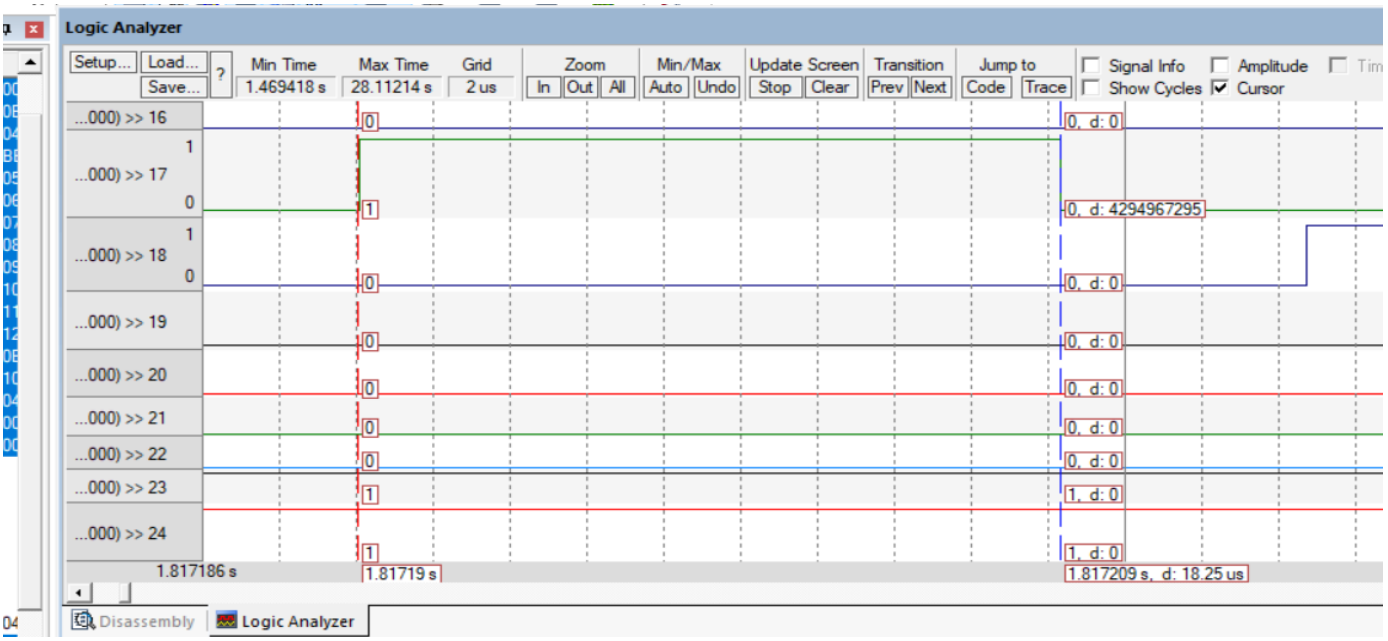
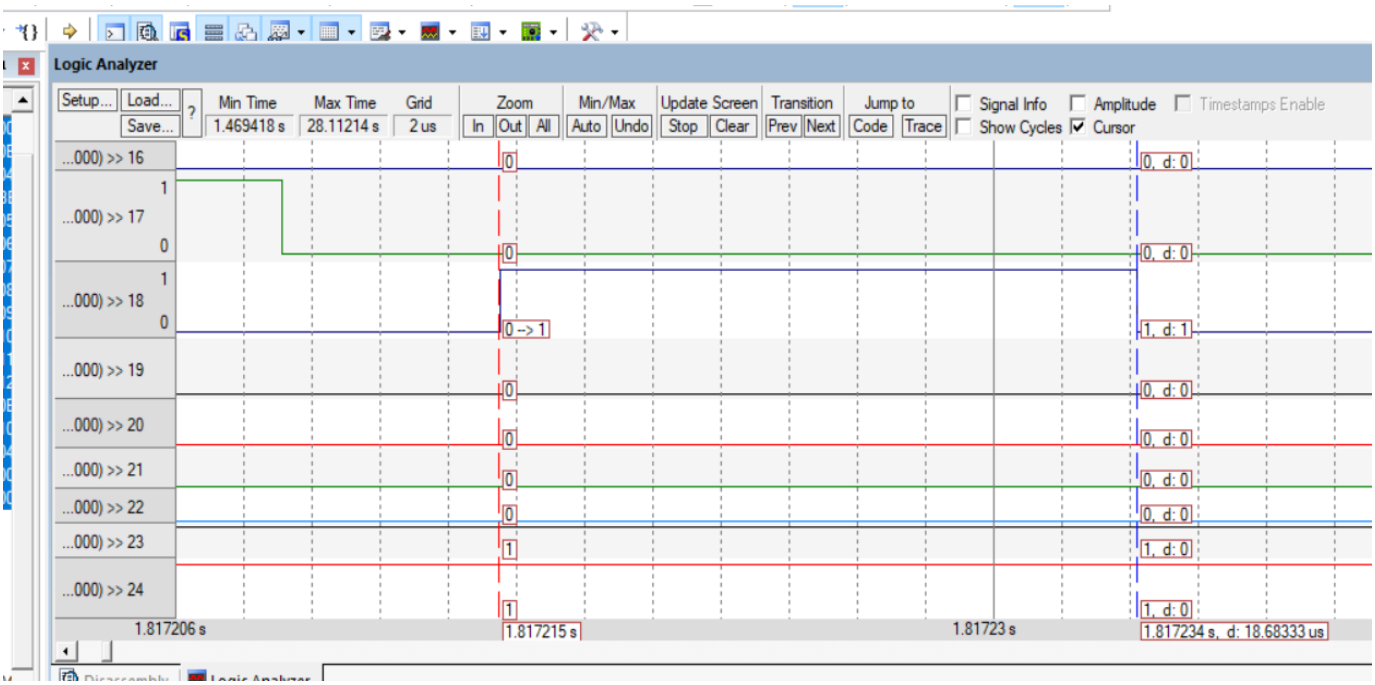
