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| EDF Scheduler |  |
|  |  |
|  | 23/9FWD RTOS |
|  | Abdulrahman Yasser |

### Analytical Calculations

* “Button\_1\_Monitor”: Task 1: {P = 50, E=13.3, D = 50}
* “Button\_2\_Monitor”: Task 2: {P = 50, E=13.3, D = 50}
* “Periodic\_Transmitter”: Task 3: {P = 100, E=20.3, D = 100}
* “Uart\_Receiver”: Task 4: {P = 20, E=15.5, D = 20}
* “Load\_1\_Simulation”: Task 5: {P = 10, E=5000, D = 10}
* “Load\_2\_Simulation”: Task 6: {P = 100, E=12000, D = 100}

## CPU load

* + 1. Hyperperiod = 100ms

## Rate-monotonic utilization

The system is schedulable because 0.73 > 0.62

## Time demand analysis

* + 1. Time demand for task 1:

T1 is schedulable

* + 1. Time demand for task 2

T2 is schedulable

* + 1. Time demand for task 3:

T3 is schedulable

* + 1. Time demand for task 4:

T4 is schedulable

* + 1. Time demand for task 5:

T5 is schedulable

* + 1. Time demand for task 6:

T6 is schedulable

### Simso result

## Implementing our tasks

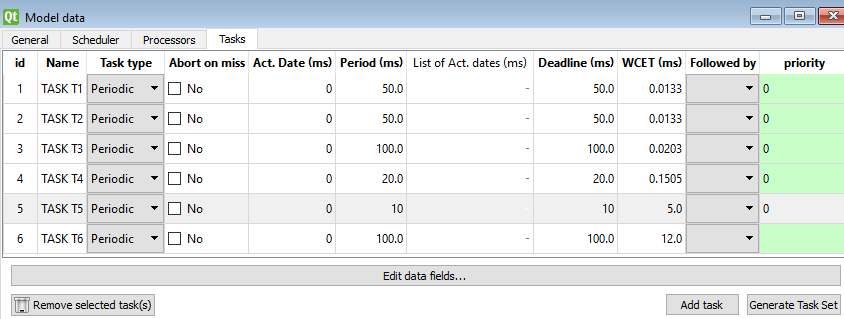


