12 Identify the Problem in your local Area or college which can be solved by integrating the things you learned and create prototype to solve it (Mini Project)

One Such Problem: Energy Management

Solution using IOT : Smart Energy Management System

This System can alert the users, students, staff and authorites when energy consumption is higher than usual, also provides energy consomption trends and patterns which might help to identify outliense in usage.

Requirements :
- Arduino
- Power Meter Sensor (INA219)
- OLED display
- Wires, bread board, Power supplay.

Procedure :

1. Connect arduino board according the sensor's datasheet

2. Connect OLED to according to its datasheet to Arduino

3. Code :

```
#include <Wire.h>
# include < Adafruit_INA219.h >
#include < Adafruit_SSD1306.h >

Adafruit_INA219 ina219;
 Adafruit_SSD1306 display(128, 64, &Wire);

void setup() {
      Serial.begin(9600);
      Wire.begin();
      ina219.begin();
       display.begin (SSD1306_SWITCHCAPVCC, 0x3C);
       display.clearDisplay();
        display.setTextSize (1);
}
void loop() {
    float current = ina219.getCurrent_mA();
    float voltage = ina219.getBusVoltage_V();
    float power = current * voltage;
    display.clearDisplay();
```

```
display.setCursor(0,0);
display.print("Current(mA):")
display.print(current);
display.setCursor(0,10);
display.print("Voltage(V):");
display.print(voltage);
display.setCursor(0,20);
display.print("Power(W):");
display.print(power);
display.display();
delay(1000);
}
```

Output:

Current(mA): 0.01
Voltage(V) 0.00
Power(W) 0.00

Current(mA):0.02
Voltage(V): 0.05
Power(W): 0.10