Wake Up Your Way Alarm Clock

6.111 Final Project

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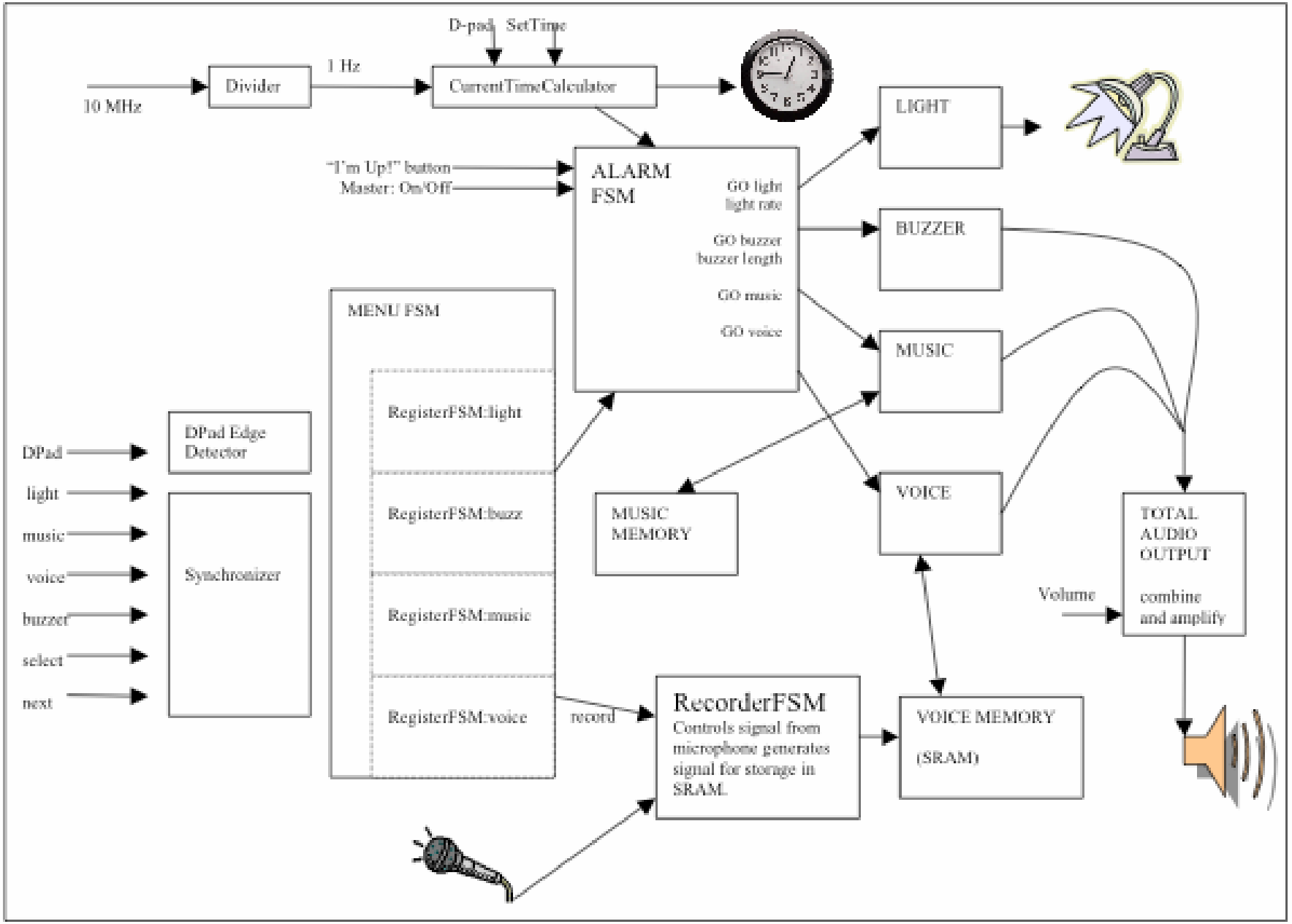
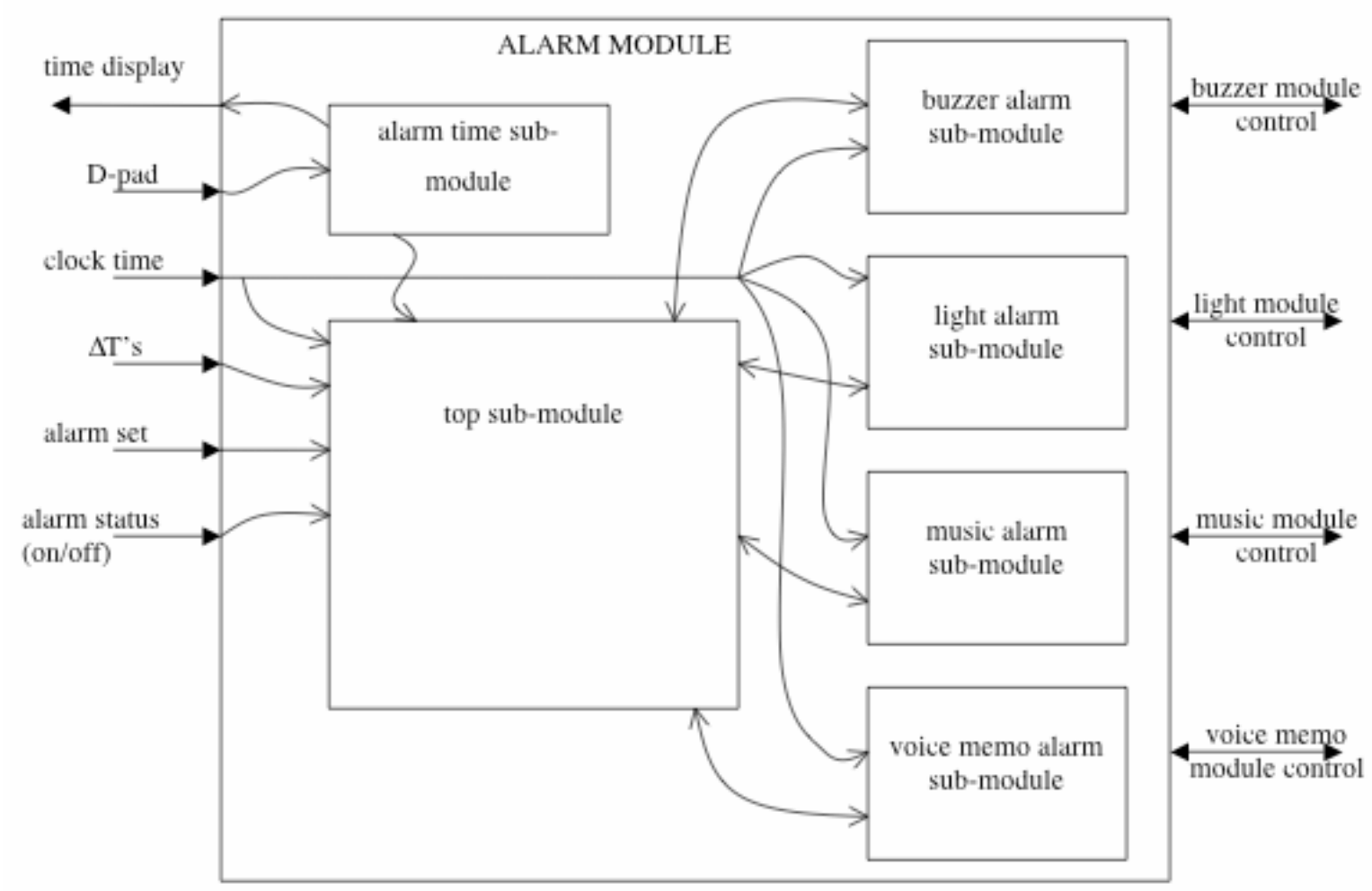
- The problem with most alarm clocks:
  - Too abrupt!
