

## Course Project

**Due Date:** 1 week before final Exams

**After filling this form, save it as PDF then submit it!**

### 1. Data

Team Data (in alphabetical order)		
	Name	ID
1	Ashraf Mahmoud	20184792
2	Youssef Aser	20184117

### 2. Mark in the following table for the finished milestone:

Project Schedule				
	Task	Description	Date (tentative)	Status
1	Proposal	Search for idea, discuss with your partner and colleagues/TAs/Instructor, get feedback on project idea, feasibility, possible development. check components availability. Block diagram of your idea.	9/4/2022	<input checked="" type="checkbox"/>
2	Plan	Settle on final idea and final outcome. Set next milestones.	25/4/2022	<input checked="" type="checkbox"/>
3	Bring idea to reality	Start overall system partitioning, know your modules, start your implementation, connections, coding, testing, ...	28/4/2022	<input checked="" type="checkbox"/>
4	Design Outlines	Submit this form after completing the Project Title, Abstract, Block Diagram.	2/5/2022	<input checked="" type="checkbox"/>
5	Mid-progress follow-up	Demonstrate your achievements. Submit your Flowchart.	6/5/2022	<input checked="" type="checkbox"/>
6	Near-final Presentation	Demonstrate your near-complete project, discuss final touches.	10/6/2022	<input checked="" type="checkbox"/>
7	Final demo and presentation.	Demonstrate your project in reality.	13/6/2022	<input checked="" type="checkbox"/>

3. After you settle your idea, choose a title and describe shortly your project including the major components, and capabilities.

#### Project Title: ALS Communication Project

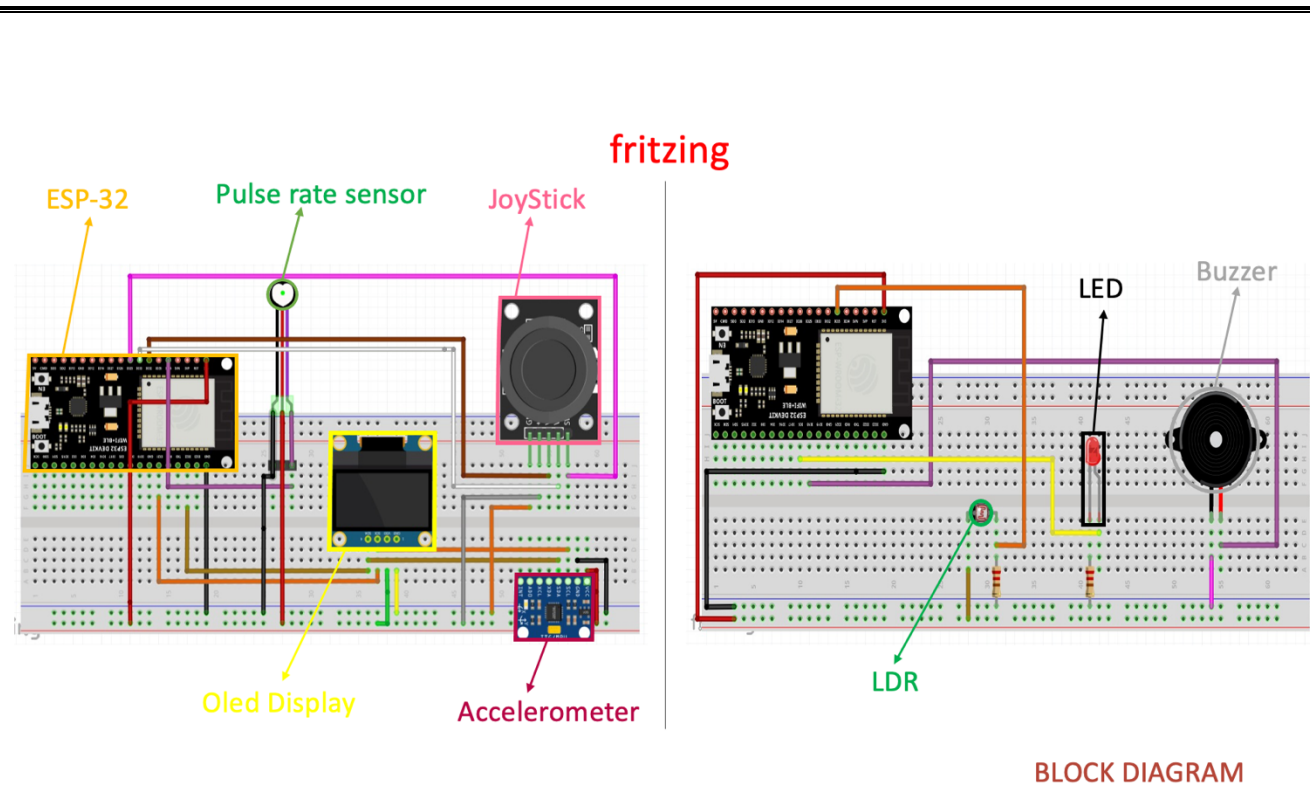
**Abstract:** Amyotrophic lateral sclerosis or ALS, is a progressive nervous system disease that affects nerve cells in the brain and spinal cord, causing loss of muscle control.

ALS often begins with muscle twitching and weakness in a limb, or slurred speech. Eventually, ALS affects control of the muscles needed to move, speak, eat and breathe. There is no cure for this fatal disease.

