Batch: A2 Roll No.: 16010322014
Experiment / assignment / tutorial No.___5____
Grade: AA / AB / BB / BC / CC / CD /DD

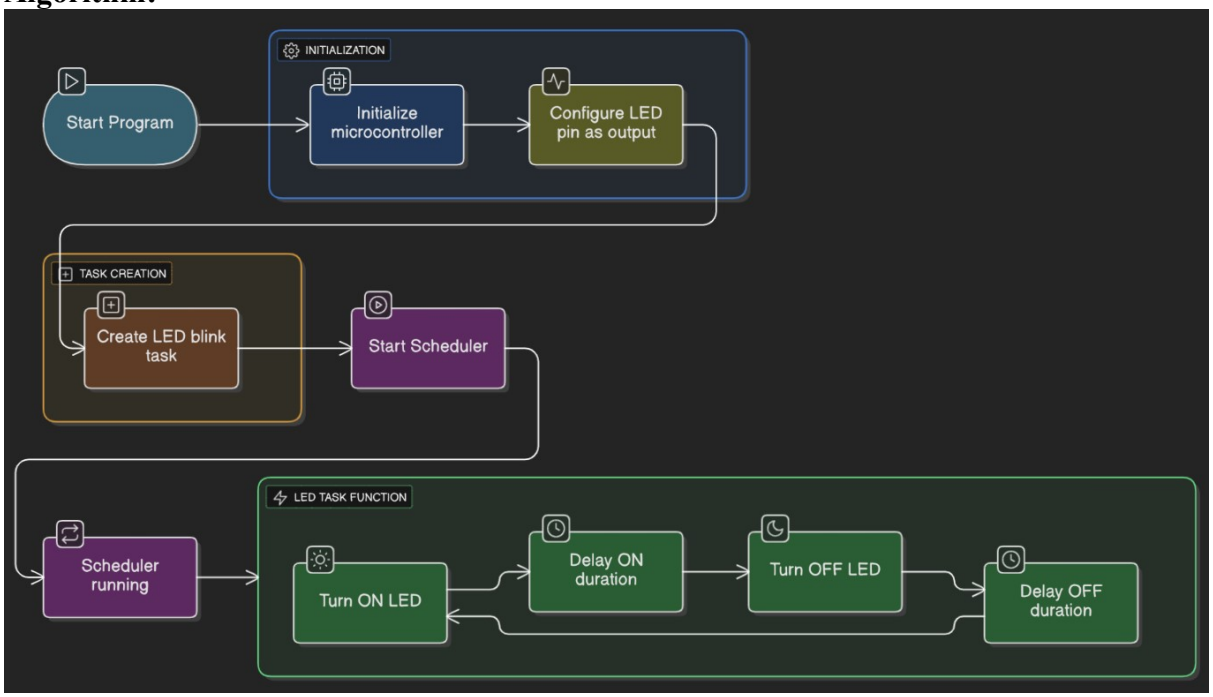
Signature of the Staff In-charge with date

TITLE: Blink LED using FreeRTOS
AIM: Write a program to blink LED connected at P0.31 using FreeRTOS API
OUTCOME: Students will be able to understand the open source RTOS and their usage

Tool Used: - Keil uVision, Flash Magic, FreeRTOS Source Code

Component required: - Development Board- LPC2148 ARM7 based board
UART to USB Converter- For UART0 Communication

