Healthcare System RTOS

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Task are Needed

The System need six Periodic tasks

1- LCD
2- Blood Pressure
3- Heart Beat
4- Temp Sensor
5- Alert Siren
6- Communication

Task Parameter

TASK ID	Periodicity	Execution Time	Deadline	Priority
LCD	100	1	100	1
Blood Pressure	25	3	25	3
Heart Beat	100	1.5	100	3
Temp Sensor	10	2.5	10	21
Alert Siren	10	1	10	4
Communication	10	1	10	1

System Tick Rate

System Tick > =TotalExecutionTime

the execution time is given for the tasks we do TotalExecutionTime.

TotalExecutionTime = (1+1+3+1.5+2.5+1) = 10ms .

So I choose 10ms .

Hyperperiod

Hyperperiod is equal to LCM (all task periodicities).

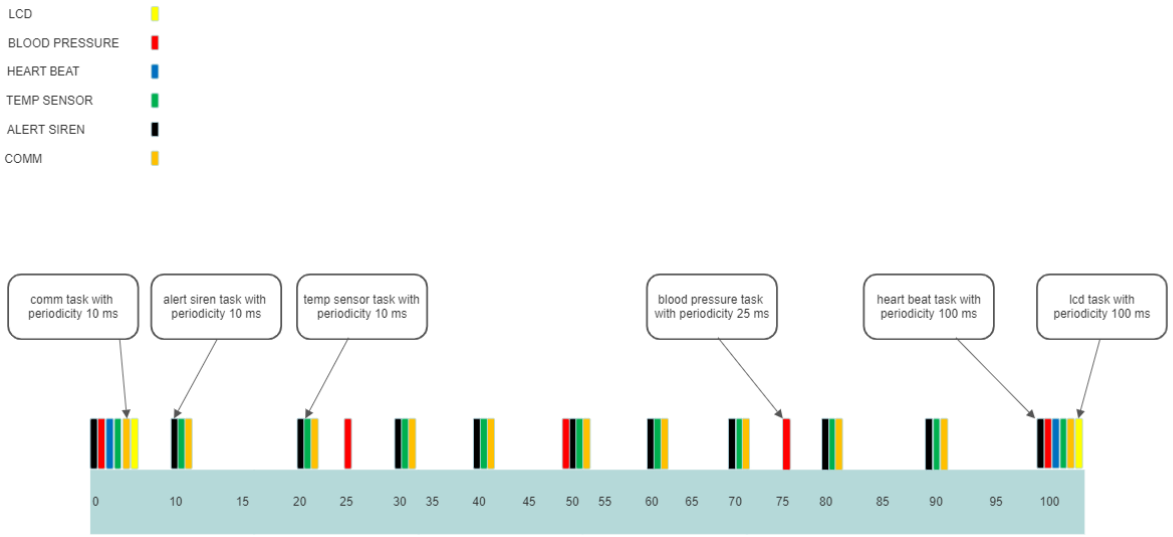
1- LCD task periodicity 100 ms.
2- Blood Pressure periodicity 25 ms.
3- Heart Beat periodicity 100 ms.
4- Temp Sensor periodicity 10ms.
5- Alert Siren periodicity 10 ms
6- Communication periodicity 10 ms.

So Hyperperiod = 100ms.

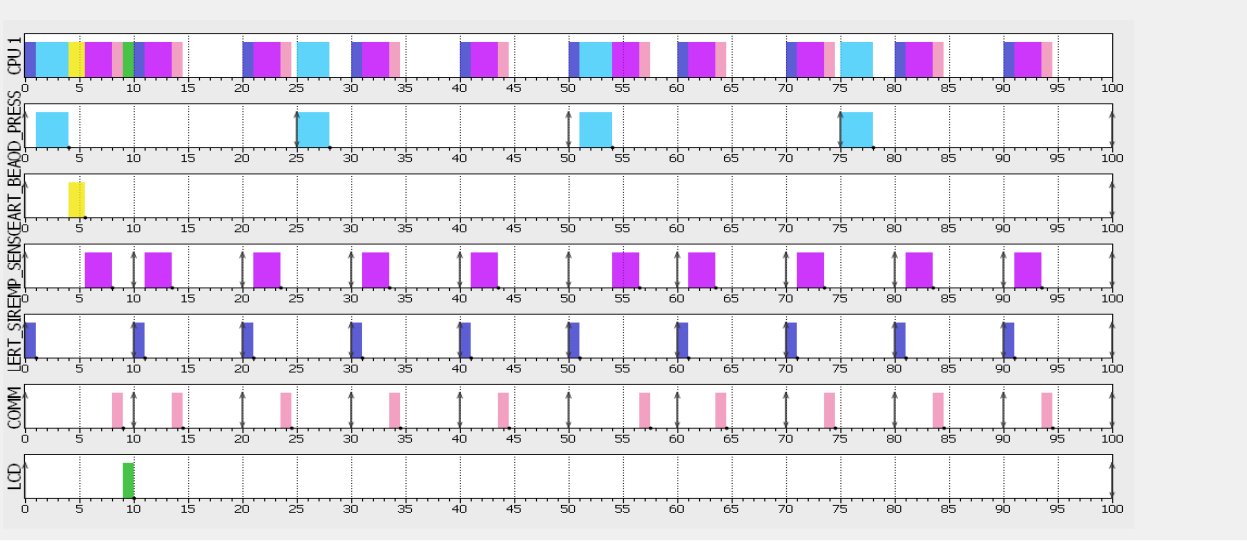
CPU Load

CPU LOAD = ((3*4)+(1.5*1)+(2.5*10)+(1*10)+(1*10)+(1*1))/100=59.5%.

Timeline and System Schedulability



Simso OUTPUT



	Total load	Payload	System load
CPU 1	0.5950	0.5950	0.0000
Average	0.5950	0.5950	0.0000

id	Name	Task type	Abort on miss	Act. Date (ms)	Period (ms)	List of Act. dates (ms)	Deadline (ms)	WCET (ms)	Followed by	priority
2	BLOOD_PRESSURE	Periodic	☑ Yes	0.0	25.0	-	25.0	3.0		3
3	HEART_BEAT	Periodic	☑ Yes	0.0	100.0	-	100.0	1.5		3
4	TEMP_SENSOR	Periodic	☑ Yes	0.0	10.0	-	10.0	2.5		2
5	ALERT_SIREN	Periodic	☑ Yes	0.0	10.0	-	10.0	1.0		4
6	COMM	Periodic	☑ Yes	0.0	10.0	-	10.0	1.0		1
1	LCD	Periodic	☑ Yes	0.0	100.0	-	100.0	1.0		1