So, we make this project to help ALS patients to communicate with people and to take information from his body like his/her heart rate and connect this information with his/her doctor to follow his/her case

#### 4. Block Diagram

##### Overall Block Diagram:



<b>Details:</b>
<b>A. Sensors</b> <b>1. Accelerometer</b> <b>2. Pulse rate sensor</b> <b>3. Joystick</b> <b>4. LDR</b>

**B. Actuator(s)**

1. OLED Display
2. Buzzer

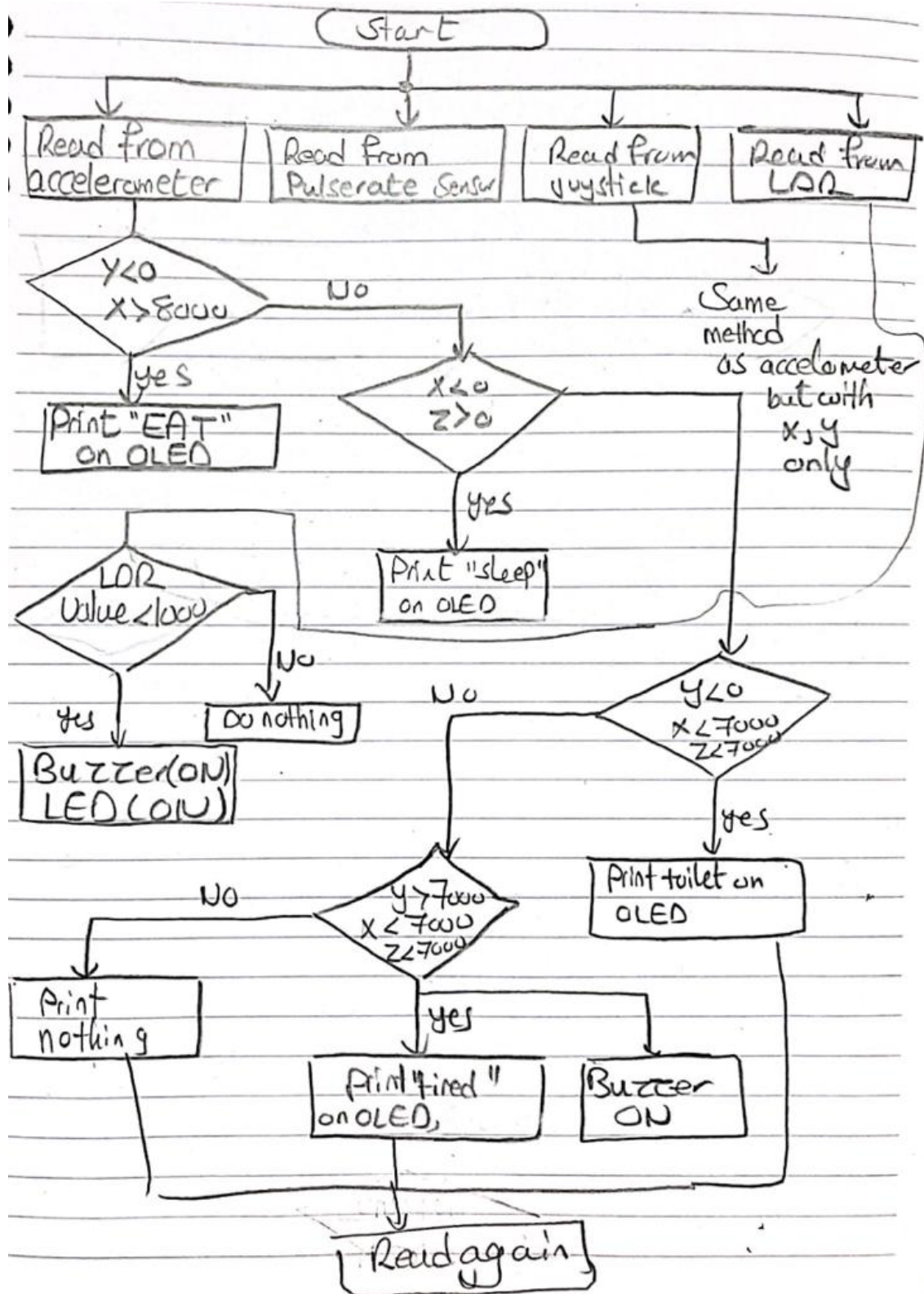
**C. Control and Connectivity**

1. Control: The microcontroller (ESP-32) controls all the sensors and actuators which are connected to it such as Joystick, accelerometer, Pulse rate sensor & LDR by using different communication protocols as I2C.
2. ESP-32 connects to internet then sends and receives data (such as sensors readings) to Thing speak.

**D. API, Webserver, ...**

- Thing-speak

## 5. Flowchart



6. Proposal(s) to reduce power consumption.

Use deep sleep when the sensors are not working.

7. Components List.

<u>NAME</u>	<u>Quantity</u>	<u>PRICE</u>
<u>ESP-32</u>	<u>1</u>	<u>250 LE</u>
<u>USB Cable</u>	<u>1</u>	<u>30 LE</u>
<u>MAX30100 HR Sensor</u>	<u>1</u>	<u>160 LE</u>
<u>OLED</u>	<u>1</u>	<u>100 LE</u>
<u>Joystick</u>	<u>1</u>	<u>45 LE</u>
<u>Accelerometer</u>	<u>1</u>	<u>240 LE</u>
<u>Pulse Rate Sensor</u>	<u>1</u>	<u>130 LE</u>
<u>LDR</u>	<u>2</u>	<u>10 LE</u>
<u>Buzzer</u>	<u>1</u>	<u>15 LE</u>
<u>Resistors</u>	<u>3</u>	<u>5 LE</u>
<u>Breadboards</u>	<u>1</u>	<u>150 LE</u>
<u>Wires</u>	-	<u>50 LE</u>
<u>LED</u>	<u>2</u>	<u>5LE</u>

<u>Battery</u>	<u>1</u>	<u>20 LE</u>
<u>5V Regulator</u>	<u>1</u>	<u>3 LE</u>

**Total ≈1000 LE**