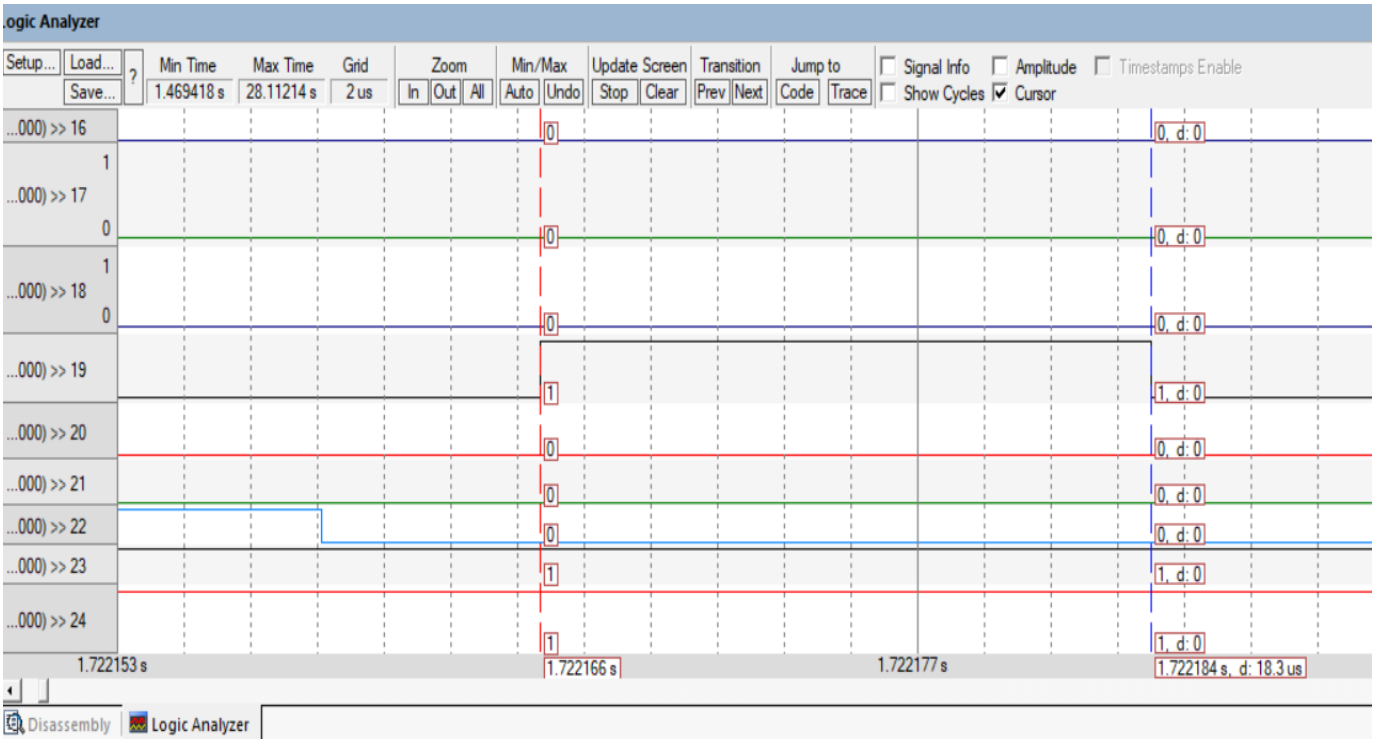
Task execution

