Assignment 2

Write the Pseudocode and Flowchart for the problem statements mentioned below:

1. Smart Home Temperature Control

Pseudocode

```
initialize tempsensor
initialize cooling OFF
initialize heater OFF
initialize Setpoint 21 C
initialize Power ON
initialize LCD

While (Power==ON)
try
  currtemp = read tempsensor()
  if(current>setpoint)
        activate Cooling ON
        print cooling system activated
  else if(current<setpoint)
        activate  Heater ON
        print heater system activated
  else
        deactivate Heater OFF
        deactivate Cooler OFF
        print every thing is in the limit

catch
    print Error is Occur in the system
wait(1sec)
```

FLOW CHART

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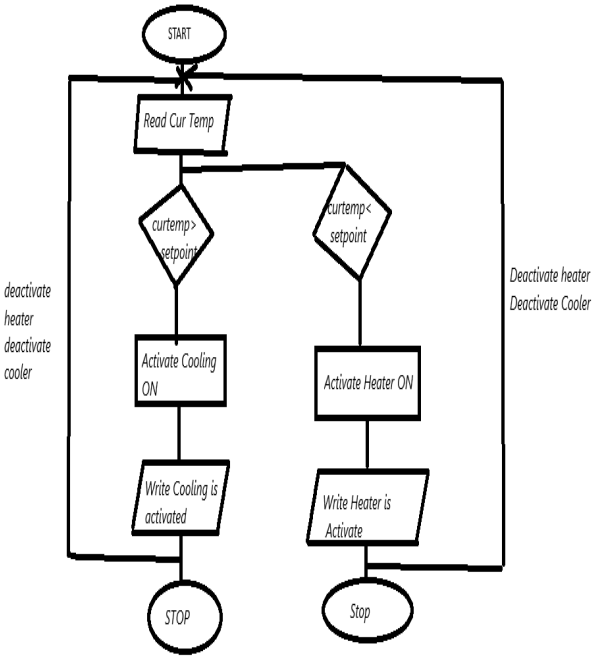

2. Automated Plant Watering System

initialize moisturesensor
initalaize moisturelimit 20
initialize waterpumb OFF
initialize wateringduration 1min
initialize Power ON
initialize LED OFF
initialize LogCard[100]
int i=0

While (Power==ON)
currmoisture = read moisturesensor()
  if(currmoisture<moisturelimi)
        activate waterpumb ON
        activate LED ON
        LogCard[i++] = timestamps()
        print logtime moisturizationlevel
        wait(wateringduration)

deactivate waterpumb OFF
deactivate LED OFF

else
print sufficient water is there

wait(1 hour)

FLOW CHART
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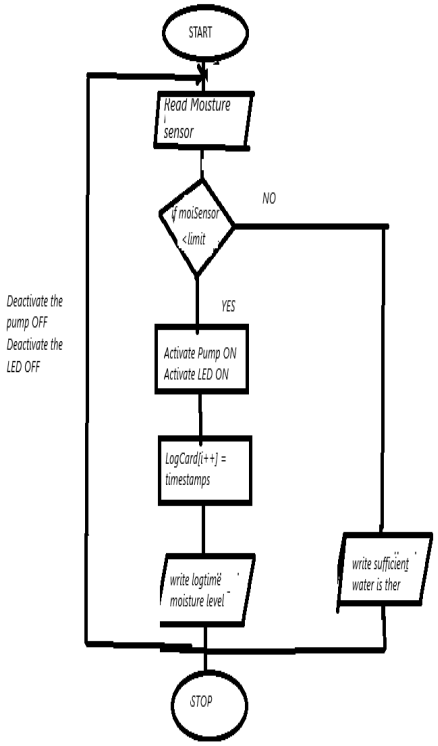

3. Motion Detection Alarm System

initialize PIR sensor
initalaize motion status = FALSE
initialize Motion 0
initialize UART
initialize Power ON
initialize alarm OFF

while(Power ==ON)
motion status = read PIR sensor()

if(motion status == TRUE)
    Motion=Motion+1
    if(Motion>5)
    activate alarm ON
    activate UART ON print "motion detected"
    deactivate alarm OFF
    motion =0
    motion status FALSE

else
 print doestn't find any thing

wait(1 seconds)

