

Development of Real-Time Systems

Week 2 Peer Graded Assignment

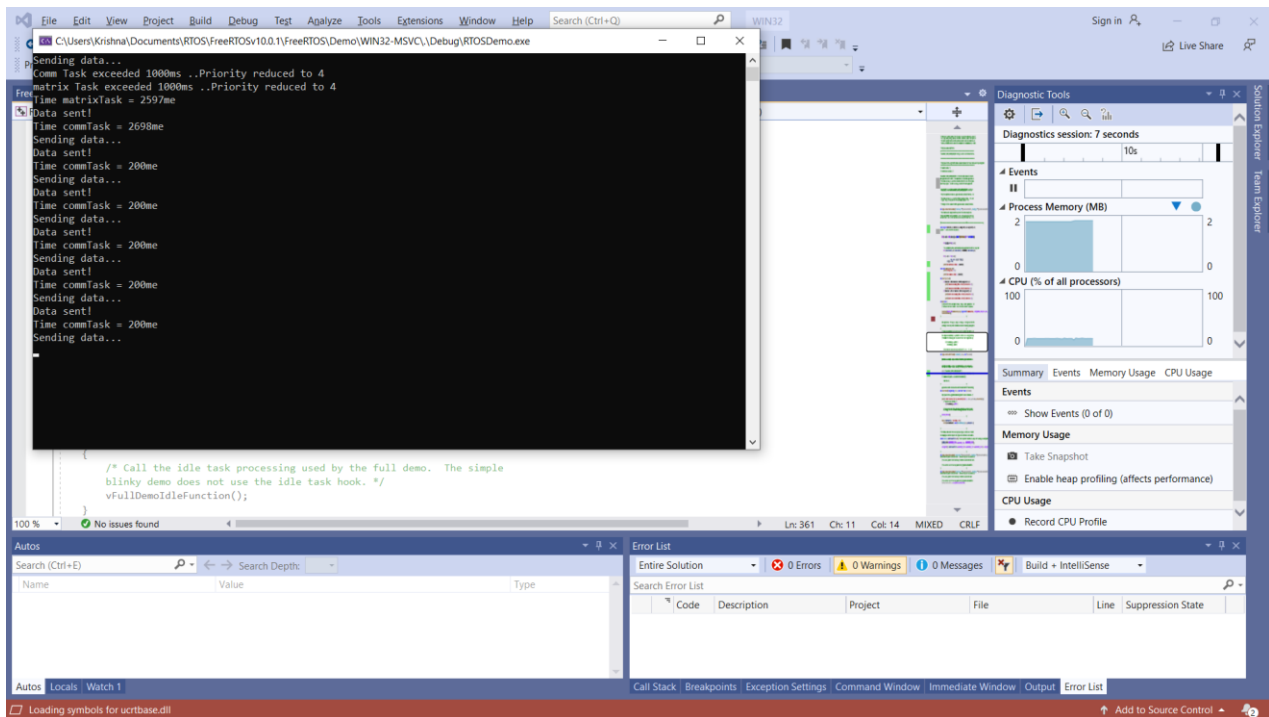
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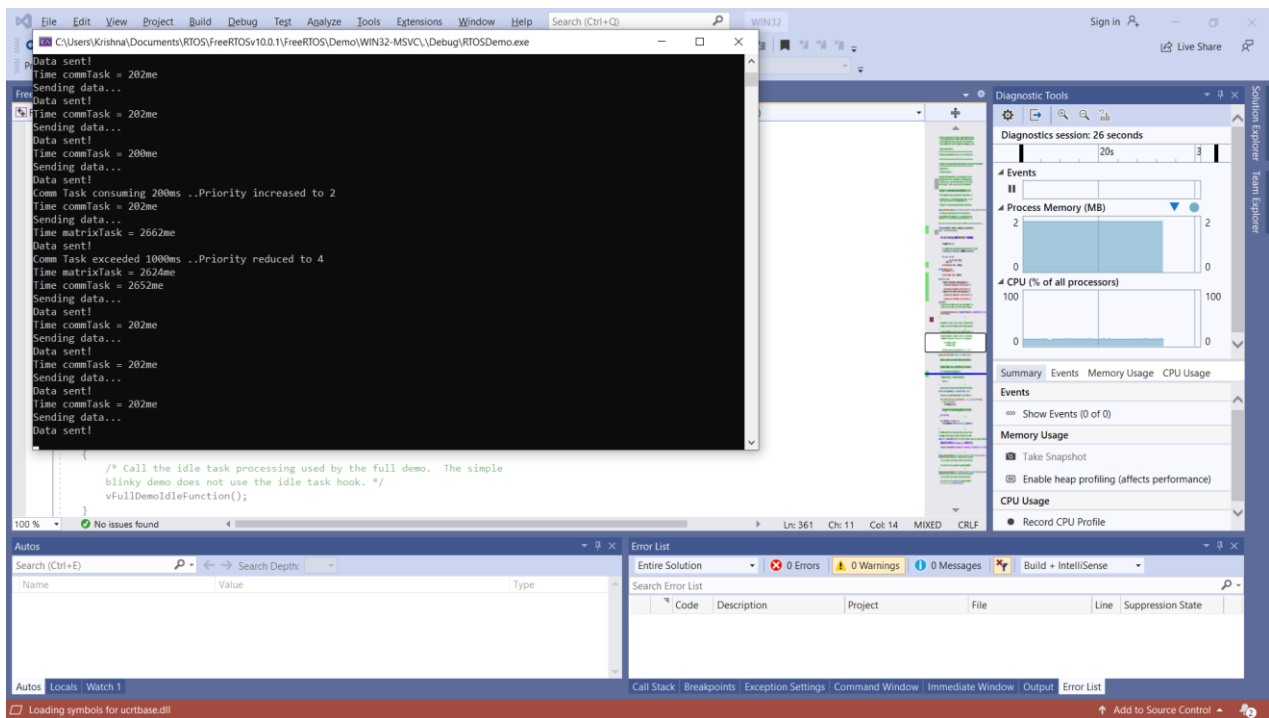
Assignment

- Create a task "matrixtask" containing the following functionality:
- Create a task "communicationtask" containing the following functionality:
- Create the tasks in FreeRTOS with the task creation call:
- "communicationtask" must send a simulated data packet every 200ms but is often blocked by matrixtask, fix this problem without changing the functionality in the tasks.
- Create a new task "prioritysettask"

- Image when code begins and according to the time taken priority is set



- Image when the code for communication task takes longer less than 200ms then we observe a priority change for the code



QNA

1) Why is "matrixtask" using most of the CPU utilization?

Ans.

Because of long for loop

```
for (simulationdelay = 0; simulationdelay < 1000000000; simulationdelay++)
```

2) Why must the priority of "communicationtask" increase in order for it to work properly

Ans.

So that to overcome of ambiguity to choose between which tasks to perform as a higher preference between the two tasks.

3) What happens to the completion time of "matrixtask" when the priority of "communicationtask" is increased?

Ans.

It is given less priority and performed when the communication task has gone into waiting mode

4) How many seconds is the period of "matrixtask"? (Hint: look at vApplicationTickHook() to measure it)

Ans.

Around 2662ms