-task Button_1_Monitor 18.25us pin1(17) and task Button_2_Monitor 18.68us pin2(18)

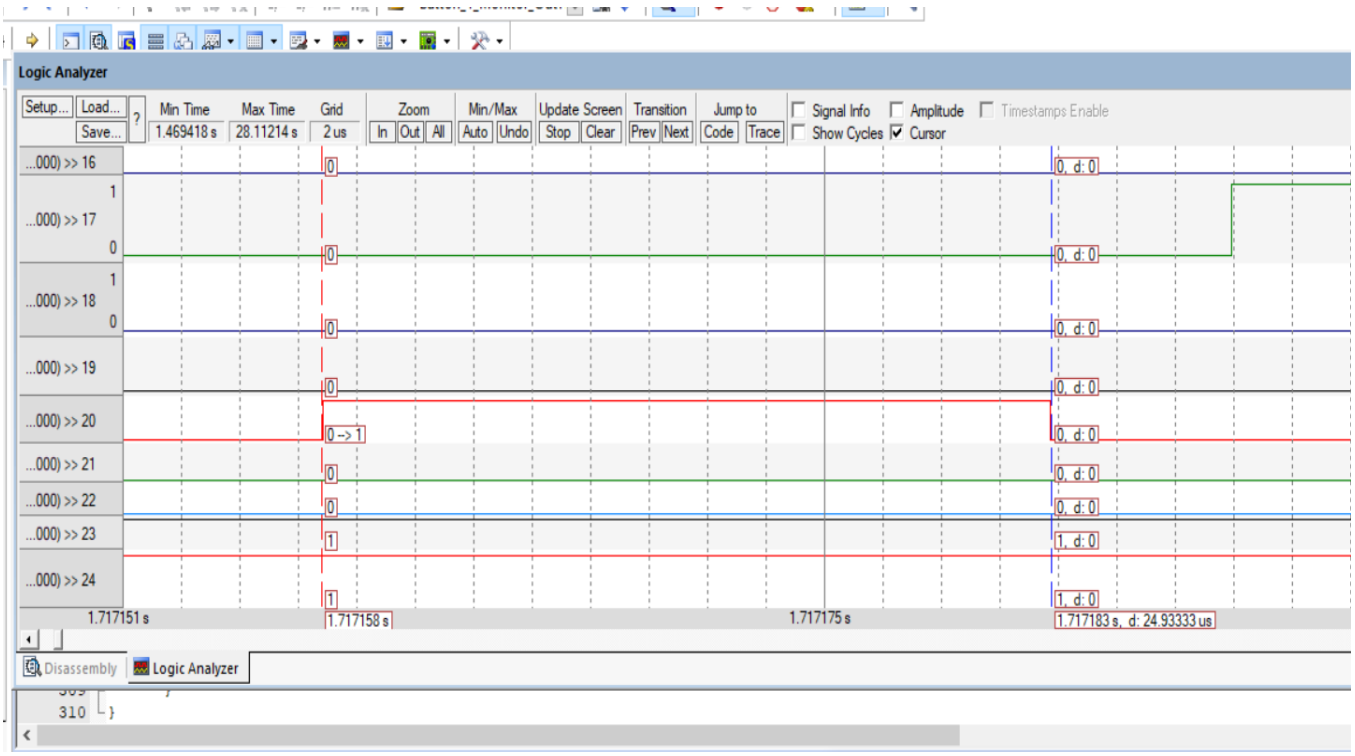