FLOW CHART
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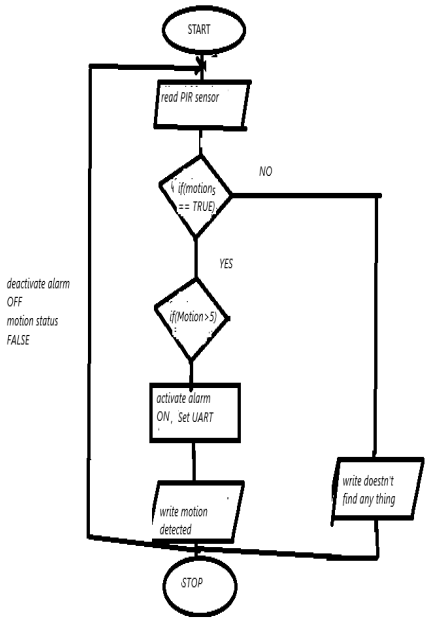


4. Heart Rate Monitor

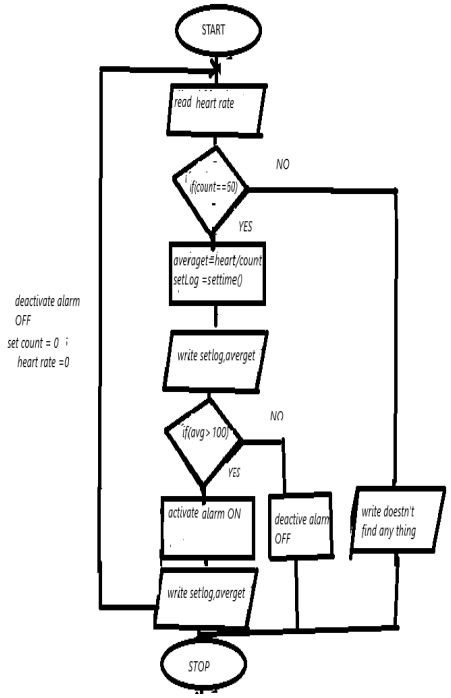
initialize heart rate sensor
initialize SD card
initialize LCD OFF
initialize Power ON
initialize alarm OFF

```
int count = 0
int heartrate =0

while(Power ==ON)
heart status = read heart rate sensor()
heartrate =heartrate + heart status
count =count + 1
if(count==60)
   averageheart = heartrate/count
   setLOg =settime()
   print : averageheart ,time,heart status
   if(averageheart >100 )
   activate alarm ON
   print  heartrate
   else:
   deactivale alarm OFF
   set count = 0
   heart rate =0

wait(1 second)
```

