Progress Presentation-I

e-Yantra Summer Intership-2016 FreeRTOS on LPC2148

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Overview of Project

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Overview o

Overview of Task

Task

Accomplished

Challenges Faced

Future Plans

References

- Project Name : FreeRTOS on LPC2148
- Objective : To create modules on the implementation of basic FreeRTOS concepts on LPC2148
- Deliverables: Documentation of each and every FreeRTOS concepts that has been implemented on LPC2148.

Overview of Task

Progress Presentation-I

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Overview of Project

Overview of Task

Task

Accomplished

Challenges Faced

Future Plans

References

TASKS	DEADLINES
Basics of RTOS	4 days
Multi-Tasking Examples	5 days
Concepts of Semaphore and Mutex examples based on the concept	4 days
Inter-Process communication- Mailbox and queues. Examples based on the concept	3 days
Concept of Context Switching. Examples based on the concept	5 days
A mini project that covers all the modules	3 days
	Basics of RTOS Multi-Tasking Examples Concepts of Semaphore and Mutex examples based on the concept Inter-Process communication- Mailbox and queues. Examples based on the concept Concept of Context Switching. Examples based on the concept A mini project that covers all the

Task Accomplished

Progress Presentation-I

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Overview of Project

Overview of Task

Task Accomplished

Challenges Faced

Future Plans

References

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Learning basics of RTOS.

- What is RTOS.
- Its characteristics.
- Difference between RTOS, GPOS.
- Implemented Multi-Tasking using FreeRTOS in Firebird V(LPC2148)
- Implemented Mutexes, Binary Semaphore and Counting Semaphore.
- Implemented Inter-Process communication.
 - Queues
 - Mailbox through Task notification.

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Overview of Task

Accomplished

Challenges Faced

References

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Mutex

Back

Forward function access denied Forward

Back Function access denied

Back

Forward function access denied Forward

Back Function access denied Back

Binary Semaphore

Semaphore given Back Semaphore given

Forward

Semaphore given

Back

Semaphore given

Forward

Semaphore given

Back

P3:Hungry Progress Presentation-I P5:Ate P5:Thinking P4:Left fork obtained Eating :) P2:Right fork obtained P4:Ate Overview of P4:Thinking Project P2:Left fork obtained Eating :) Overview of Task P1:Right fork obtained P3:Hungry Accomplished P5:Hungry Challenges Faced P2:Ate Future Plans P2:Thinking References P1:Left fork obtained Eating :) Thank You P4:Right fork obtained P1-Ate P1:Thinking P4:Left fork obtained Eating :) P3:Right fork obtained P5:Hungry P2:Hungry P4:Ate P4:Thinking

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Overview of Project

Overview of Task

Task Accomplished

Challenges Faced

Future Plans

References

Thank You

MailBox using Task Notification

No Notice No Notice No Notice

N1 sent a Message

Received MSG from N1

N2 sent a Message

Received MSG from N2

N3 sent a MSG

Received MSG from N3

N4 sent a MSG

Received MSG from N4

N1 sent a Message

Received MSG from N1

No Notice

N2 sent a Message

Received MSG from N2

No Notice

N3 sent a MSG

ReceivN1 sent a Message

ed MSG from N3

Queue

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Progress Presentation-I

Overview of Project

Overview of Task

Accomplished

Challenges Faced

Future Plans References

Thank You

Data sent to Queue : Task 1 Data sent to Queue: Task 1 Data sent to Queue : Task 1 Data read from Queue: Task 1 Data sent to Queue: Task 1 Data read from Queue: Task 1 Data sent to Queue: Task 2 Data read from Queue: Task 1 Task 3 Data sent to Queue: Data read from Queue: Task 1 Data sent to Queue: Task 4 Data read from Queue: Task 1

Task 1

Task 1

Task 2

Task 1

Task 3

Data sent to Queue:

Data sent to Queue:

Data sent to Queue:

Data read from Queue:

Data read from Queue:

Challenges Faced

Progress Presentation-I

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Overview of Project

Overview of Task

Accomplished

Future Plans

References

Task

- Issue : Porting RTOS into Firebird V and the configurations that needed changes.
- Solution: Replace the startup.s file and include various other libraries.
- Finding Implementation level difference between Binary Semaphore and Mutex.
- Issue : Loss of Data in Serial Communication.
- Solution :
 - Shortening the string size(temporary solution),
 - Tried creating a Mutex for accessing the Serial communication Functions.
 - Trying to solve Using Queues

Future Plans

Progress Presentation-I

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Overview of Project

Overview of Task

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Task Accomplished Challenges Faced

Future Plans References

- Implement Context switching.
- Create a mini project that can demonstrate all the learnt concepts together .

References

Progress Presentation-I

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Overview of Project

Overview of Task

Task

Accomplished
Challenges Faced

Future Plans

References

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- http://tinymicros.com/
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- http://www.rtos.be/2013/05/mutexes-and-semaphores-two-concepts-for-two-different-use-cases/

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Overview of Project

Overview of Task

Overview or ras

Task Accomplished

Challenges Faced

Future Plans

References
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