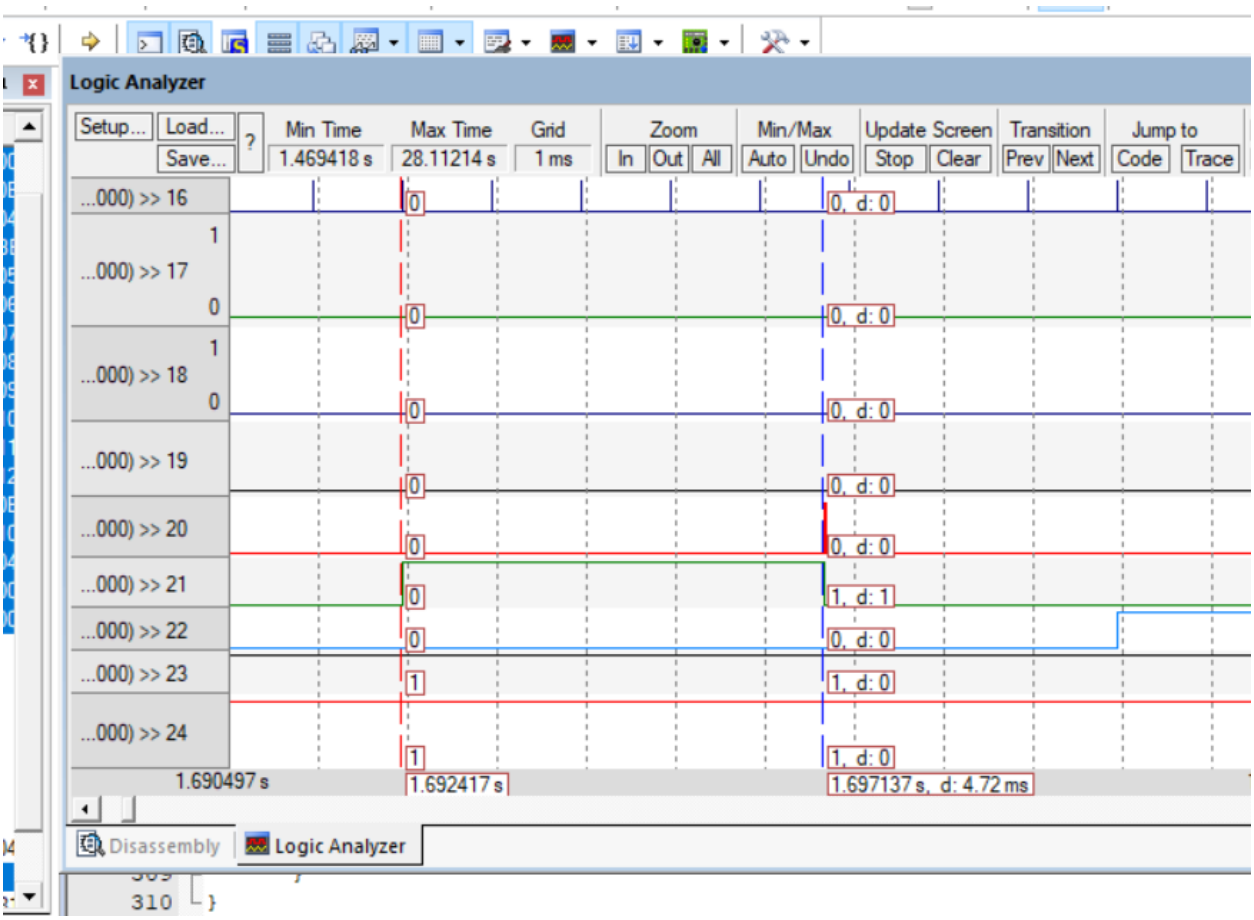
- task Periodic_Transmitter 18.3us pin3(19)



