Baby Incubator

1. **Budget**
   - Pulse sensor (borrowed)
   - LCD (Shahd)
   - Arduino (Fatma/Nada)
   - Color Sensor (**350 EGP** / Lab / Borrow)

Color Sensor TCS3200
Category: Sensors
350.00 EGP

   - Temperature & Humidity Sensor (**55 – 65 EGP**)

Temperature & Humidity Sensor Module DHT-11 (SKU#KY015)
Based on Sensor DHT11
Category: Sensors
55.00 EGP

DHT-11 Temperature & Humidity Sensor
Categories: Sensors Temperature Sensor IC's
65.00 EGP

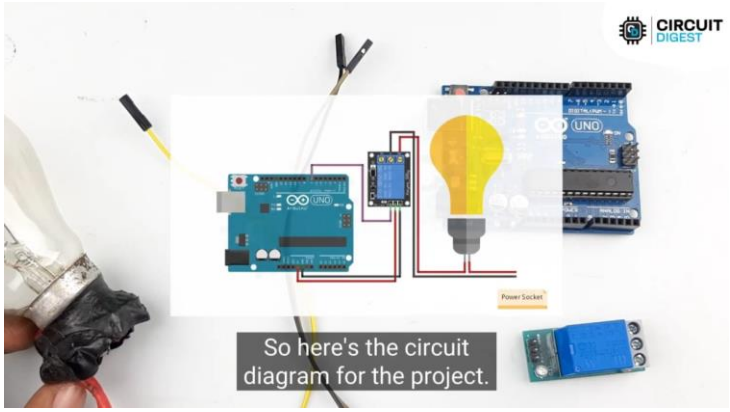
   - Additional Sensor: O2/CO2/**Sound** (**45 – 195 EGP**)

Sound Detector - Analog & Digital Outputs Sensor
Categories: Audio | Sound | Camera Sensors
195.00 EGP

Sound Detector - Digital Output Sensor
Categories: Audio | Sound | Camera Sensors
45.00 EGP

   - LEDs for alarm (available) [+ Warning on LCD? + Mobile App Notifications?]
   - Buzzer (probably not but also available)
   - Heating Element:
     - ➔ Lamp + Relay Module (from previous project) [SEARCH MORE]
       - Relay Module (**45 – 100 EGP**) [Not sure if this is the right component]

1 Output Relay Module Works on (5V/12V/24V) Signal
Category: Relays & Relay Module
~~55.00 EGP~~
45.00 EGP



     - ➔ Heating Pad (not sure about integration)
   - Cooling element (not sure if required): DC Fan (**45 EGP**) [5V or 12V same price] [SEARCH MORE]

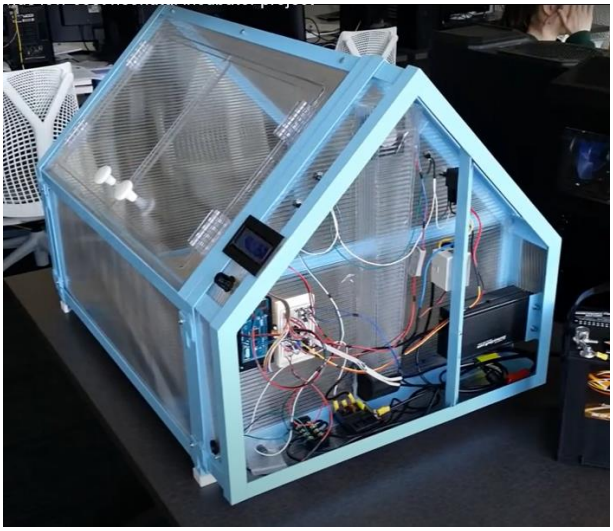
Cooling Fan 5Vdc Size 50x50x10mm
Category: Fans | Fluid Control | Pumps
45.00 EGP

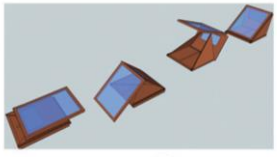
   - Box/Container: Plastic & Transparent OR Shoebox/Carton

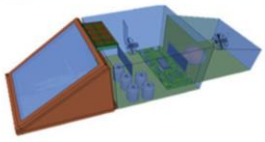
2. **Tasks**
   - Pulse Sensor Modifications
     ➔ Retake readings
     ➔ Normalize values bet. 60 to 100 bpm (or add lower/higher values to simulate irregularity)
     ➔ Do we still need to show “ECG”? If so, modify our current fake ECG
   - Temperature & Humidity Sensor
     ➔ Just the sensor or the module?
     ➔ Code + Connection
   - Color Sensor
     ➔ Find a way to get it
     ➔ Code + Connection
   - Sound Sensor
     ➔ Digital or Analog?
     ➔ Code + Connection
   - LCD I2C Module
     ➔ Welding
     ➔ Code + Connection
   - Heating Element
     ➔ Search more on relay module & lamp requirements
     ➔ Code + Connection
   - Cooling Element (if required)
     ➔ Search more on the DC Fan
     ➔ Code + Connection
   - Box Design
     ➔ Box Material
     ➔ Ventilation Holes/ Flap Doors
     ➔ Sensors Placement
     ➔ LCD Placement
     ➔ Heating/ Cooling Element Placement
     ➔ Pillow/Mat for the baby
   - Mobile App
     ➔ MIT Inventor app integration with Arduino
3. **Timeline**
   - By Monday:
     ➔ Bought components
     ➔ Preliminary code for the components (preferably in functions for easier integration)
     ➔ Full design plan
   - On Tuesday (on campus):
     ➔ Components placement
     ➔ Sensor Integration
     ➔ Mobile App integration (if not then by Wednesday)

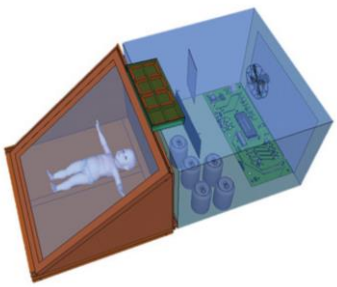
4. **Real Incubator:** [حضانة الأطفال - Infant Incubator (youtube.com)]

5. **Design Ideas**









6. **Statement**

Task 02

Infant Incubator

(15th of October, 2024)

Statement: You are required to design a model of an infant incubator which provides a display for **temperature**, **humidity**, and **heart rate**. The system should trigger an alarm when the temperature drops below the desired level and apply a procedure to reset the temperature to the desired one. A **color sensor** should be installed inside the incubator to help detect symptoms of jaundice.

Bonus

- Mobile application that notifies the user with abnormal conditions
- Add an additional sensor to monitor another important parameter (e.g., oxygen level, CO_2 concentration, or sound level) within the incubator environment.

Deadline: Thursday, 24th of October, 2024

Policy: Group Task (4 or 5 members per team)

Submission: In Class Submission

Evaluation Criteria:

Item	Grade %
Full functionality of the HW	60%
Design	20%
Questions	10%
Attendance	10%

7. **GitHub Repo**
   https://github.com/Sondos-Mahmoud/Baby-incubator-device--main
8. **Baby** (lol)

Figure 1 Robin