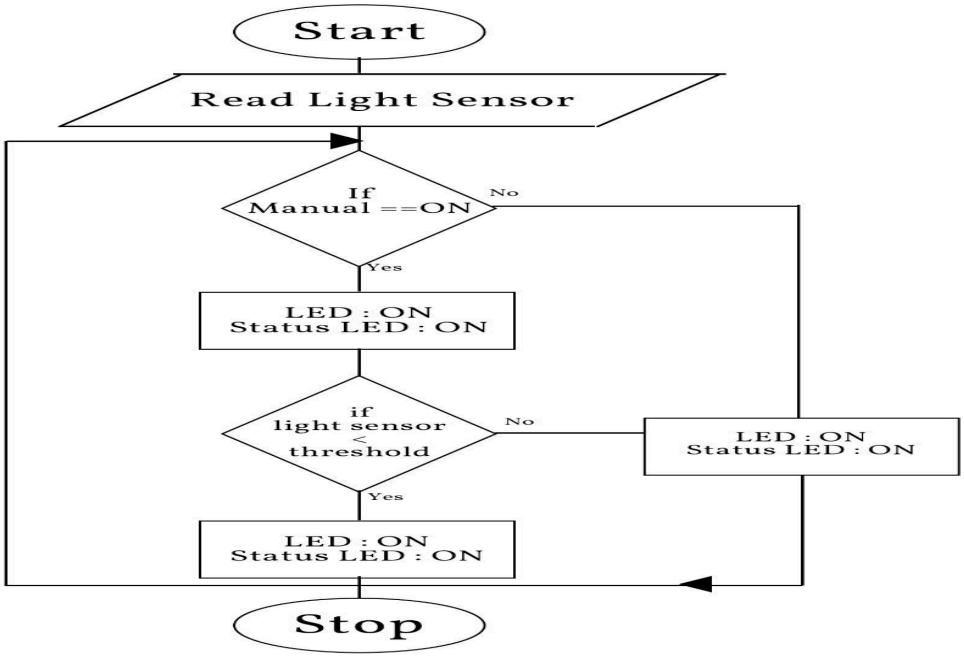
FLOW CHART



5. LED Control Based on Light Sensor

initialize light intensity
initialize light threshhold 30
initialize LCD OFF
initialize Power ON
initialize LED status OFF
initialize manualLED
while(power == on)
light = read light intensity()
if(manualLED == ON)
    activate LED ON
    activate LED status ON
    else
    if(Light<light threshhold)
    activate LED ON
    activate LED status ON
    else
    deactivate LED ON
    deactivate LED status ON
wait(1 minute)

FLOW CHART



6. Digital Stopwatch

```
initalaize Stop
initalaize Start
initalaize Reset
initalaize LCD
initialize Power ON
initialize SD card
initalaize elapsedTime = 0
initalaize stopwatchRunning = false
initalaize paused = false

while(power== ON)
if (Start == ON)
    startTime = GetCurrentTimestamp()
    SDCard("Start Time ")
    stopwatchRunning = TRUE
    paused = false
else if(Stop == ON)
    stopwatchRunning = false
    endTime = GetCurrentTimestamp()
    SDCard("Stop Time " )
else if(Reset == ON)
    stopwatchRunning = false
    paused = false
    elapsedTime = 0
    print ElapsedTime(elapsedTime)
if(stopwatchRunning==true && paused==false)
    elapsedTime = elapsedTime + 1
    print " elapsedTime "
 wait(1 minites)
```

FLOW CHART

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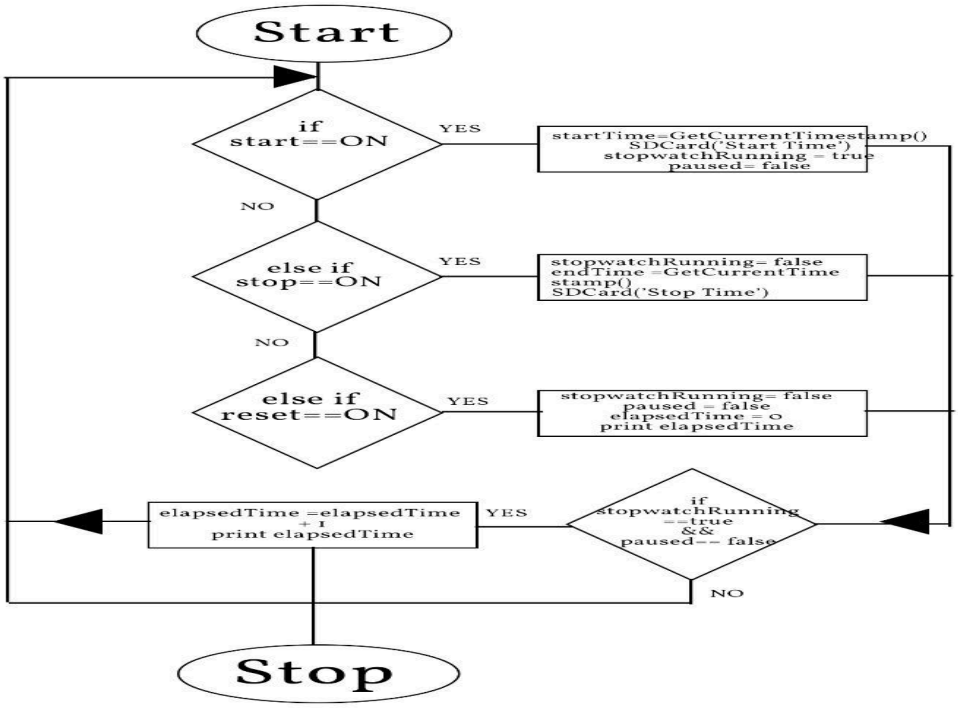
Start
if start==ON
YES
startTime=GetCurrentTimestamp()
SDCard('Start Time')
stopwatchRunning = true
paused= false
NO
else if stop==ON
YES
stopwatchRunning= false
endTime =GetCurrentTime stamp()
SDCard('Stop Time')
NO
else if reset==ON
YES
stopwatchRunning= false
paused = false
elapsedTime = o
print elapsedTime
if stopwatchRunning ==true && paused== false
YES
elapsedTime =elapsedTime + 1
print elapsedTime
NO
Stop