Figure 1Tasks implementation in simso

## Results

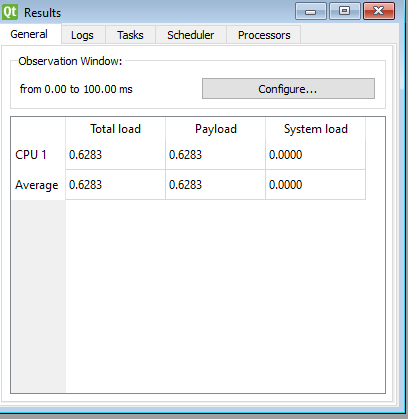


Figure 2 Simso Load result

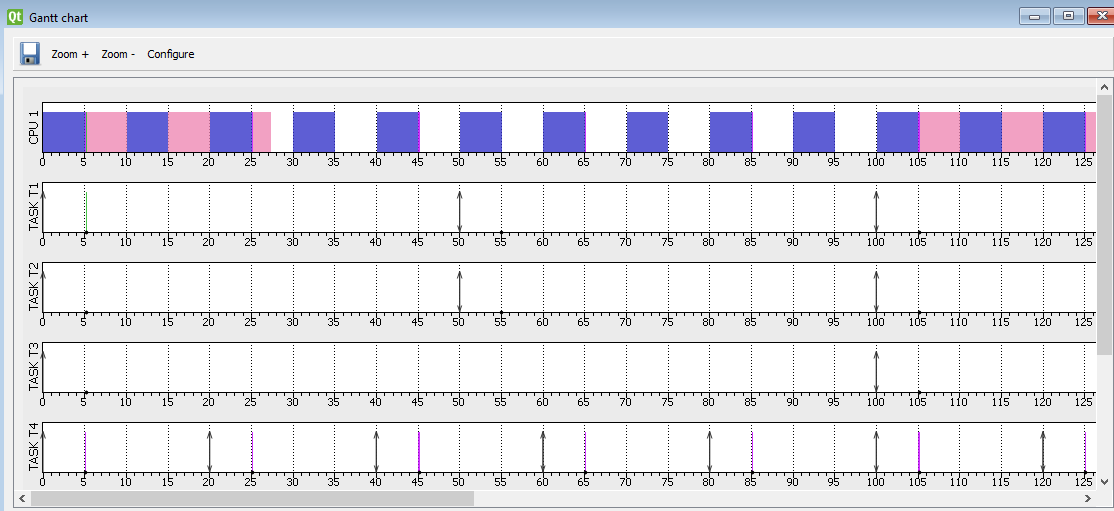


Figure 3 Simso execution in 300ms period

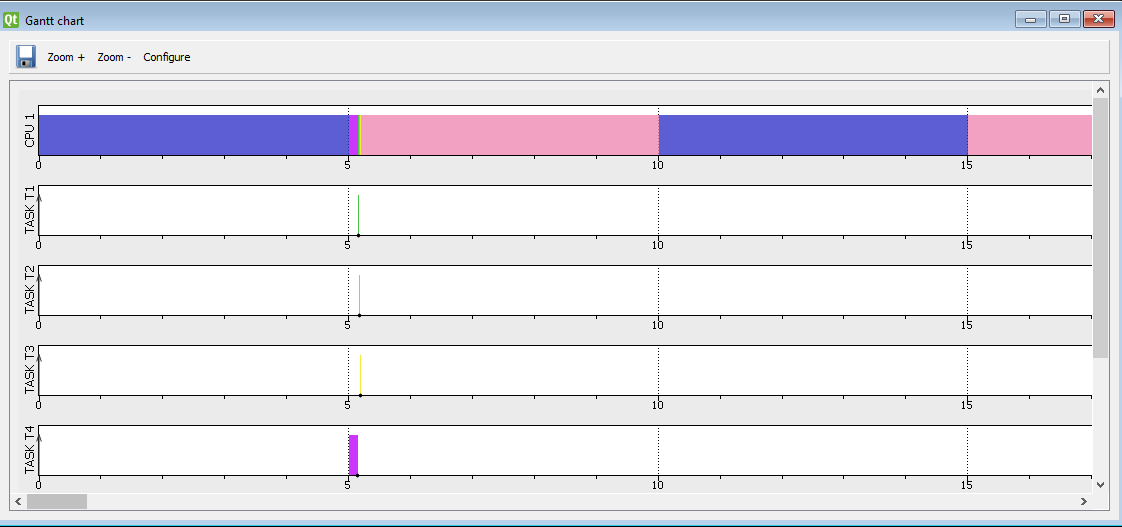


Figure 4 execution of small tasks in simso

### Using Keil Simulator in run time

## Tasks execution times

#### Task 1: Button\_1\_Monitor: 13.2 µs

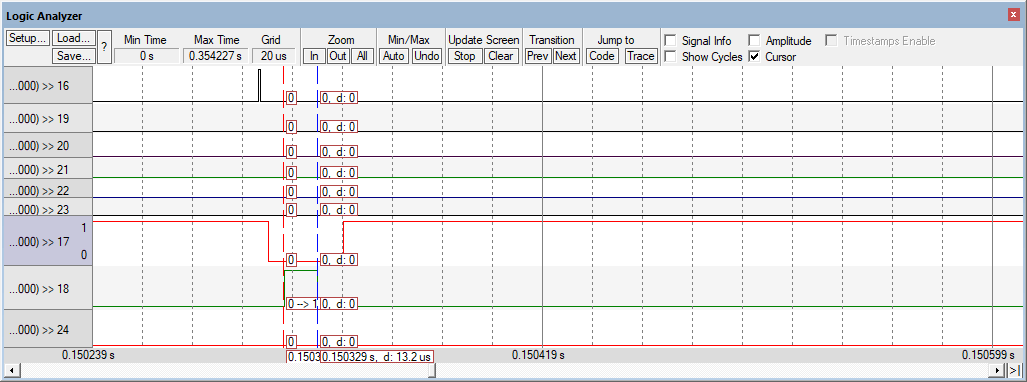


Figure 5 Button\_1\_Monitor execution time