Algorithm: -



Procedure: -

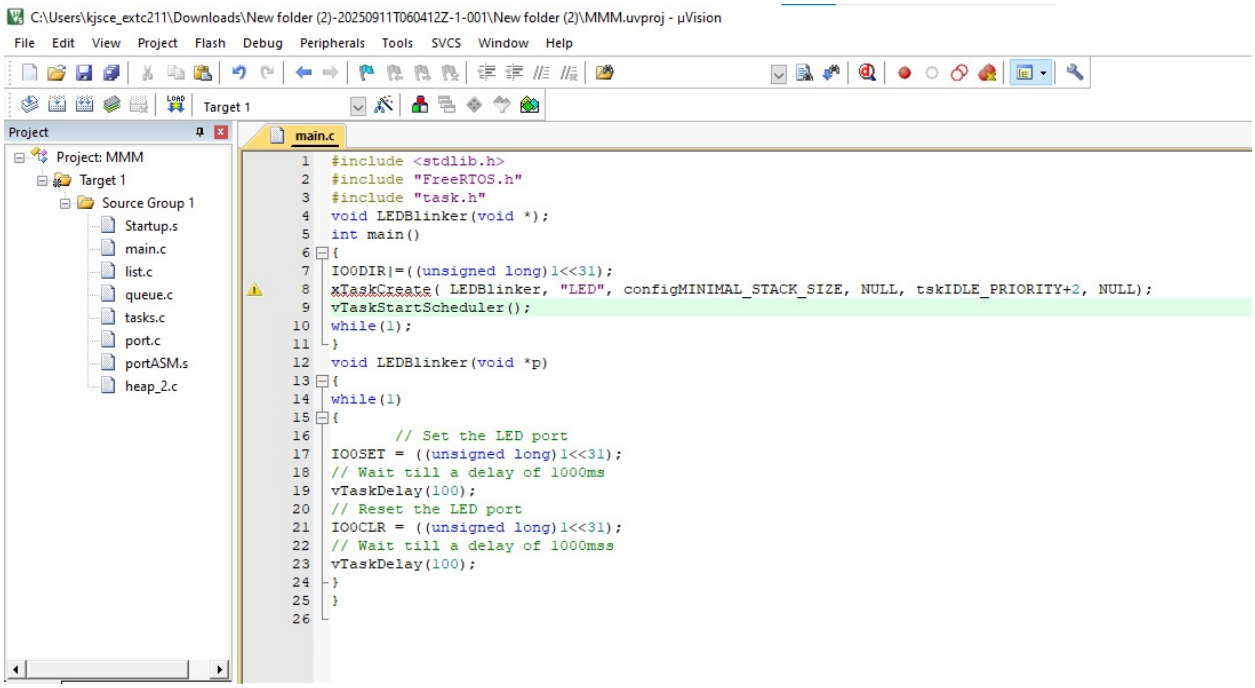
1. **Set up the development environment**
   - Open the project in Keil uVision
   - Include FreeRTOS source code (with correct port for LPC2148).
2. **Configure UART0 on LPC2148**
   - Initialize UART0 for communication.
   - Set baud rate, stop bits, and enable UART interrupts.
3. **Create FreeRTOS tasks**
   - **Task 1**: Waits on a binary semaphore and processes incoming data.
   - **Task 2 (ISR)**: Triggered when UART0 receives data and gives the semaphore.
4. **Build and flash the code to LPC2148**
   - Use any LPC programmer to flash the compiled hex file.
5. **Test UART Communication**
   - Connect UART0 to PC via USB-UART adapter.

FreeRTOS API: -

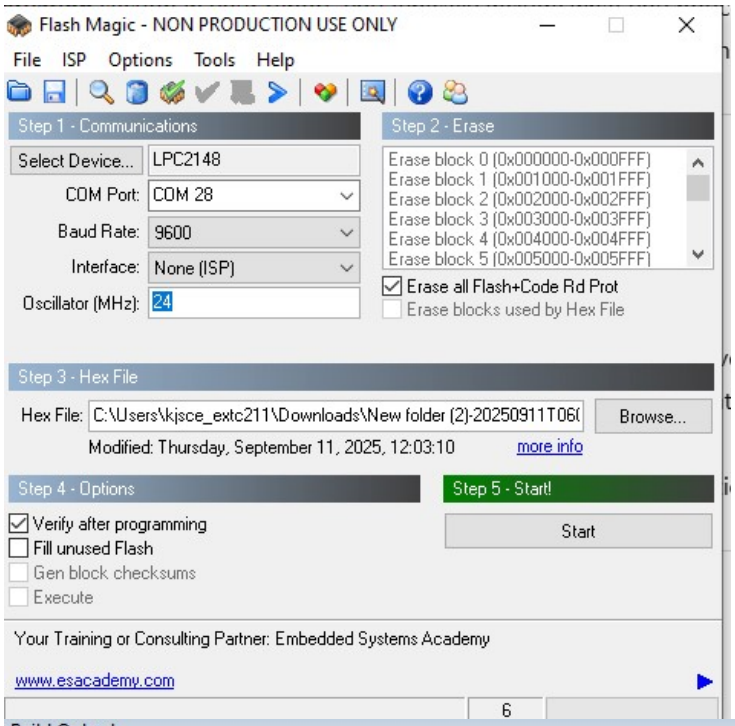
xTaskCreate Used to create a new task.

