Legos Implementation of the Emachine

BAY Team

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Description of the tasks

- 2 Tasks t_1 , t_2
- t_1:
  - 2 Hz
  - Counter which is displayed on the screen
- t_2:
  - 1 Hz
  - Reads the light sensor and emits:
    - Two beeps if light level < threshold
    - One beep otherwise

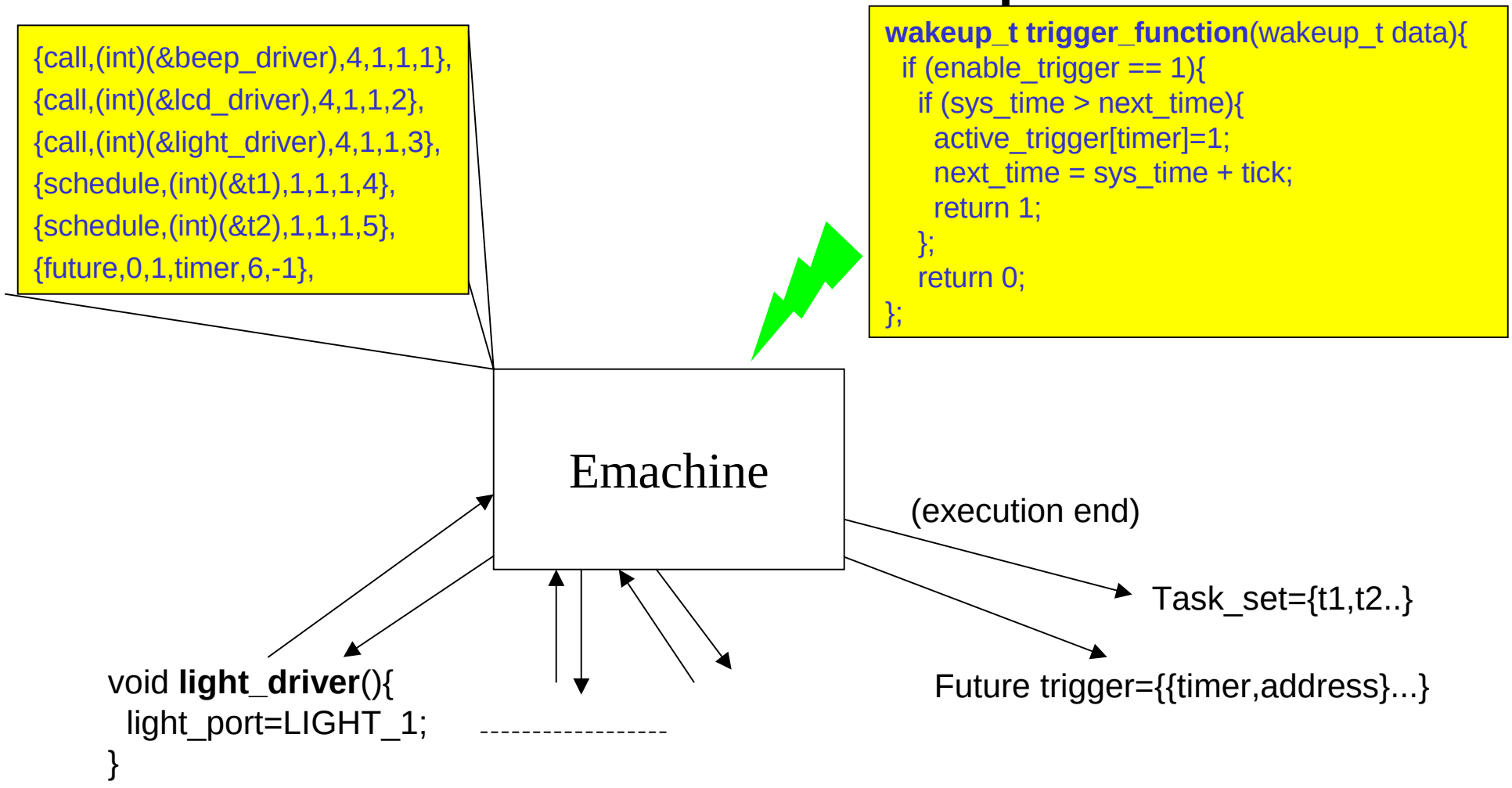
Core Code

```
int main(){
  Init();
  while (1){
    wait_event(&trigger_function,0);
    enable_trigger = 0;
    update_enabled_trigger();
    while (!trigger_queue_is_empty()){
      einterpreter();
      dispatch_tasks();
    }
    enable_trigger = 1;
  }
}
```

```
void einterpreter(){
  trigger_address curr_trigger;
  Instr instruction;
  int PC=0;
  curr_trigger = get_enabled_trigger();
  PC=curr_trigger.address;
  while (PC != -1){
    instruction = program[PC];
    switch (instruction.op_code){
    case call:
        exec(driver_function)
        PC= program[PC].next;
    case schedule:
        task_set <- task_function;
        task_set.number_of_tasks ++;
        PC= program[PC].next;
    case future:

enqueue_trigger(program[PC].trigger,program[PC].address);
        PC=program[PC].next;
    }
  }
}
```

Execution Principle



```
/*----------Tasks----------*/
void t2(){
  static int count=0;
  lcd_port=count++;
}

void t1(){
  if (light_port < 100)
    beep_port=sys_beep;
  else
    beep_port=double_beep;
}
```

```
/*----------Drivers----------*/
/*Attention!!! in this implementation they are not
really atomic*/

void light_driver(){
  light_port=LIGHT_1;
}
void beep_driver(){
  dsound_play(beep_port);
}
void lcd_driver(){
  lcd_int(lcd_port);
}
```

```
/*----Ports !!!!----*/
static int light_port;
static int lcd_port;
static note_t *beep_port;

/*------Drivers-----*/
extern void light_driver();
extern void beep_driver();
extern void lcd_driver();

/*------Tasks------*/
extern void t1();
extern void t2();
```