7. Temperature Logging System

```
initalaize temperaturesensor
initialize templog[100]
initalaize LCD display
initialize power ON
initialize sensor error false
initialize SDCard

while(power == ON)
try
   currtemp = read temperature sensor()
   if(currtemp == Error)
   sensorError = true
   print "sensor error"
   else
   sensorError = false
   timestamp = GetCurrentTimestamp()
   templog(timestamp, currtemp)
   SDCard.write(templog)
   print"templog"
catch
   print" temperature sensor is not working properly"

wait(10 minites)
```

FLOW CHART

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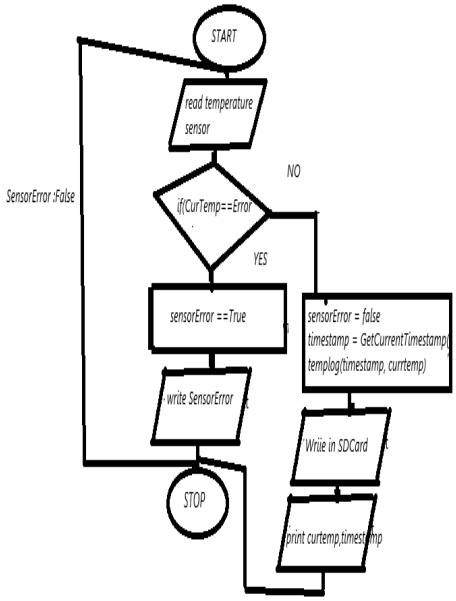

8. Bluetooth Controlled Robot

Pseudocode

```
INITIALIZE speed = 50
INITIALIZE currentState = "Stopped"
INITIALIZE BluetoothModule
INITIALIZE Motors
INITIALIZE LEDs
while(power ==ON)
 command =read BluetoothModule()
 if(command != null)
    if(command==forwardmove)
    Motors.SetDirection("Forward")
    speed = newSpeed
```

```
    Motors.SetSpeed(speed)
    Motors.Start()
    if currentState == "Moving"
    activate LED ON
    if speed>100
    activate LED
    else
    deactivate LED
    else
    deactivate LED
  else if(command == backward)
    Motors.SetDirection("backward")
    speed = newSpeed
    Motors.SetSpeed(speed)
    Motors.Start()
    if currentState == "Moving"
    activate LED ON
     if speed>100
    activate LED
    else
    deactivate LED
    else
    deactivate LED
  else if(command == left)
    Motors.SetDirection("left")
    speed = newSpeed
    Motors.SetSpeed(speed)
    Motors.Start()
    if currentState == "turning"
    activate LED ON
     if speed>100
    activate LED
    else
    deactivate LED
    else
    deactivate LED
  else if(command == right)
    Motors.SetDirection("right")
    speed = newSpeed
    Motors.SetSpeed(speed)
    Motors.Start()
    if currentState == "turning"
    activate LED ON
     if speed>100
```

```
    activate LED
    else
    deactivate LED
    else
    deactivate LED
else if(command == stop)
    Motors.stop()
    if currentState == "Stop"
    deactivate LED ON

    else
    activate LED
else
print"no command received"
```

