Project Report

ROBOT CONTROL SYSTEM

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PktParser:

Module Name	Pktparser.c
Purpose	To read the incoming robot packet and extract necessary commands
Task	ParserTask
Task Priority	6
Queues	**Parser Queue**: it used to store the buffer address containing the data after the parser task and post to RobotManager **Framer Queue**: It used to store the buffer address containing the error data and post to framer task
Mailboxes	None
Semaphores or Mutexes	None
Data Source	Serial IO Driver
Data Destination	RobotMgr, Framer ,
Special Data Structures	None
Shared Data	None

RobotManager:

Module Name	RobotMgr.c
Purpose	To read the data from the buffer fetched from the parser queue and frame the message and send it to Robot Controller through Robotqueue
Task	RobotManagerTask()
Task Priority	3
Queues	Parser Queue :It pends on the parser queue until a buffer get posted to this queue from parser task Robot Queue:it used to store the buffer address containing Robot commands and post to the robotcontroller Framer Queue:it used to store buffer address containing the acknowledge data and post to the framer queue
Mailboxes	RobotMailbox:it is used the store the buffer address of either hereiam or stop to the Robotcontroller
Semaphores or Mutexes	None
Data Source	Packet Parser
Data Destination	Robot Controller, Framer
Special Data Structures	Robotdata: contains the fields of command robotaddress, destination ,position instance ,x and y position which are the characteristics of Robot everytime the command is issued
Shared Data	None

Robot Controller:

Module Name	RobotCtrl.c
Purpose	To read the data from the buffer fetched from the RobotQueue and frame the message and send it to Framerqueue.
Task	RobotControllerTask()
Task Priority	1
Queues	Robot Queue; it pends on the buffer that is getting posted from the robot manger Framer Queue;it stores the address of the buffer containing the path of robot and post to the framer task
Mailboxes	Robot Mailbox (MQueue):it pends on the buffer that is getting posted from the robot manager mail queue containing either hereiam or stop command
Semaphores or Mutexes	Mutex: it is used protect the critical section like choosing the path which depends upon availability of the floor
Data Source	Robot Manager
Data Destination	Framer
Special Data Structures	Robotdata, Robotfloor: Contains the fields that is required to represent the robot on the floor HereIam: Contains the fields that is required to update the particular robot position on the floor
Shared Data	Path ,floor map:I am checking whether the path requested is being occupied on the floor ,if it is then telling the robot to use the adjacent floors whichever is available and reach the destination

Framer:

Module Name	Framer.c
Purpose	To read the data from the buffer fetched FramerQueue and frame the packet and send to Control Centre
Task	FramerTask()
Task Priority	2
Queues	Framer Queue
Mailboxes	None
Semaphores or Mutexes	None
Data Source	Packet Parser, Robot Manager, Robot Controller
Data Destination	Control Center
Special Data Structures	Framer: contains the fields that are needed to send to the control centre that is required to update particular robot status
Shared Data	None

Collision Avoidance:

Used a Mutex for Protecting the step function and particular x and y position on floor map

Conclusion:

	COMPLETED	PARTIALLY WORKING	IN PROCESS	NOT STARTED
Packet Parser	**Yes**			
Framer Task	**Yes**			
Add Robot Command	**Yes**			
Move Robot Command	**Yes**			
Follow Path Command	**Yes**			
Loop Robot Command	**Yes**			
Stop Looping Command	**Yes**			
Collision Avoidance Support	**Yes**			
Double Buffered I/O	**Yes**			