**EP1000 Digital Fabrication Fundamentals**

**Module Project**

|  |  |
| --- | --- |
| **Group:** | Gp XX |
| **Adm No:** | pNNNNNNN |
| **Name:** | Rodney Dorville |

**Project Title:**

|  |
| --- |
| A Digital Clock with Temperature & Humidity readings |

**What does it do?**

|  |
| --- |
| This is a digital clock with a 4-digit LED display. The project keeps exact time. When powered up, the project displays the date and time. You can also display the date, current temperature and humidity. |

**What are it's features?**

|  |
| --- |
| a. Keeps exact time even when main power is removed.  b. Displays time, date, temperature and humidity  c. Uses push-button switches to select functions:  i. date  ii. temperature & humidity  iii. clock functions (change time etc) |

**What will you make?**

|  |  |
| --- | --- |
| CAD Design, Graphics | Casing design, display unit, housing, casing, informational text next to buttons. |
| Laser cutting | Casing for clock |
| 3D Printing | Display mounting, switches, CPU and module PCB supports |
| Processing | Clock, push-button presses, display, readings |
| Input devices | Push-button switches, DS3231 RTC, DHT-11 sensor |
| Output devices | TM1637 4-digit display, buzzer |

**Bill of materials**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sn.** | **Qty** | **Item Description** | **Approx Cost** |
| 1 | 1 | [Arduino Nano](https://shopee.sg/Atmega328-MINI-USB-Nano-V3.0-ATmega328P-CH340G-5V-16M-Micro-controller-board-for-Arduino-328P-NANO-3.0-CH340-i.321673055.8748012491) | $8.05 |
| 2 | 1 | [TM1637 4-digit Display](https://shopee.sg/1pcs-4-Bit-TM1637-7-Segments-Digital-Display-Tube-Red-4-Digit-LED-Display-Module-Board-For-Arduino-Diy-LED-Display-Board-i.161750523.7334087534) | $1.40 |
| 3 | 3 | [Push-buttons (push to make)](https://shopee.sg/5-Pcs-x-Momentary-Dash-OFF-(ON)-N-O-Push-Button-Switch-Car-Boat-Truck-9V-12V-24V-i.118949267.1879364150) | $1.00 |
| 4 | 3 | [3mm assorted indicator LEDs](https://shopee.sg/LED-Diode-Red-Green-White-Blue-Yellow-3mm-5mm-(Local-Stock-Fast-Shipping)-i.194871830.6139455047) | $0.20 |
| 5 | 1 | [DHT-11 Temperature, humidity sensor](https://shopee.sg/DHT11-DHT-11-Digital-Temperature-and-Humidity-Temperature-Sensor-for-arduino-DIY-KIT-i.161750523.6012730006) | $1.55 |
| 6 | 1 | [Buzzer](https://shopee.sg/10pcs-3v-Active-Buzzer-Magnetic-Long-Continous-Beep-Tone-Alarm-Ringer-12mm-MINI-Active-Piezo-Buzzers-Fit-For-Computers-Printers-i.321673055.6957503523) | $0.25 |
| 7 | 1 | [Real-time-clock DS3231 Module](https://shopee.sg/Ds3231-AT24C32-High-Precision-Clock-Module-IIC-Module-Storage-Module-i.186656254.6403629743) | $4.40 |
| 8 | 1 | [Lithium Battery CP2032](https://shopee.sg/-SGSeller-40-Pieces-20-10-5-3-Pieces-Free-Postage-CR2032-3V-Lithium-Coin-Button-Battery-i.2564800.3815194441) | $1.50 |
| 9 | 1 | 5V DC power jack | $0.30 |
| 10 | 1 | A3 acrylic sheet 3mm (Black) |  |

**References:**

|  |
| --- |
| 1. [Arduino Project Hub: 230 Clocks Project](https://create.arduino.cc/projecthub/projects/tags/clocks) |