

# Embedded Bluetooth Communication System

Team: REDSOLOCUP  
CIS 641 - 02





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- ❏ Combined ACS Master / CE Bachelor Student
  
- ❏ Embedded System Design / Maintenance





# Project Description

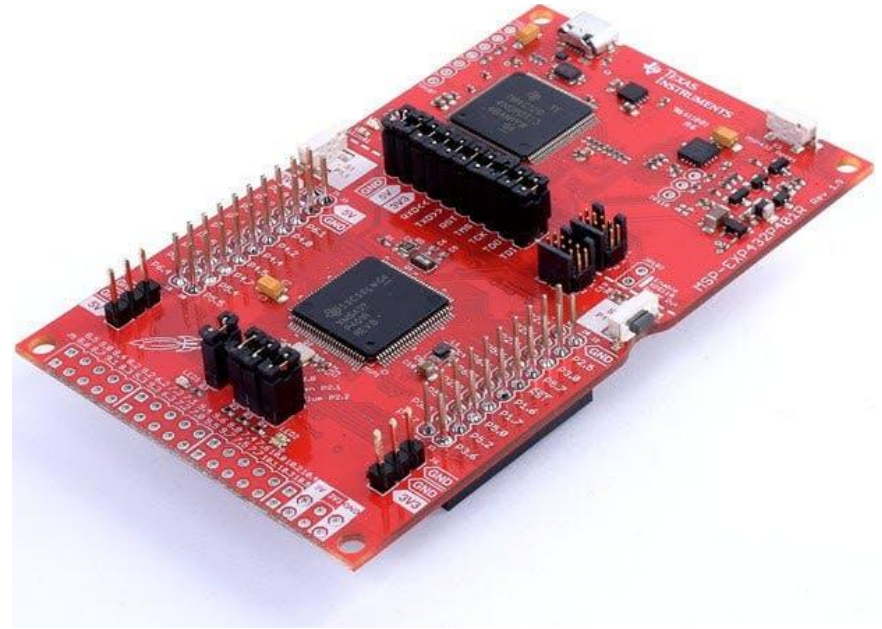


- CORE ~~ User able to enter message using a serial terminal (e.g. TeraTerm) and send to another user using the same system
- User #1 enters message in serial terminal → message sent serially to microcontroller → message converted to bluetooth format → message sent via bluetooth and received by system #2 → message converted to serial format in system #2 → message sent serially to secondary terminal → message viewable on serial terminal to User #2
- Three main parts to system:
  - a. Bluetooth transmission
  - b. UART (serial) transmission
  - c. Message handling



# Hardware/ Software

- MSP432 Microcontroller
- HC05 Bluetooth Module
- Embedded C using Code Composer Studio
- MSP432WARE middleware



# Terminal Styling

- Loosely resemble VT100 style terminal
- Ability to accept ANSI escape codes
  - Allows developer to use color and additional characters to create art and format character position
  - Important for user application- visually appealing, easier to navigate



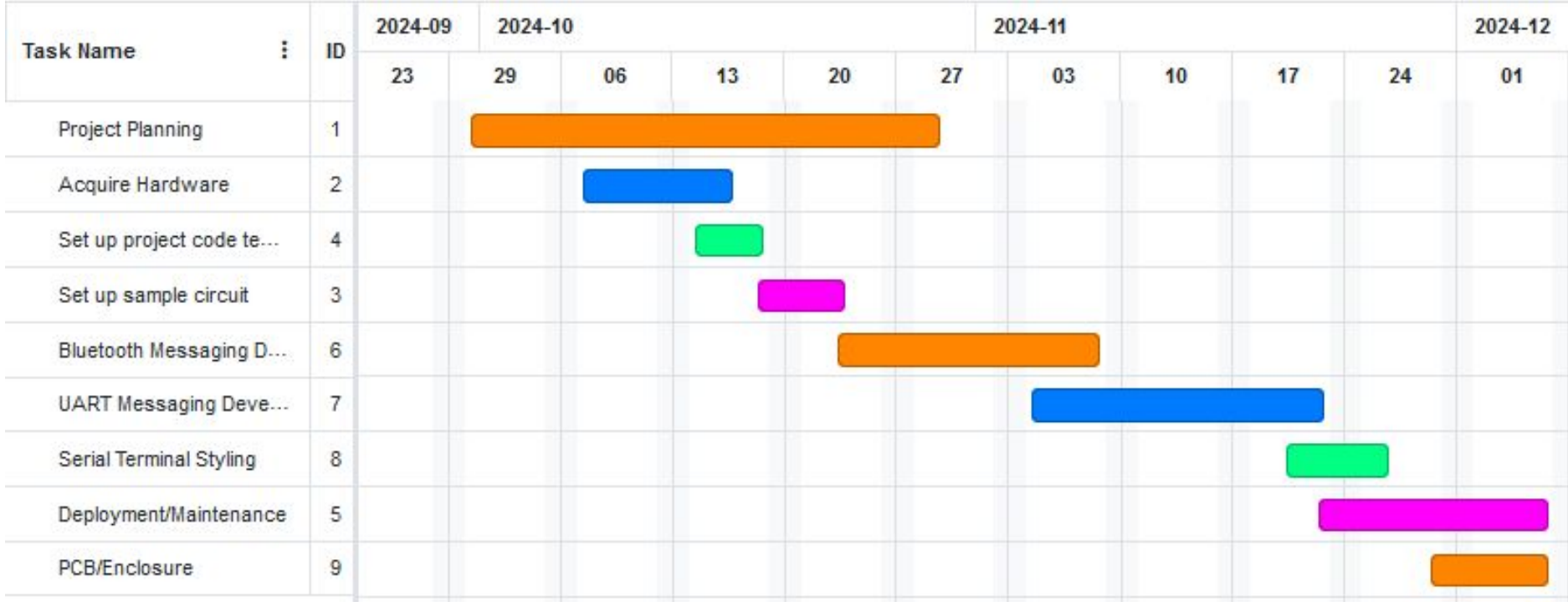
```
CPU[|||||] 2.0% Tasks: 16 total, 1 running
Mem[|||||] 13/123MB Load average: 0.37 0.12 0.04
Sup[|||||] 0/109MB Uptime: 00:00:50
```

