

Inlämningsuppgift #1

Realtime systems

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Please answer these two questions

1- Let us have these 5 Threads:

THREAD NAME	ARRIVAL TIME	BURST TIME
RED	0	80
GRN	30	50
YLLO	50	30
ORG	60	10
BLU	70	20

Compare both **average waiting time** and **throughput** in case we run in FCFS(First Come First Serve) with RR Round robin upon **Quanta = 5ms** and with **Quanta = 10ms. (25 points)**

2- We all know how Microwave oven works. So let summaries how **our** microwave oven works.

- We have 4 main parts of our microwave: Door, Heater, lamp and motor that get the round disk rolling in it.
- The Heater** has two powers eight hundred Watt and four hundred Watt.
- The lamp** that switches on when start heating till finish it and once we open the door the it switched off if the door closed.
- The Motor:** that can get around 30 degrees per second.

- e. **The Door:** it is sensor that gives 0 if it is open and 1 if it closes.

Based on the introduction let us create a sketch using Arduino IDE and FreeRTOS based on these steps:

- i. Describe your plan of Tasks and parameters for this project after reading carefully all needs below. **(10 points)**
- ii. Create the needed FreeRTOS tasks to manage microwave parts such as: heaters, lamp, door, motors. The output of this task will be simulation messages to Serial terminal.
Like: "heater started", "heater stop", "motor round 30d", "motor round 90d", "motor round 360d" "motor round 0d". "Light on"," Light off", "door open" door closed".**(50 points)**
- iii. Show the output from your sketch for these three pre-programmed setups as:
 1. Defrosting Meat that needs 5 minutes at 800W. **(5 points)**
 2. Defrosting vegetables needs 1 minute at 400W.**(5 points)**
 3. General heating for 30 seconds. **(5 points)**

Betyg

<65 IG

>65 G

>85 VG