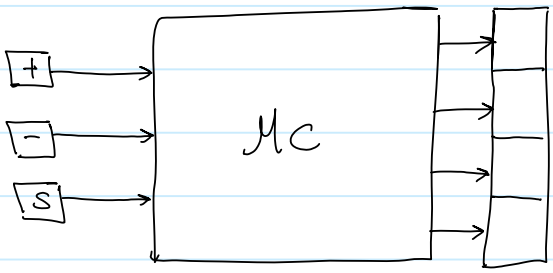
Digital Clock

Friday, December 20, 2019 1:04 PM

In This project We create Digital clock display hours and minutes

* Requirments *

* Context Diagram



* modes:

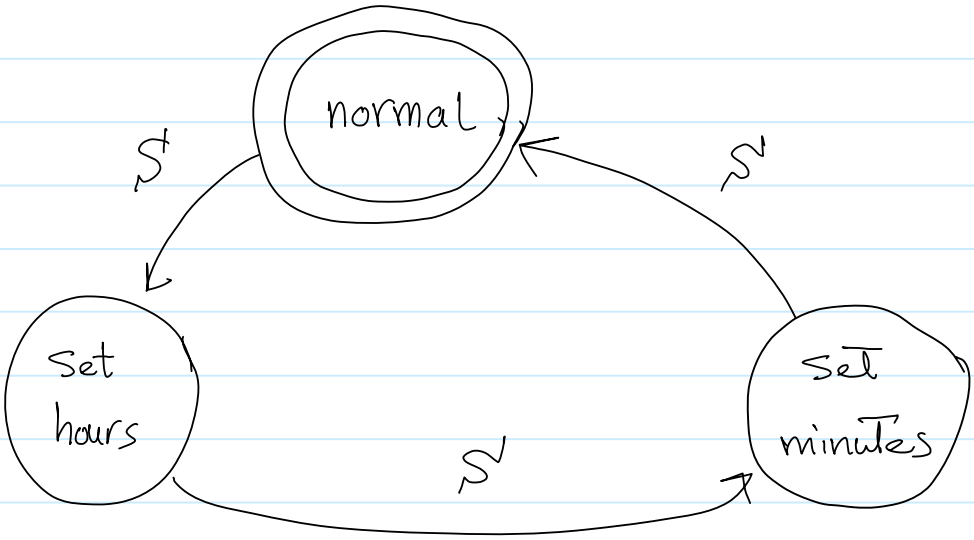
1- default.
clock working in normal operation.

2- set hours
set The current Value of hours.

3- set minutes
set The current Value of minutes.

* Buttons:
active only on set up modes.

1- (S) Set : switch between modes.
2- (+) plus : add 1 to the current value if active.
3- (-) minus : sub 1 from the current value if active.



* 7 Segments:

hours: units : display the hours units digit.
tens : display the hours tens digit.

Minutes: units: display the minutes units digit.
tens: display the minutes tens digit.

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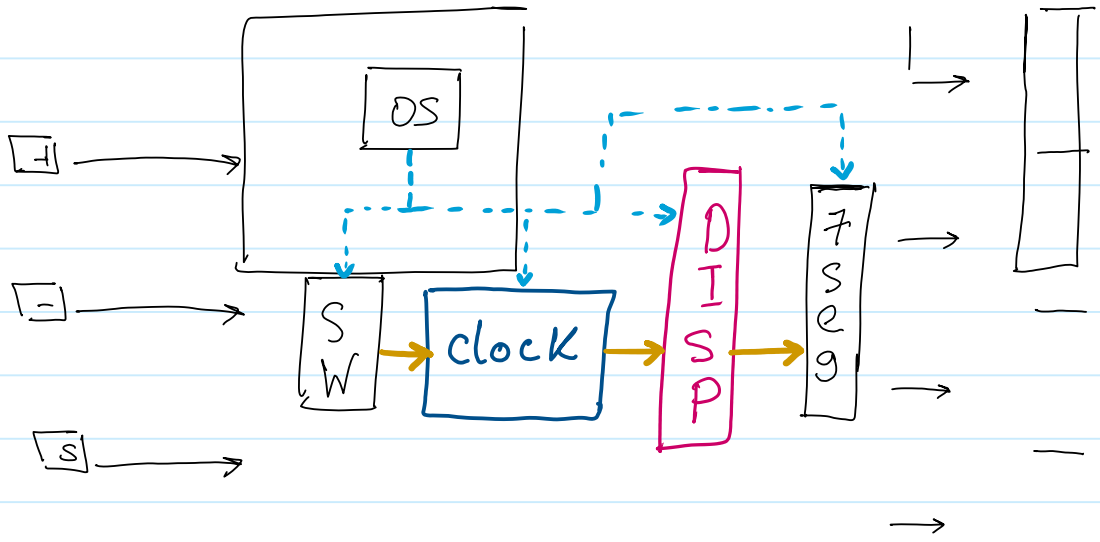
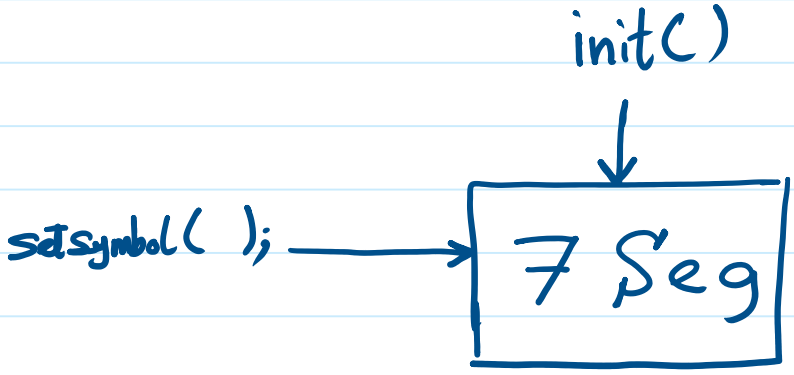
* Design *