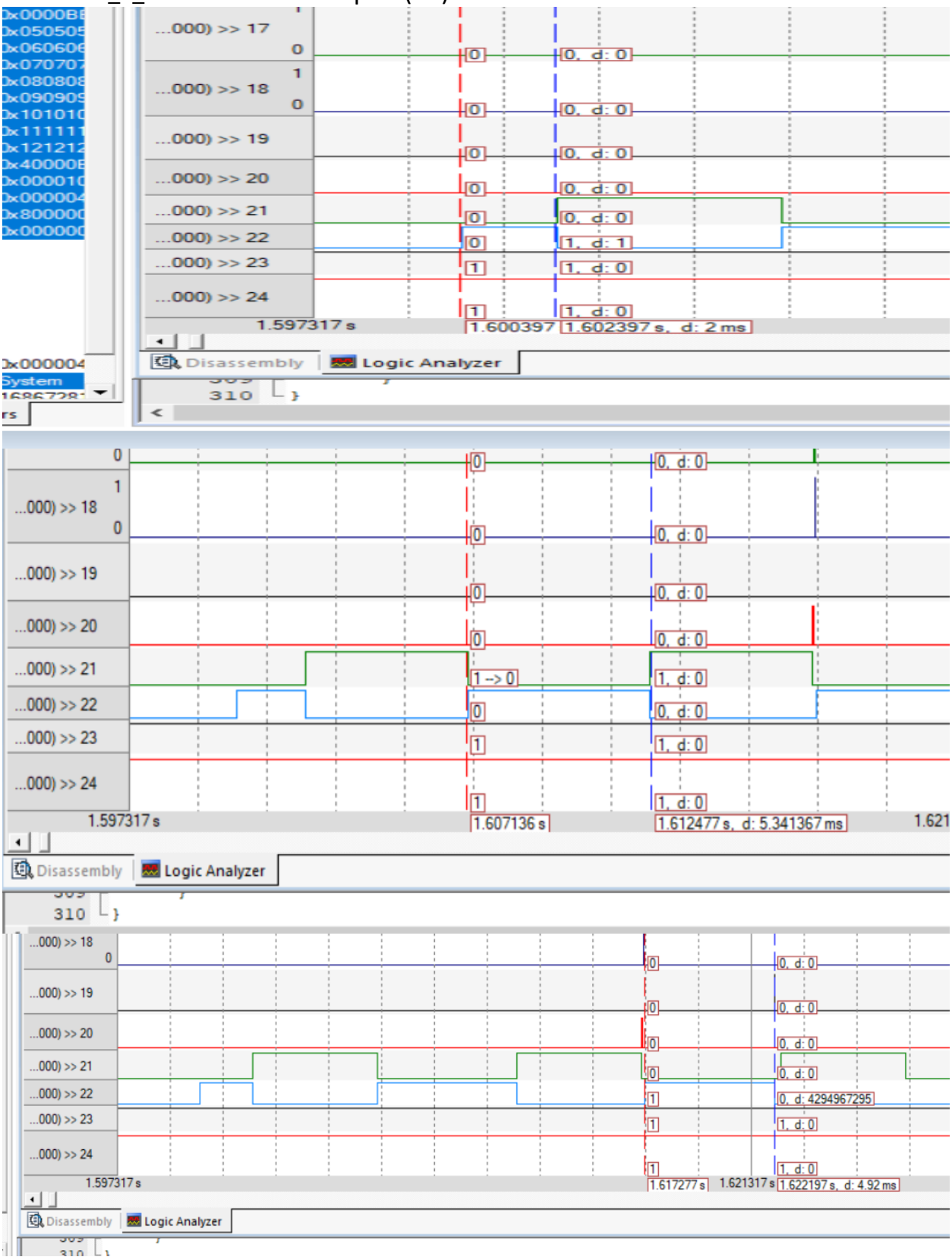
- task Uart_Receiver 24.93us pin4(20)



- task Load_1_Simulation 4.72 ms pin5(21)