FLOW CHART

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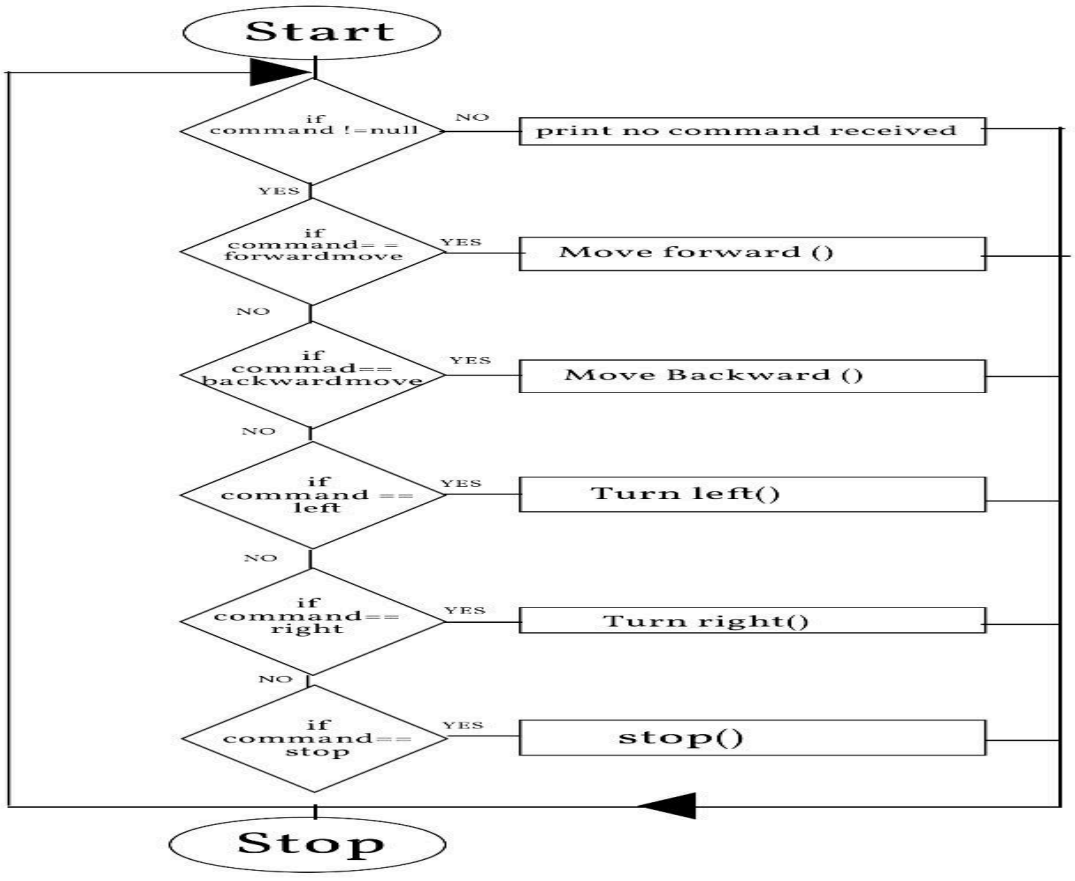

9 Monitoring System

Pseudocode

```
initalaizeADC
initalaize alert
initalaize voltage level 11V
initalaize LCD
initialize Power ON
initalaize  power saving
initialize Low voltage

while(power == ON)
ACD value = read ADC()
voltage = convert ADC to voltage
print in LCD "  voltage"
if(voltage<voltage level)
    activate alarm ON
    timestamp = GetCurrentTimestamp()
    print in LCD" timestamp , voltage"
    set power saving(Low voltage)
    deactivate alarm
else
   print in LCD "  voltage"
wait(1 minute)
```

FLOW CHART
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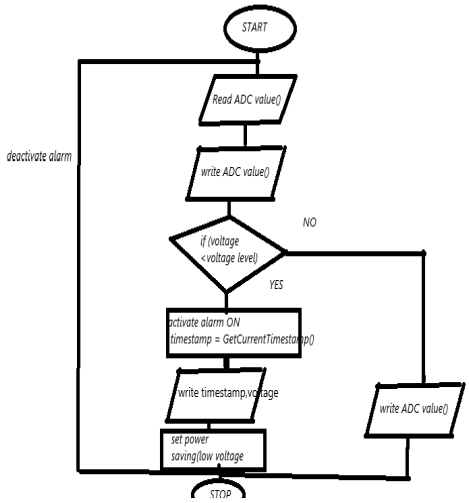

10. RFID-Based Access Control System

Pseudocode
Initialize RFID reader
Initialize authorizedtags
Initialize relay OFF
Initialize buzzer OFF
Initialize SD card for logging
initalaize power ON

while(power == ON)
RFID scanner == read RFID Reader()
timestamp = get_timestamp()
if(RFID scanner ==authorizedtags)
    activate relay ON
    delay(2 seconds)
    activaterelay OFF
    access= "timestamp" :time stamp ,"access" :RFID scanner
    logSD card(access)
    print access granted
else
    activate_buzzer ON
    delay(1 second)
    activate_buzzer OFF
    access= "timestamp" :time stamp ,"access" :RFID scanner
    logSD card(access)

print access denaied

wait(1 minute)
FLOW CHART
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