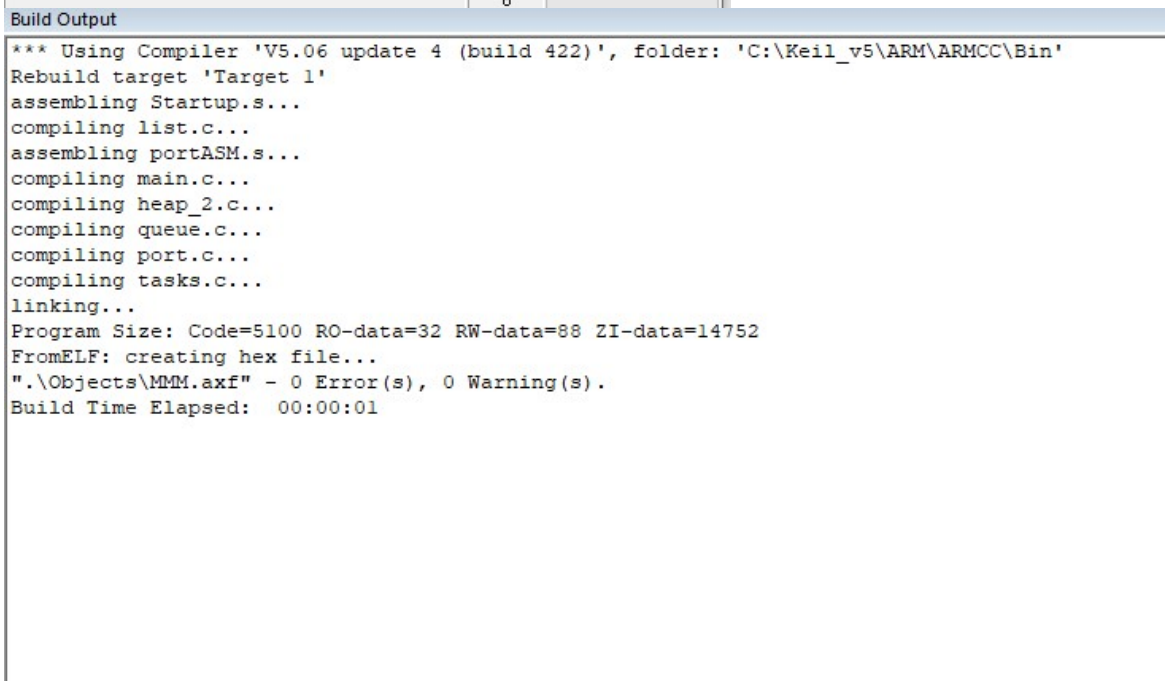
vTaskStartScheduler Starts the RTOS scheduler, which begins executing the created tasks according to their priorities.

vTaskDelay Puts the calling task into the Blocked state for a specified number of tick periods.



Observations:





Conclusion:

In this experiment, an LED was successfully blinked using the FreeRTOS API. The use of task creation, scheduling, and delay functions demonstrated real-time task management. Students gained practical understanding of open-source RTOS concepts and their applications in embedded systems.

Signature of faculty in-charge with date