Lab Exercises

MapuSoft Academic Program

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Exercises for RTOS Lab

Practical exercises on OS Abstractor concepts

S.No	Programs	Title
1	*LabEx1_Task_Single*	Creation of a single task.
2	*LabEx2_Task_Multiple*	Creating a multiple tasks.
3	*LabEx3_Task_Relinquish*	Task relinquish.
4	*LabEx4_Task_Suspend_Resuming*	Task suspend and task resume.
5	*LabEx5_Mutex_Single_task*	Creating mutex and taking and giving mutex by a task.
6	*LabEx6_Mutex_Multiple_Task*	Creating mutex and taking and giving mutex by multiple tasks.
7	*LabEx7_Queue*	Creating a queue and sending and receiving messages through queue in a process.

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S.No	Programs	Title
8	*LabEx8_Pipe*	Creating a pipe, sending and receiving messages through pipe in a process.
9	*LabEx9_Priority_Inversion*	Mutex deadlock: Priority inversion.
10	*LabEx10_Priority_Inheritance*	Mutex deadlock prevention: Priority Inheritance.
11	*LabEx11_Mutex_Ceilings*	Mutex deadlock prevention:Mutex Ceilings.
12	*LabEx12_Creating_Process*	Creating process from another process.
13	*LabEx13_Pipe_Process*	Creating a pipe and sending and receiving messages through pipe in processes.

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S.No	Programs	Title
14	*LabEx14_Queue_Process*	Creating a queue and sending and receiving messages through queue in processes.
15	*LabEx15_Resources_Another_Process*	Creating all resources within a process and getting the IDs in another process.
16	*LabEx16_Tiered_Shared_Memory_Processes*	Tiered shared memory in processes.
17	*LabEx17_Timer*	Controlling the timer.
18	*LabEx18_Dynamic_Memory*	Dynamic memory
19	*LabEx19_Partition_Memory*	Partition memory
20	*LabEx20_Tiered_Memory*	Tiered memory

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Exercises on Programming in Vxworks

S.No	Programs	Title
1	LabEx1_vxw_Task_Single	Creating a single task.
2	LabEx2_vxm_Task_Multiple	Creating a multiple tasks
3	LabEx3_vxm_Task_Relinquish	Task relinquish
4	LabEx4_vxm_Task_Suspend_Resuming	Task suspend and task resume
5	LabEx5_vxm_Mutex_Single	Creating mutex, taking and giving mutex
6	LabEx6_vxm_Mutex_Multiple_Task	Creating mutex, taking and giving mutex by multiple tasks
7	LabEx7_vxm_Queue	Creating a queue, sending and receiving messages through queue in a process
8	LabEx8_vxm_Priority_Inversion1	Priority Inversion1
9	LabEx9_vxm_Priority_Inversion2	Priority Inversion2
10	LabEx10_vxm_Error_Handling1	Error Handling1
11	LabEx11_vxm_Error_Handling2	Error Handling2
12	LabEx12_vxm_TCB1	Task Control Block1

Exercises for RTOS Lab

Exercises on Programming in Vxworks

S.No	Programs	Title
13	LabEx13_vxm_TCB2	Task Control Block2
14	LabEx14_vxm_TCB3	Task Control Block3
15	LabEx15_vxm_TCB4	Task Control Block4
16	LabEx16_vxm_Events	Events
17	LabEx17_vxm_Partition_Memory	Partition Memory
18	LabEx18_vxm_Queue	Queues
19	LabEx19_vxm_semaphore1	Semaphore1
20	LabEx20_vxm_semaphore2	Semaphore2
21	LabEx21_vxm_Ring_Buffer1	Ring Buffer1
22	LabEx22_vxm_Ring_Buffer2	Ring Buffer2
23	LabEx23_vxm_Timer	Timer
24	LabEx24_vxm_Two_Digit_Counter	Design a two-digit counter
25	LabEx23_vxm_Digital_Clock	Design a digit clock

Exercises for TDCI Lab

Exercises on Embedded Programming using **Arduino UNO Board**

S.No	Programs	Title
1	*LabEx1_Traffic_Light*	Traffic light controller.
2	*LabEx2_Plant_Irrigation*	Automatic plant irrigation.
3	*LabEx3_Gas_Detection*	Gas leak detection.
4	*LabEx4_Garbage_Monitoring*	Garbage monitoring and Indication system.
5	*LabEx5_Street_Light_Controller*	Automatic street light controller.
6	*LabEx6_Motion_Detection*	Motion based automatic door opener.
7	*LabEx7_Water_Level_Monitoring*	Water level Monitoring and Alarm system.
8	*LabEx8_Rainfall_Monitoring*	Rainfall Monitoring System
9	*LabEx9_Obstacle_Detection*	Obstacle Detection System.
10	*LabEx10_Health_Monitoring*	Health monitoring system (Heart rate and Body temperature).

S.No	Programs	Title
1	*labEx1_Temperature_Monitor*	Industrial Temperature Monitor.
2	*labEx2_Humidity_Monitoring*	Humidity Monitoring System.
3	*labEx3_Gas_Detection*	Gas leak detection and Alert System.
4	*labEx4_Systick_Freq_Measurement*	System Tick Frequency Adjustment and Measurement.
5	*labEx5_Street_Light_Controller*	Automatic street light controller.
6	*labEx6_Motion_Detection*	Motion based automatic door opener.
7	*labEx7_Tick_Increment*	Simulating Time Passing with Manual Tick Increment.
8	*labEx8_Rainfall_Monitoring*	Rainfall Monitoring System.
9	*labEx9_Obstacle_Detection*	Obstacle Detection System.
10	*labEx10_Blink_Increasing_Delay*	LED Blinking with Increasing Delay.

S.No	Programs
1	Code optimization of the AppCOE project.
2	Importing and configuring each optimized project on AppCOE to cross-crompile for target board.
3	Build all the canned demos using cross compiler.
4	Configured to run and debug on target Raspberry board.
5	Workspace of optimized canned demos project.

Contact Links:

- You can contact MapuSoft to request a license key for evaluation here:
  http://mapusoft.com/contact
- For any technical or sales questions please submit a ticket at the MapuSoft support site here:
  http://mapusoft.com/support/