

# Time modeling

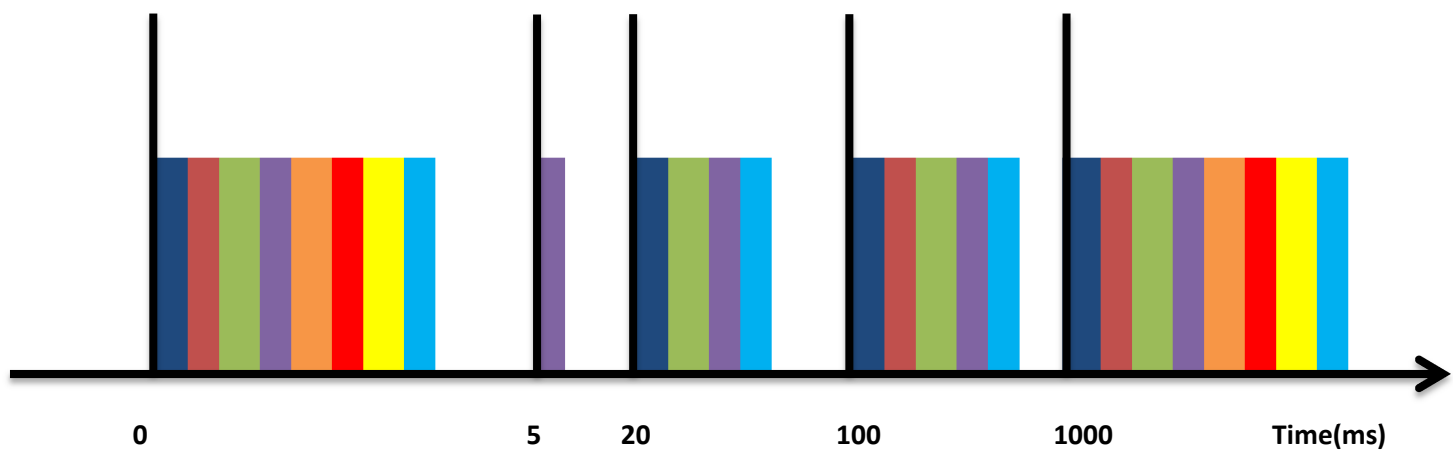
Task	Action	BCET (ms)	WCET (ms)	Periode Of Action (ms)	Periode Of Task (ms)
SW_Update	SW_Power_Update SW_Up_Update SW_Down_Update	~0	0.331	20	20
TMP_SENSOR_Update	Read_Sensor_TMP	~0	0.798	100	20
TMP_Update	TMP_REQ_Update TMP_SENSED_Update	~0	0.626	20 1000	20
SSD_Update	SSD_Update_Mode SSD_Refresh	~0	0.807	20 5	5
HEATER_Update	HEATER_Update_Mode	~0	0.260	1000	1000
COOLER_Update	COOLER_Update_Mode	~0	0.260	1000	1000
LED_Update	LED_Update_Mode	~0	0.096	1000	1000
EEPROM_Update	EEPROM_Store_Data	~0	1	20	20
TICK(ms)					5
Major Cycle(ms)					1000

Minor Cycle = TICK = GCD(20, 20, 20, 5, 1000, 1000, 1000, 20) = 5 ms

Major Cycle = LCM((20, 20, 20, 5, 1000, 1000, 1000, 20) = 1000 ms

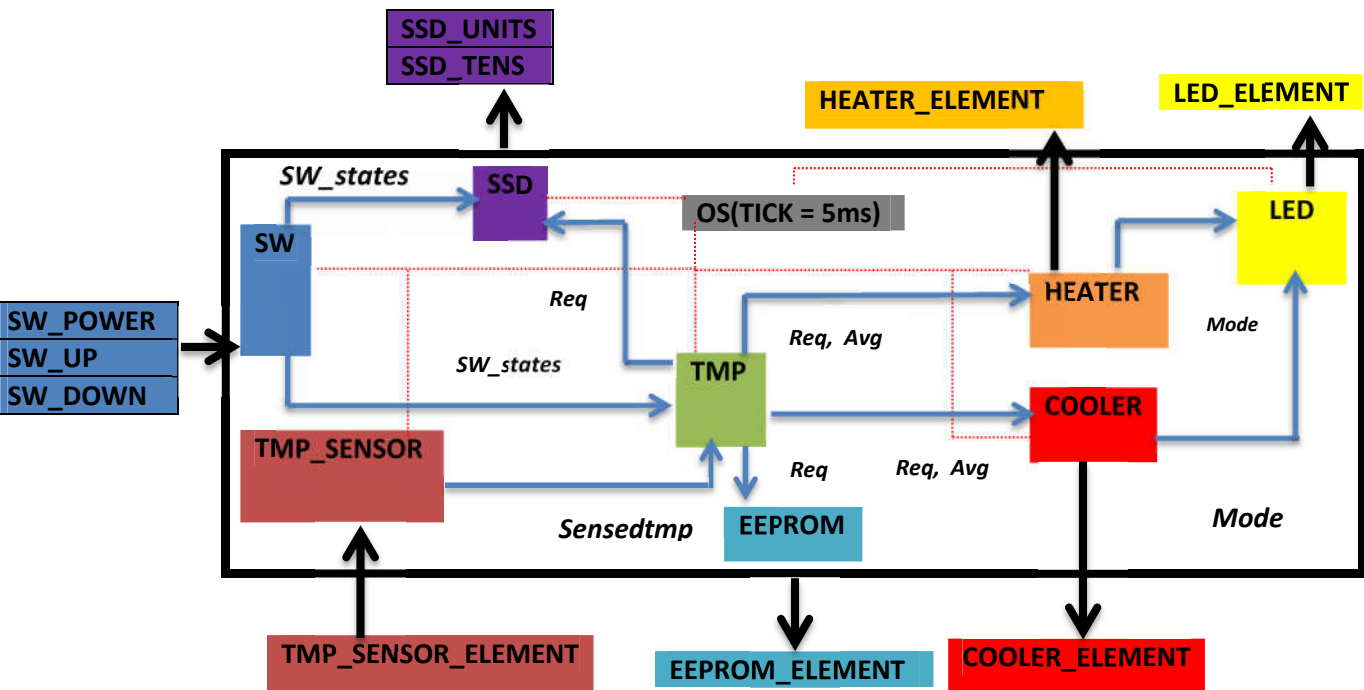
Major Cycle = 1000 / 5 = 200 Minor Cycle

