



Learning Report

REAL TIME OPERATING SYSTEMS



LTTs
GLOBAL
ENGINEERING
ACADEMY



L&T Technology Services

Manisha Chandra
PS NO. - 99003684



Document History

Ver. Rel. No.	Release Date	Prepared. By	Reviewed By	Approved By
1	08-03-2021	Manisha Chandra		
2	09-03-2021	Manisha Chandra		
3	10-03-2021	Manisha Chandra		
4	11-03-2021	Manisha Chandra		
5	12-03-2021	Manisha Chandra		
6	13-03-2021	Manisha Chandra		

Contents

TASK 1:	4
A. DESCRIPTION	4
B. LEARNING OUTCOME	4
C. CHALLENGES	4
D. RESOURCES	4
E. SUBMISSION	4
TASK 2:	5
A. DESCRIPTION	5
B. LEARNING OUTCOME	5
C. CHALLENGES	5
D. RESOURCES	5
E. SUBMISSION	5
TASK 3:	6
A. DESCRIPTION	6
B. LEARNING OUTCOME	6
C. CHALLENGES	6
D. RESOURCES	6
E. SUBMISSION	6
DAY1_ACTIVITY:	
A. Description	
B. LEARNING OUTPUT	
C. CHALLENGES	
D. RESOURCES	
E. SUBMISSION	

Task 1:

- **Description**

To create a single project and implement INTERRUPT, ADC and UART using FreeRTOS. We have taken two tasks, one is with ADC and one with LED.

- **Learning Outcome**

- By pressing a button its changing from task 1 to task 2 with the help of using semaphore.
- Learned how to implement INTERRUPT, ADC and UART using FREERTOS.

- **Challenges**

Understanding and implementing the concepts of RTOS.

- **Resources**

1. https://www.youtube.com/watch?v=muOL9SH0p9g&list=PLfIJKC1ud8gj1t2y36sabPT4YcKzmN_5D&index=1
2. https://www.youtube.com/watch?v=k_fHypOMk9s&list=PLfIJKC1ud8gj1t2y36sabPT4YcKzmN_5D&index=2
3. https://www.youtube.com/watch?v=SsBgNFEpfFE&list=PLfIJKC1ud8gj1t2y36sabPT4YcKzmN_5D&index=3
4. https://www.youtube.com/watch?v=piC_aYENyxo&list=PLfIJKC1ud8gj1t2y36sabPT4YcKzmN_5D&index=4

- **Submission**

GIT HUB: https://github.com/99003684/RTOS_Submissions

Task 2:

A. Description

This task is to implement a GPIO interrupt which signal a task that reads the value of ADC and send it to another task using Queue and second task will read from Queue and write it to UART.

B. Learning Outcome

- 1st task excuted with returing ADC value and sent it to another task using queue.

C. Challenges

- Finding relevant topics
- understanding and implementing them.

D. Resources

1. https://www.youtube.com/watch?v=J6J8EUcw6qU&list=PLfIJKC1ud8gj1t2y36sabPT4YcKzmN_5D&index=5
2. https://www.youtube.com/watch?v=49Q4p4ARpng&list=PLfIJKC1ud8gj1t2y36sabPT4YcKzmN_5D&index=6

E. Submission

GIT HUB: https://github.com/99003684/RTOS_Submissions

Task 3:

A. Description:

This task is to implement ADC, PWM and various protocols(SPI/I2C/UART) using STM32F407 board and using software timer of RTOS. Implemented software timer both the one-shot and periodic timer for protocols and coming to one-shot when the timer expires task wont restart again and coming to periodic timer, timer will be automatically be restarted when it expires.

B. Learning Outcome

- What we have done and outcome of this task is Implemented software timer both the one-shot and periodic timer for protocols and coming to one-shot when the timer expires task wont restart again and coming to periodic timer, timer will be automatically be restarted when it expires.

C. Challenges

- Finding relevant topics for how to implement software timer for the application

D. Resources

1. https://www.youtube.com/watch?v=9H6vhgxQTTk&list=PLfIJKC1ud8gj1t2y36sabPT4YcKzmN_5D&index=9

E. Submission

GIT HUB: https://github.com/99003684/RTOS_Submissions

DAY1_ACTIVITY:

A. Description:

C Programming question.

- Write a program to extract valid data if present, and pass it to the resultant array.
- Watched videos on Introduction to FreeRTOS

B. Learning Outcome

- Learned how to implement a array of structures in a application.
- Learned how to extract valid data from a data packet.

C. Challenges

- Finding relevant topics for how to implement array of structures in application.

D. Resources

- <http://www.throwtheswitch.org/unity>
- <http://pythontutor.com/c.html#mode=edit>

E. Submission

GIT HUB: https://github.com/99003684/RTOS_Submissions