

1. Write an algorithm to calculate the GCD and LCM for elements of two arrays,
Algorithm:

```
start
initialize the variables a and b
initialize gcd = 1
if a < b
    checking a < b is smaller
    take a loop i start from 1 to a
    check the i is divided by a and b with out any remainder
    then a and b are divisible by i the update gcd value as i
if b < a
    take a loop i start from 1 to a
    check the i is divided by a and b with out any remainder
    then a and b are divisible by i the update gcd value as i
calculate the lcm value
print the GCD value
print the lcd value
```

2. Problem Statement 1: Temperature Monitoring System

Algorithm:

```
start
initialize the temperature value
initialize the alarm system
initialize the LED
Read the temperature from the sensor at regular intervals.
if the temperature value is above the threshold limit
    the alarm make sound
else if
    the alarm will not make noise
Repeat the loop
End
```

3. Problem Statement 2: Motor Control System

Algorithm:

```
start
initialize potentiometer
```

initalize the LED
read the potentiometer value from the user
set the motor speed using PWM
display the motor speed on LED
end

4.Problem Statement 3: LED Blinking Pattern

Algorithm:

Start
initailze LED array
read the blink pattern(fast or slow)
check if the pattern is fast
blink the LED fast
else if the pattern is slow
blink the LED slow
check if the blink pattern changed or not
repeat the steps from 3
End

5.Problem Statement 4: Data Logger

Algorithm:

start
initalize sensors
initalize EEPROM
Read data from the sensor
Store sensor data in EEPROM
Increment memory address to store next data
If the storage is full restore
display the sensors data
repeat the process
End

6. Calculator

Pseudocode

```
start
initialize the variables num1 and num2,c
switch(c)
case: '+'
c=num1+num2
printf(c)
break
case: '-'
c=num1-num2
printf(c)
break
case: '*'
c=num1*num2
printf(c)
break
case: '/'
if num2 != 0:
c = num1 / num2
printf num1 + " / " + num2 + " = " + c
else:
printf "Error! Division by zero is not allowed."
end IF
break
```

7. Factorial of a number

```
initialize the number, fact=1
if number < 0
print "error"
else
for(i=number; i>0; i--)
fact = fact * number
printf(factorial)
```

8. Factorial of a number using recursion

Initialize the number, fact=1

```
factorial( int number)
if(number==1)
return 1
else
return number * factorial(number-1)
if number<0
print"error"
else
printf(factorial(number))
```

9. Problem Statement: Smart Irrigation System

Pseudocode

1. Start
2. Initializing variables
 - . threshold= input()
3. while
 - read moisture // from sensor
 - read time // from sensor
4. if(moisture < threshold && time is b/w 6AM and 6PM)
 1. print("the soil moisture is :", moisture, "the pump is activated now")
 2. wait for 10 seconds
 3. stop the pump
- 5 else
 1. print("the soil moisture is :", moisture, "the pump is not activated now")
6. Stop

Flow chart:



