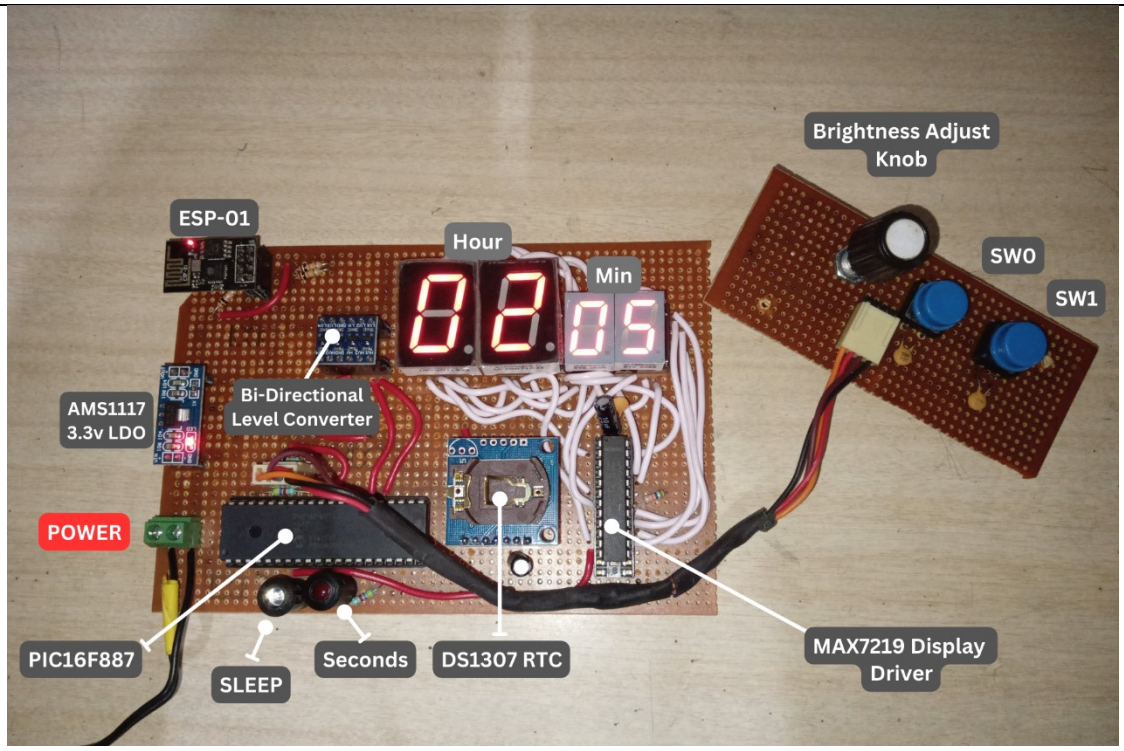
Internet Clock Test Report

This report verifies the functionality of the Internet Clock Project.

Author: Ashwin Vallaban

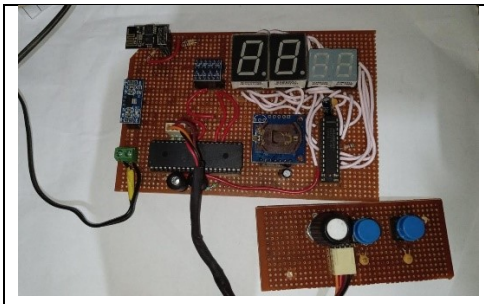
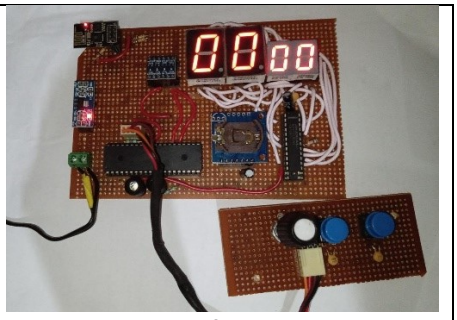
Table of Contents



