FLOWCHART

Some Problems to Solve

**1. You are working at Toyota Indus Motors and want to assemble a car. Design a flowchart with proper process modules and decision structures to replicate a pipeline production.**

Start

Start

Input “Body Structure”

Assemble all the components of car

Print “car is working”

Input “4 tyres”

If the car is working

Input “Engine of car”

NO

Check all the parts again

End

YES

ALGORITHM

Some Problems to Solve

1. **Implement an algorithm for determining if an Nth is a divisor of an n Number (i.e. 2 is a divisor of 6). If so, determine if it’s an even number or odd number as well.**

* Start
* Input: Two integers n and N
* Process: Check N is a divisor of n if n mod N=0 (i.e, N divided by n leaves no remainder)
* If N is a divisor, check if N is even or odd
* If N mod 2 = 0
* Print “Even” else,
* Print “Odd”
* End

1. **Implement an algorithm where the user enters a number, and an appropriate month is displayed.**

* Start
* Input: Enter the month number (1-12)
* Read the month number
* Process: Switch the month number.
* If 1 entered Print “January”
* If 2 entered Print “February”
* If 3 entered Print “March”
* If 4 entered Print “April”
* If 5 entered Print “May”
* If 6 entered Print “June”
* If 7 entered Print “July”
* If 8 entered Print “August”
* If 9 entered Print “September”
* If 10 entered Print “October”
* If 11 entered Print “November”
* If 12 entered Print “December”
* Else, Print “Invalid number Please enter between 1 to 12”
* End

**3)** **Implement an algorithm for making a simple calculator with all the operators (+, -, \*, /, %)**

* Start
* Input: Enter the 1st Number
* Enter the 2nd Number
* Enter the operator (+, -, \*, /, %)
* Process: Let sum=0
* If operator = “+” generate result in sum (Num1 + Num2)
* Else, if operator = “-” generate result in sum (Num1 - Num2)
* Else, if operator = “\*” generate result in sum (Num1 \* Num2)
* Else, if operator = “/” and generate result in sum (Num1/Num2) if, Num2 =0
* Print “Error division by zero not allowed”
* End
* Else, if operator = “%” and if, Num2=0
* Print “Error Mod by zero is not allowed”
* Exit
* Else, generate result in sum (Num1 % Num2)
* Else, if another operator is used
* Print “Invalid operator please enter one of (+, -, \*, /, %)”
* Exit
* Else, Print the result (stored in sum)
* End

PSEUDOCODE

Some problems to solve.

**QUESTION: 1.**

**Find the maximum number in any of three variables**.

1 START

2 // Input/Output

3 INPUT variable1=a

4 INPUT variable2=b

5 INPUT variable3=c

6 // variables and Initialization

7 SET sum to 0

8 // Process Steps

9 Let a=2, b=4, c=6

10 // Conditional Statements

11 IF a>b and b>c

12 PRINT “a is greater”

13 ELSE

14 IF b>a and b>c

15 PRINT “b is greater”

16 IF b>a and c>b

17 PRINT c is greater

18 END

**QUESTION :2.**

**Take three variables as input and add them without using the + operator (Use your head for this)**

1 START

**2 // Input/Output**

3 INPUT 3 variable a, b, c

**4 // variables and Initialization**

5 SET sum to 0

**6 // Process Steps**

7 Multiply b and c by negative sign

8 Subtract the variables b and c by a

9 store the result in sum variable

10 PRINT “Sum”

11 END

**QUESTION :3.**

**Create a small calculator which only does ‘+’ or ‘-‘Operations. (Hint: Take three variable inputs with one being used for the operator)**

1 START

**2 // Input/Output**

3 Enter the 1st variable and store it in num 1

4 Enter the 2nd variable and store it in num 2

5 Enter the 3rd variable and store it in num 3

**6// variables and Initialization**

7 SET sum to 0

**8 // Process Steps and // Conditional Statements**

9 IF the operator is ‘+’ Add num1+ num2 and store result in sum variable

10 IF the operator is ‘-’ Subtract num1- num2 and store result in sum variable

11 IF the operator is neither ‘+’ nor ‘-‘

12 PRINT “Invalid operator”

13 PRINT “SUM”

14 END