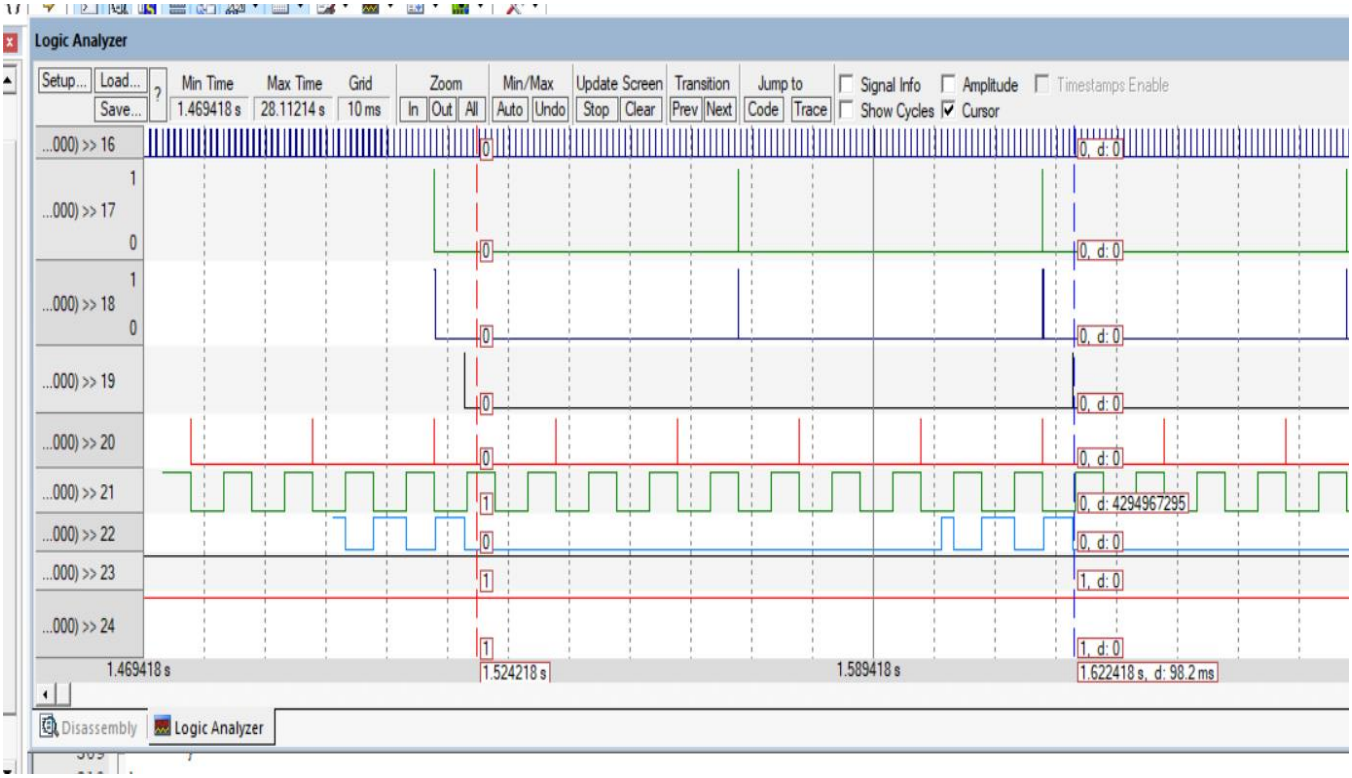


- task Load_2_Simulation 12.26 ms pin6(22)



1-Using analytical methods

-the system hyperperiod it is the system repeat ..98.2 to 100ms



CPU_LOAD=sum[(H/P)*Ci)]/H

CPU_LOAD=(((100/50)*18.25*10^-3 +(100/50)*18.68*10^-3 +(100/100)*18.3*10^-3 +(100/20)*24.93*10^-3 +(100/10)*4.72+(100/100)*12.26)/100)=59.67/100=59.67%