Project Overview

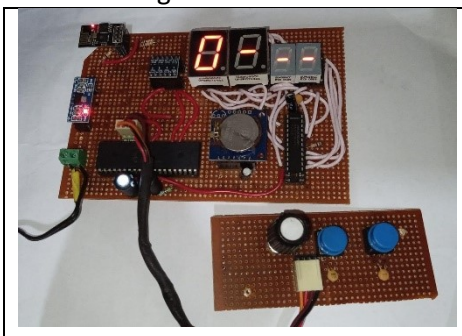
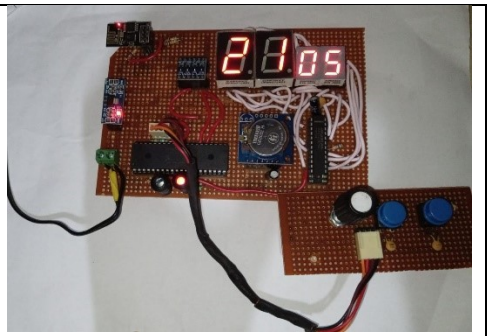
Phase 1: Powering the project

Using 5V Source

Objective	5V USB source is used to power the Internet Clock Project. USB source should support current up to 800mA.
Condition	Initially powered down. The RTC 3V battery is removed from the socket. Switches and POT board is connected using JST.
Result	The modules power up normally. Seconds LED does not blink as the 1Hz clock is halted in DS1307 which is the default state after Reset.  **Before**  **After**

Phase 2: Testing the Time Keeping Functionality

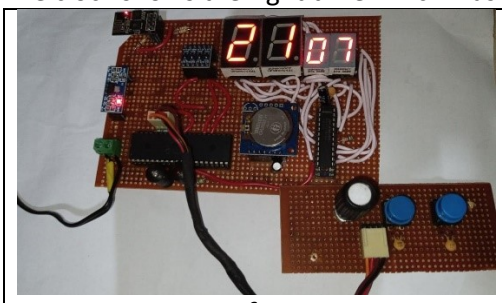
Adjusting the time using switches

Objective	The switch connections are checked. The switches can be clicked so that particular mode can be selected.
Condition	Project is powered up using 5V USB source. RTC 3V battery is inserted into the socket. The switches and POT board is connected using JST.
Result	Time can be adjusted manually. The Project can go into Time Set Mode and project displays '0 - - -'. The time can be adjusted and is set to 21:05. The Seconds LED starts blinking once the time is set.  **In Time Set Mode**  **After setting the time**

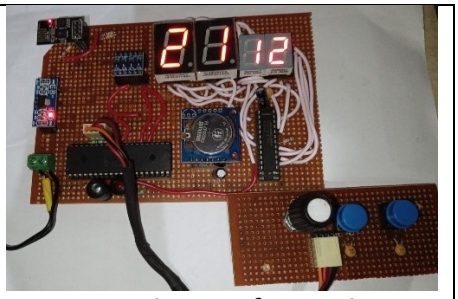
Turning off the 5v source and then plugging it back in to check if time is still right

Objective	To check if the clock can keep the time running even when the 5V source is removed and then connected back after 5 min.

Condition	Project is powered up using 5V USB source. RTC 3V battery is inserted into the socket. The switches and POT board is connected using JST.
Result	The clock shows the right time which was set before the 5V source is removed.



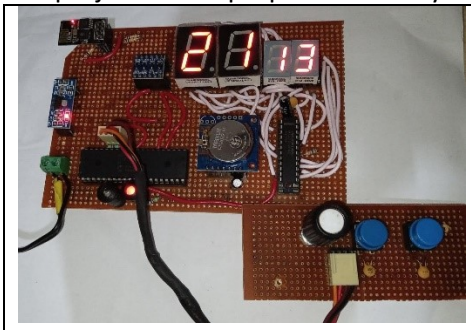
Before



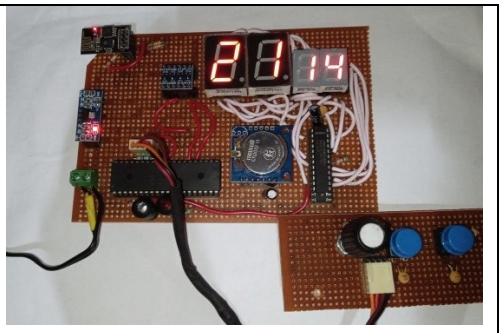
Powering-up after 5 min

Testing Time Update Overflow Counter

Objective	To check if the clock can show proper time after 60 seconds are elapsed. The counter configured to count the 1hz clock pulses from DS1307 overflows after 60 counts and the microcontroller reads the time from RTC.
Condition	Project is powered up using 5V USB source. RTC 3V battery is inserted into the socket. The switches and POT board is connected using JST.
Result	The project shows proper time every minute.