#### Task 2: Button\_2\_Monitor: 13.3 µs

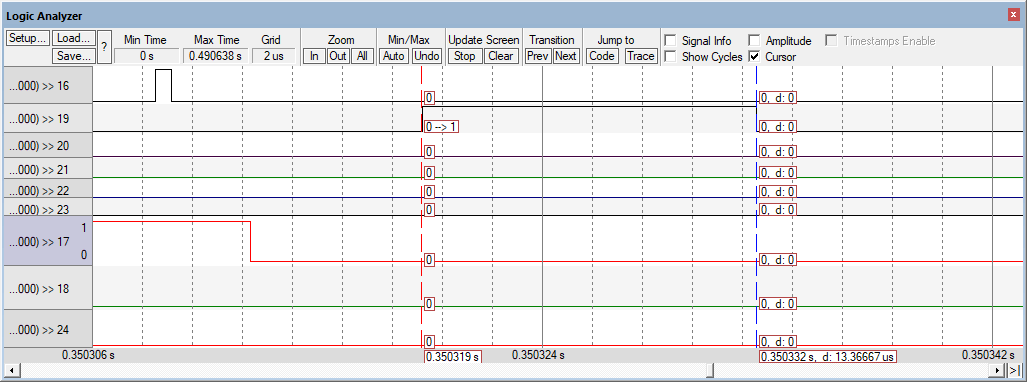


Figure 6 Button\_2\_Monitor execution time

#### Task 3: Periodic\_Transmitter: 20.35 µs

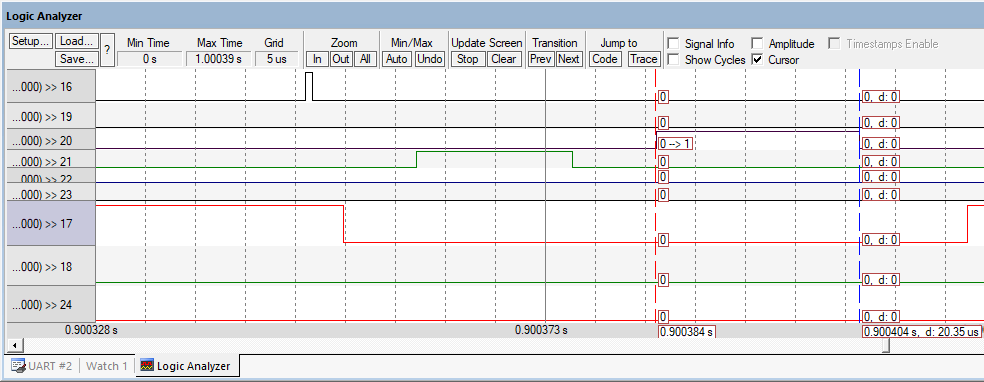


Figure 7 Periodic\_Transmitter

#### Task 4: Uart\_Receiver: 15.5µs or 26µs

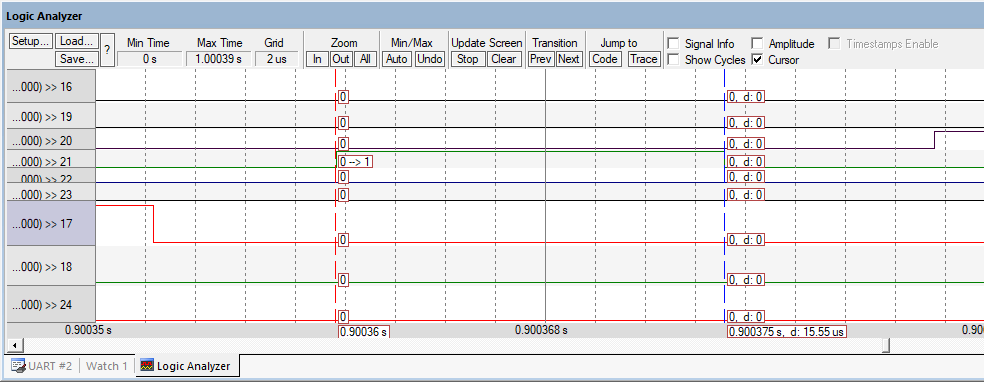


Figure 8 Uart\_Receiver execution time when Queue is empty

When there is data to send

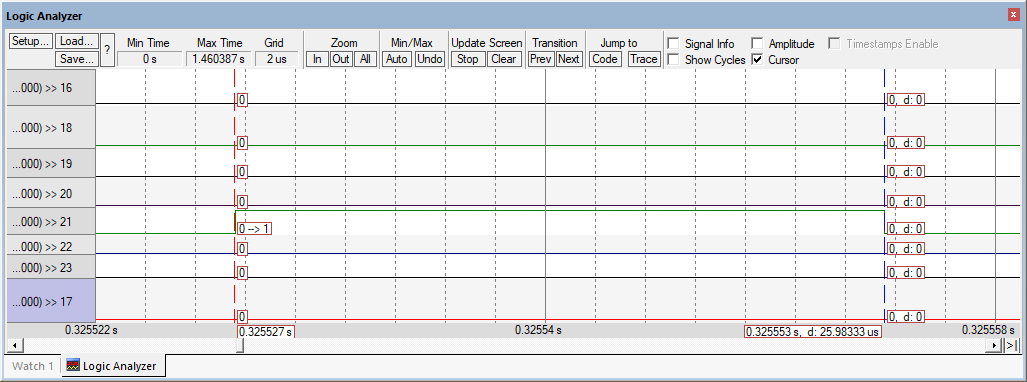