1-Rate-Monotonic utilization bound

Urm=20(2^(1/20)-1)=70% System guaranteed schedulable

2-Time demand analysis

T1{P:50,E: 18.25us,D:50} T2{P:50,E: 18.68us,D:50} T3{P:100,E18.3us:,D:100}

T4{P:20,E: 24.93us,D:20} T5{P:10,E:4.72ms,D:10} T6{P:100,E:12.26ms,D:100}

T1-

W(1)=T1-18.25*10^-3+T5-(4/10)+T4-(2/20)=18.75 *10^-3<50

W(2)=18.25*10^-3+T2-(1/50)+T4-(4/20)+T5-(9/10)+T6-(1/100)=19.38*10^-3<50

System guaranteed schedulable

T2-

W(1)=T2-18.68*10^-3+T1-(1/50)+T5-(4/10)+T4-(2/20)=19.2*10^-3 <50

W(2)=T2-18.68*10^-3+T1-(2/50)+T4-(4/20)+T5-(9/10)+T6-(1/100)=19.83*10^-3<50

System guaranteed schedulable

T3-

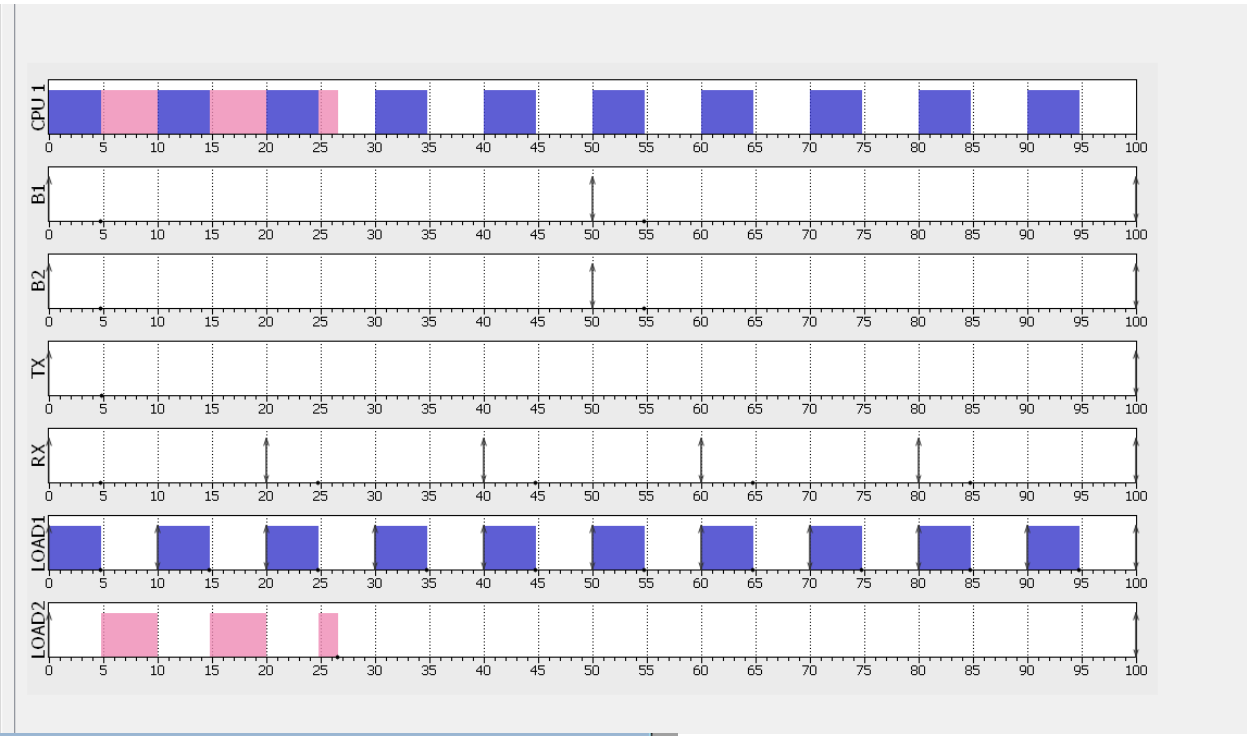
W(1)=T3-18.3*10^-3+T1-(2/50) +T2-(2/50)+T4-(5/20)+T5-(10/10)+T6-(1/100)=19.64*10^-3<100
System guaranteed schedulable
T4-
W(1)=T4-24.9310^-3+T5-(2/10)= 25.3 *10^-3<20
W(2)=T4-24.93*10^-3+T5-(4/10)+=25.3 *10^-3<20
W(3)=T4-24.93*10^-3+T1-(1/50) +T2-(1/50)+T5-(5/10)=25.47*10^-3<20
W(4)=T4-24.93*10^-3+T1-(1/50) +T2-(1/50)+T5-(7/10)=25.67*10^-3<20
W(4)=T4-24.93*10^-3+T1-(2/50) +T2-(2/50)+T4-(5/20)+T5-(10/10)+T6-(1/100)=26.27*10^-3<20
System guaranteed schedulable
T5- like T4 System guaranteed schedulable
T6-
W(1)=T6-12.26+T1-(2/50) +T2-(2/50)+T4-(5/20)+T5-(10/10)+T3-(1/100)=13.6<100
System guaranteed schedulable