| PID  | USER   | PRI | NI | UIRT | RES  | SHR  | S | CPU% | MEM% | TIME+   | Command                  |
|------|--------|-----|----|------|------|------|---|------|------|---------|--------------------------|
| 3692 | per    | 15  | 0  | 2424 | 1204 | 980  | R | 2.0  | 1.0  | 0:00.24 | htop                     |
| 1    | root   | 16  | 0  | 2952 | 1852 | 532  | S | 0.0  | 1.5  | 0:00.77 | /sbin/init               |
| 2236 | root   | 20  | -4 | 2316 | 728  | 472  | S | 0.0  | 0.6  | 0:01.06 | /sbin/udevd --daemon     |
| 3224 | dhcp   | 18  | -2 | 2412 | 552  | 244  | S | 0.0  | 0.4  | 0:00.01 | /sbin/dhclient3 -c IF_ME |
| 3488 | root   | 18  | 0  | 1692 | 516  | 448  | S | 0.0  | 0.4  | 0:00.00 | /sbin/getty 38400        |
| 3491 | root   | 18  | 0  | 1696 | 520  | 448  | S | 0.0  | 0.4  | 0:00.01 | /sbin/getty 38400        |
| 3497 | root   | 18  | 0  | 1696 | 516  | 448  | S | 0.0  | 0.4  | 0:00.00 | /sbin/getty 38400        |
| 3500 | root   | 18  | 0  | 1692 | 516  | 448  | S | 0.0  | 0.4  | 0:00.00 | /sbin/getty 38400        |
| 3501 | root   | 16  | 0  | 2772 | 1196 | 936  | S | 0.0  | 0.9  | 0:00.04 | /bin/login --            |
| 3504 | root   | 18  | 0  | 1696 | 516  | 448  | S | 0.0  | 0.4  | 0:00.00 | /sbin/getty 38400        |
| 3539 | syslog | 15  | 0  | 1916 | 704  | 564  | S | 0.0  | 0.6  | 0:00.12 | /sbin/syslogd -u s       |
| 3561 | root   | 18  | 0  | 1840 | 536  | 444  | S | 0.0  | 0.4  | 0:00.79 | /bin/dd bs 1 if /p       |
| 3563 | klog   | 18  | 0  | 2472 | 1376 | 408  | S | 0.0  | 1.1  | 0:00.37 | /sbin/klogd -P /va       |
| 3590 | daemon | 25  | 0  | 1960 | 428  | 308  | S | 0.0  | 0.3  | 0:00.00 | /usr/sbin/atd            |
| 3604 | root   | 18  | 0  | 2336 | 792  | 632  | S | 0.0  | 0.6  | 0:00.00 | /usr/sbin/cron           |
| 3645 | per    | 15  | 0  | 5524 | 2924 | 1428 | S | 0.0  | 2.3  | 0:00.45 | -bash                    |

```
F1Help F2Setup F3Search F4Invert F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit
```

# **Project Timeline / Responsibilities**





[Everything assigned to Isaiah]





# Current Progress

- Got off to a slow start, but am currently back on track
- Currently in the bluetooth messaging development stage
- Worried about time needed for ANSI styling, might be a little more involved than I initially thought → may need to adjust timeline accordingly

# Questions?