2 'y'

⑤

⑥ // Process steps

⑦ Convert 'x' and 'y' into binary numbers.

⑧ Take 1's complement of 'y'.

⑨ Take 2's complement of 'y' by adding '1'.

⑩ Add 'x' and 2's complement of 'y'.

⑪ Convert sum into decimal number.

⑫ PRINT "answer of subtraction"

⑬

⑭ END

Q3:- Develop pseudocode for a basic calculator that performs multiplication & division. The pseudocode should prompt the user for two num & operator, then display result of operation.

START

// Input /output

INPUT number 'x'

INPUT number 'y'

INPUT operator

// Process steps

Check operator and solve.

// Conditional statements

IF operator is '*' THEN

perform $x * y$ AND

PRINT "product"

IF operator is "/" THEN

perform x / y AND

IF $y = 0$, THEN

ERROR

ELSE IF $y \neq 0$ THEN

PRINT "quotient"

END