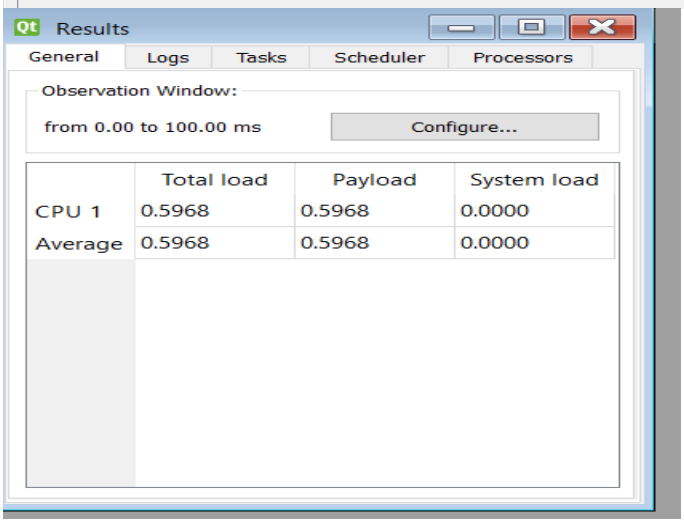
2-simo

simo1.xml

General | Scheduler | Processors | Tasks

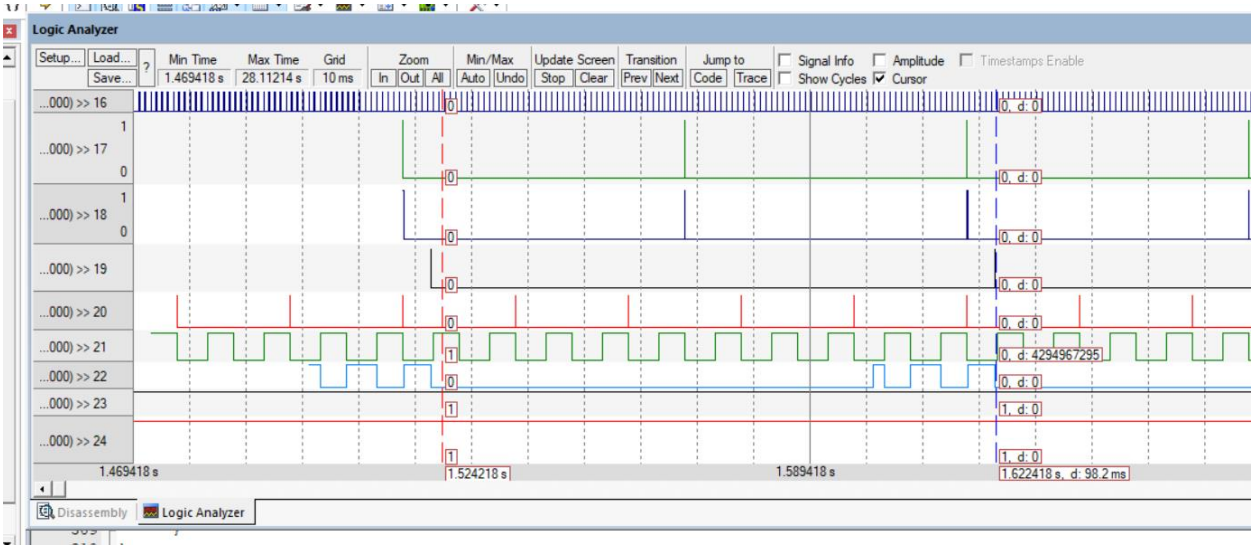
id	Name	Task type	Abort on miss	Act. Date (ms)	Period (ms)	List of Act. dates (ms)	Deadline (ms)	WCET (ms)	Followed by
1	B1	Periodic	No	0	50.0	-	50.0	0.01825	3
2	B2	Periodic	No	0	50.0	-	50.0	0.01868	4
3	TX	Periodic	No	0	100.0		100.0	0.0183	6
4	RX	Periodic	No	0	20.0	-	20.0	0.02493	2
5	LOAD1	Periodic	No	0	10	-	10	4.72	1
6	LOAD2	Periodic	No	0	100.0	-	100.0	12.26	5



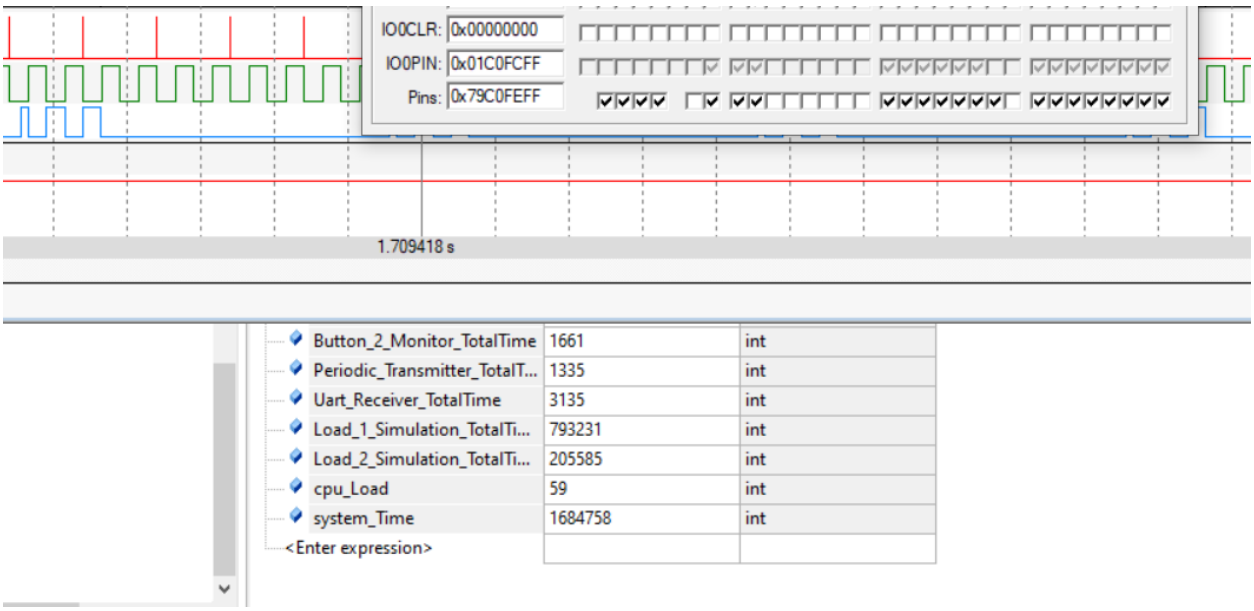


-first 4 task will execute without preemption but load1/2 will preemption

3- BY KEIL



-we see load1 will come first at 22 and then rx and then button 1 and button 2 will come together same deadline then load 2 will come



-we see cpu load is 59% it is good scheduler