Figure 9 Uart\_Receiver execution time when Queue is full

#### Task 5: Load\_1\_Simulation: 5.01ms

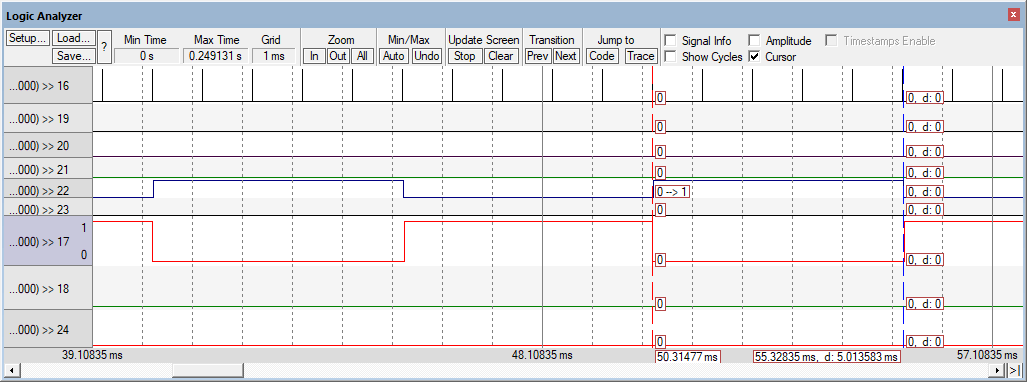


Figure 10 Load\_1\_Simulation execution time

#### Task 6: Load\_2\_Simulation: 12.013ms

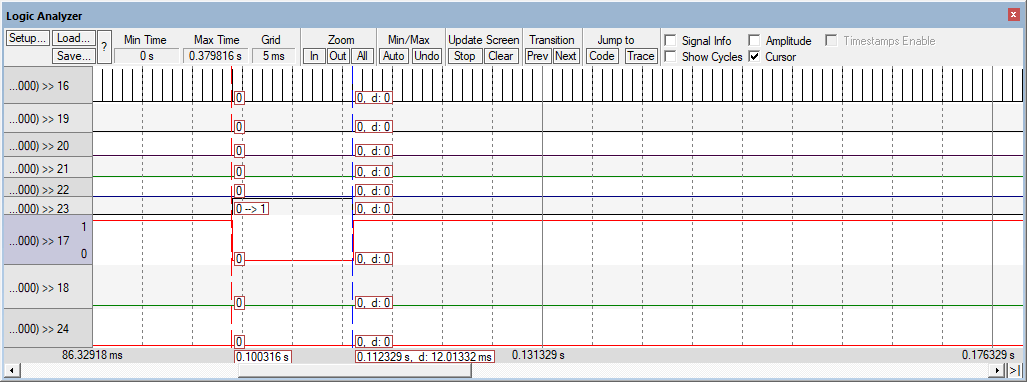


Figure 11 Load\_2\_Simulation execution time

## CPU usage

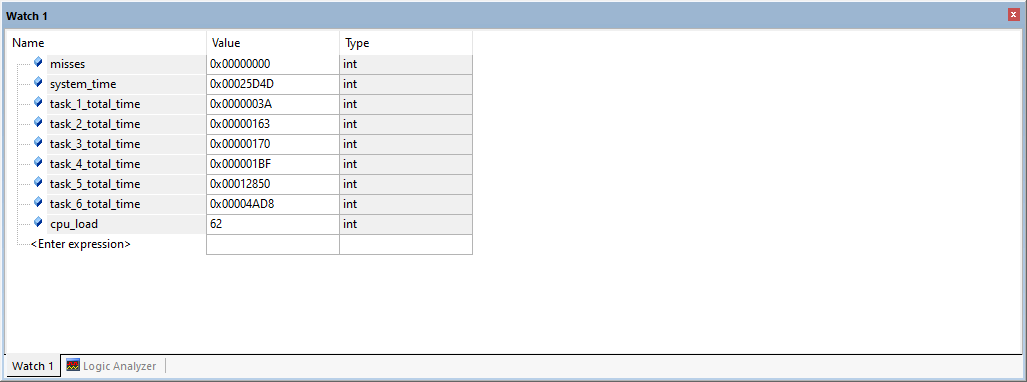


Figure 12 Tasks execution time and CPU load in run time

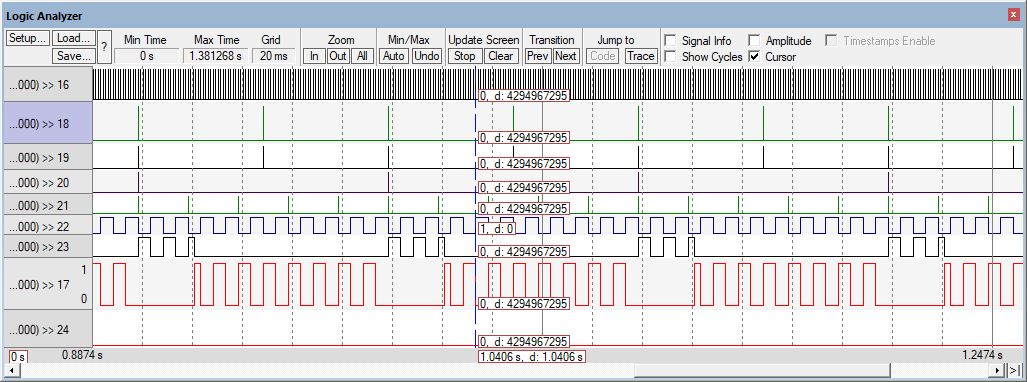


Figure 13 Live screen from the running program