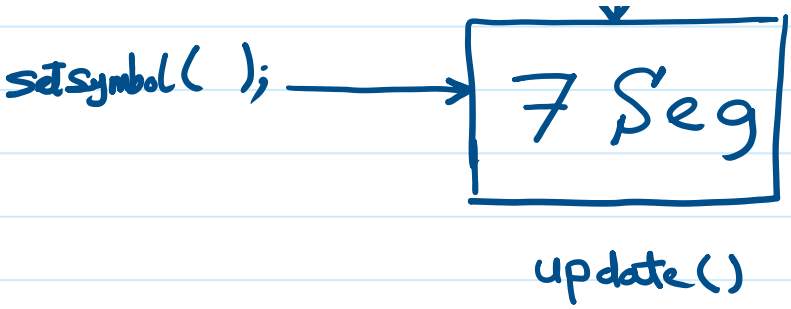
* Block Diagram



*Detailed design.

- 7segment block
  - show symbols in 7 segments
  - switch between 7 segments to use 1 port only

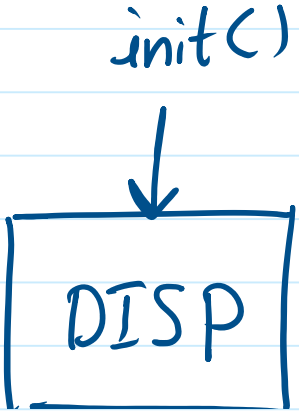





```
U8_t  init (U8_t  number7seg);
Void  setSymbd (U8_t  symbd);
Void  update (Void);
```

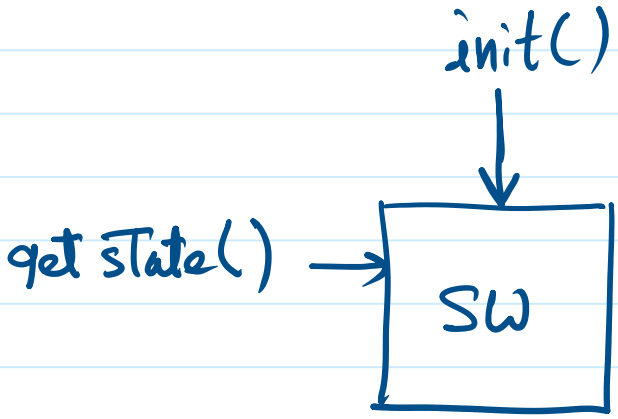
- Disp Block

- Display every Digit in the Current timer in It's place.
- active modes in 7 segment
- operat Blinking or not on 7segments.



update()

- Switch Block
  - handel any switch press.

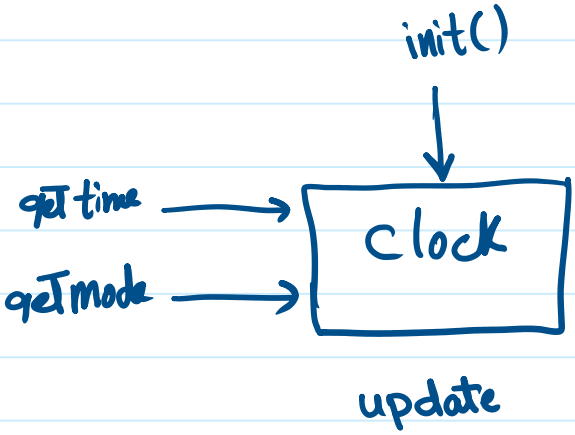


update

```
Void  init(Void);
u8_t  getState(SwitchNumber);
Void  update(Void);
```

- Clock block

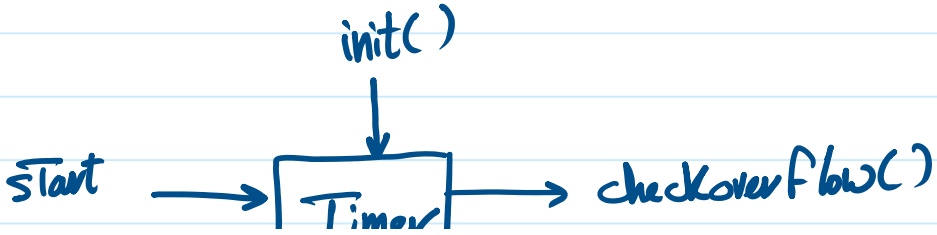
  - main operation of clock
  - mode handel and control

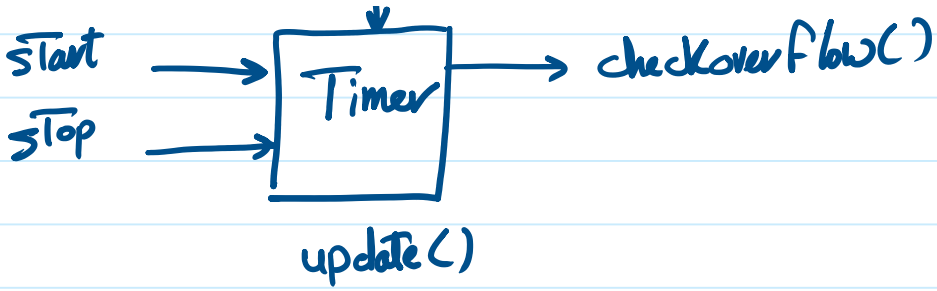



```
init(    );
getTime (Time_t *  );
getMode(    );
update (    );
```

- OS (Timer)

  - generate tick






```
init(    );
start(   );
stop(    );
update(      );
u8_t  checkoverflow(      );
```