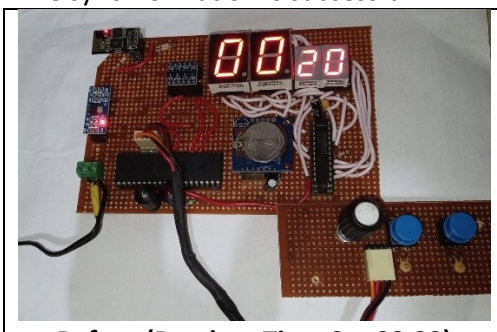
Before



After 1 min

Internet Time Synchronization with ESP-01 connected to Hotspot

Objective	To synchronize the clock with Internet time.
Condition	Project is powered up using 5V USB source. RTC 3V battery is inserted into the socket. The switches and POT board is connected using JST. ESP-01 WiFi module is connected to Hotspot.
Result	Time synchronization is successful.

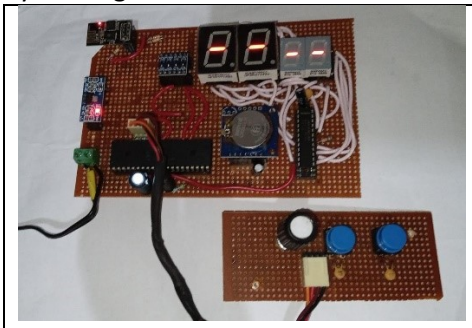


Before (Random Time Set 00:20)

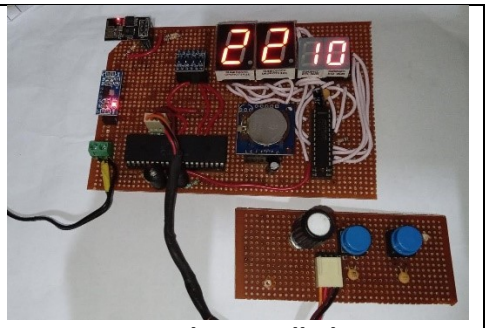
After

Internet Time Synchronization with no Internet Connection (Exit the mode with SW0 switch)

Objective	To check is the time can be synchronized when the hotspot is turned off. To check if the Sync mode can be cancelled using SW0 switch.
Condition	Project is powered up using 5V USB source. RTC 3V battery is inserted into the socket. The switches and POT board is connected using JST. Hotspot is disabled. ESP-01 WiFi module is not connected to Hotspot.
Result	The clock shows '- - - -' and no time sync occurs. The sync mode can be cancelled by clicking on SW0 switch and the normal time set before is shown.



In Time Sync mode

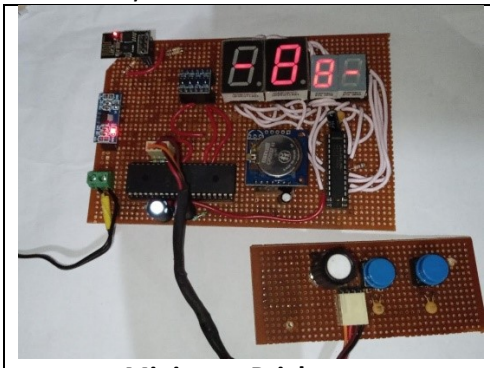


Mode Cancelled

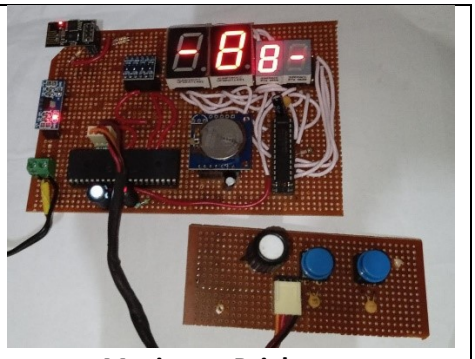
Phase 3: Testing the Brightness Adjustment Functionality

Adjusting the Display Brightness to Minimum and Maximum values

Objective	The brightness of the display should be adjusted using the POT knob. Minimum to Maximum brightness levels is to be achieved.
Condition	Module is powered up using a 5V source. RTC battery is inserted into the socket. Switches and POT board is connected using JST
Result	Brightness can be adjusted properly. Minimum and maximum brightness was set successfully.



Minimum Brightness



Maximum Brightness

Report Complete