CPU Load =  $\sum WCET / \text{Major Cycle} = 4.178/1000 = 0.004178 = 0.4178\%$



- SW@20ms
- TMP\_SENSOR@100ms
- TMP@20ms
- SSD@5ms
- HEATER@1000ms
- COOLER@1000ms
- LED@1000ms
- EEPROM@20ms

# Block diagram



# Modules diagram

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SW
-SW_State[SW_MAX_NUMBER] : SW_STATE_t -SW_Period_Ended : Bool_t
+SW_Init(void) : void +SW_Update(void) : void +SW_Period_Is_Ended(void) : Bool_t +SW_Read(SW_ID : const SW_t) : SW_State_t -SW_Update_State(SW_ID : const SW_t) : void -SW_Update_Period(void) : void

TMP_SENSOR
-TMP_SENSOR_Reading_Val : u8_t -TMP_SENSOR_Period_Ended : Bool_t
+TMP_SENSOR_Init(void) : void +TMP_SENSOR_Update(void) : void +TMP_SENSOR_Read(void) : u8_t

TMP
+TMP_Required : u8_t +Avg_Tmp : u16_t -TMP_Mode : TMP_MODE_t -Update_Avg_Tmp : Bool_t
+TMP_Update(void) : void +TMP_Avg_Update(AVG_UPDATE_ENABLE : const Bool_t) : void -TMP_Required_Update(void) : void -TMP_Sensed_Update(void) : void

SSD
-SSD_Symbol : u8_t -SSD_Blinking_Period : u8_t -SSD_Blinking_On_Period : u8_t -SSD_Blinking_Off_Period : u8_t -SSD_Mode : SSD_MODE_t
+SSD_Init(void) : void +SSD_Update(void) : void +SSD_Set_Symbol(SYMBOL : const u8_t) : void -SSD_On(SSD_ID : const SSD_t) : void -SSD_Off(SSD_ID : const SSD_t) : void -SSD_Update_Symbol(SSD_SYMBOL : const u8_t) : void -SSD_Refresh(void) : void -SSD_Update_Mode(void) : void

HEATER
-Tmp_Req : s8_t -Tmp_Avg : u8_t -Update : Bool_t -HEATER_Mode : HEATER_MODE_t
+HEATER_Init(void) : void +HEATER_Update(void) : void +HEATER_Set(REQ_TMP : const u8_t, AVG_TMP: const u8_t, UPDATE_ENABLE : const Bool_t) : void -Heater_On(void) : void -Heater_Off(void) : void -HEATER_Update_Mode(void) : void

COOLER
-Tmp_Req : s8_t -Tmp_Avg : u8_t -Update : Bool_t - COOLER_Mode : COOLER_MODE_t
+ COOLER_Init(void) : void + COOLER_Update(void) : void + COOLER_Set(REQ_TMP : const u8_t, AVG_TMP: const u8_t, UPDATE_ENABLE : const Bool_t) : void - COOLER_On(void) : void - COOLER_Off(void) : void - COOLER_Update_Mode(void) : void

LED
-LED_State : LED_STATE_t -LED_Mode : LED_MODE_t -Update : Bool_t
+LED_Init(void) : void +LED_Update(void) : void + LED_Set_Mode(MODE : const LED_MODE_t, LED_UPDATE_ENABLE : const Bool_t) : void -LED_On(void) : void -LED_Off(void) : void -LED_Blink(void) : void

EEPROM
-Update : Bool_t
-EEPROM_Data : u8_t
+EEPROM_Init(void) : void
+EEPROM_Update(void) : void
+EEPROM_Store(DATA : const u8_t, UPDATE_ENABLE : const Bool_t) : void
+EEPROM_Read_Byte(EEPROM_ID : const EEPROM_ID_t, EEPROM_ADDRESS : const u8_t) : u8_t
-EEPROM_Write_Byte(EEPROM_ID : const EEPROM_ID_t, EEPROM_ADDRESS : const u8_t, DATA : const u8_t) : void