  - Single environment variable (sound, either buzzer or music)
  - Promote bad ‘snoozing’ habits

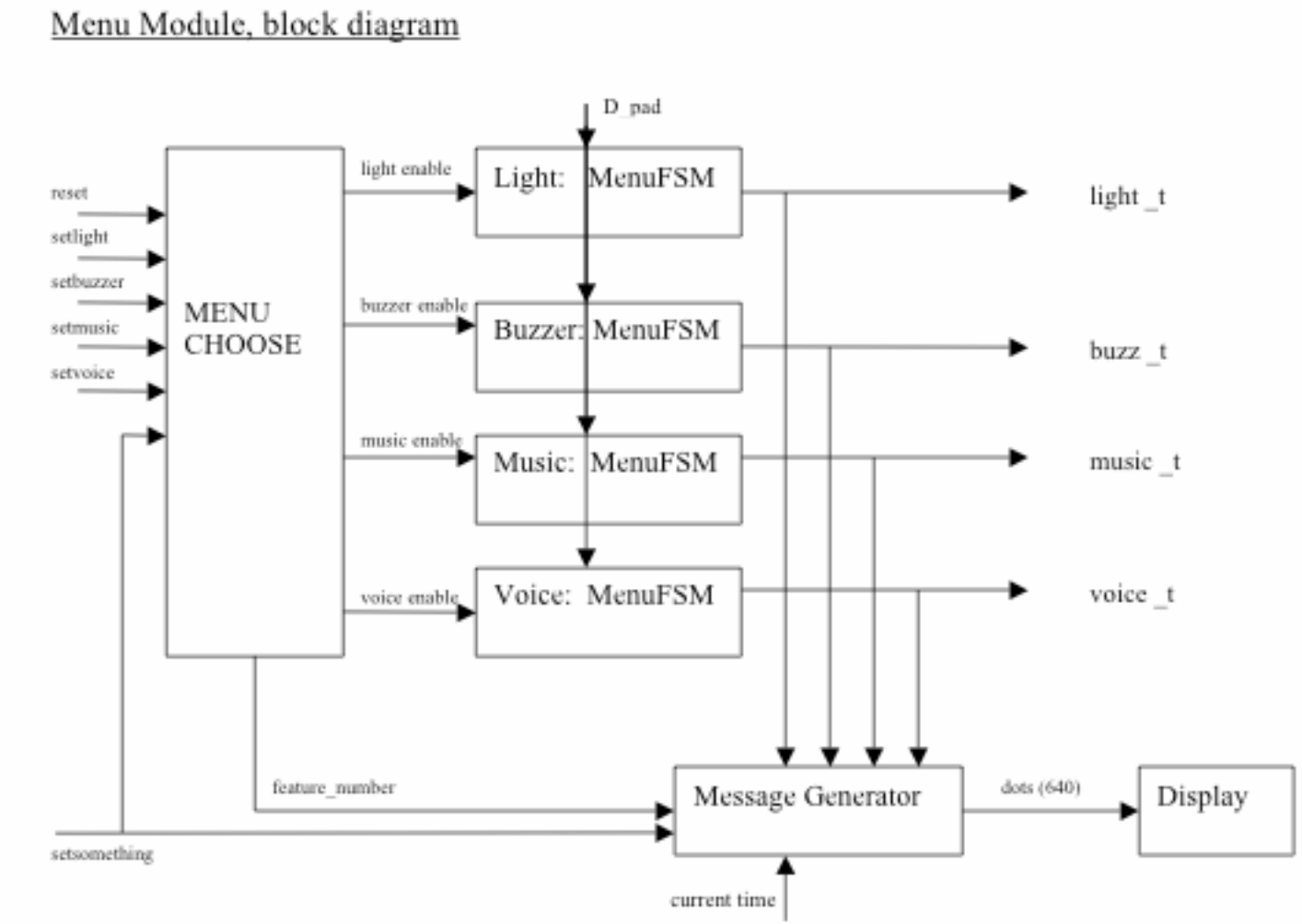
- Goals of our project:
  - Make waking up a more gradual, pleasant experience
  - Use a combination of environment variables… sight and sound
  - ‘alarm’ should be a gradual build-up


D-pad
SetTime
10 MHz
Divider
1 Hz
CurrentTimeCalculator
LIGHT
"I'm Up!" button
Master: On/Off
ALARM FSM
GO light
light rate
GO buzzer
buzzer length
GO music
GO voice
BUZZER
MENU FSM
MUSIC
RegisterFSM:light
DPad
DPad Edge Detector
light
music
voice
buzzer
select
next
Synchronizer
RegisterFSM:buzz
MUSIC MEMORY
VOICE
TOTAL AUDIO OUTPUT
Volume
combine and amplify
RegisterFSM:music
RegisterFSM:voice
record
RecorderFSM
Controls signal from microphone generates signal for storage in SRAM
VOICE MEMORY
(SRAM)

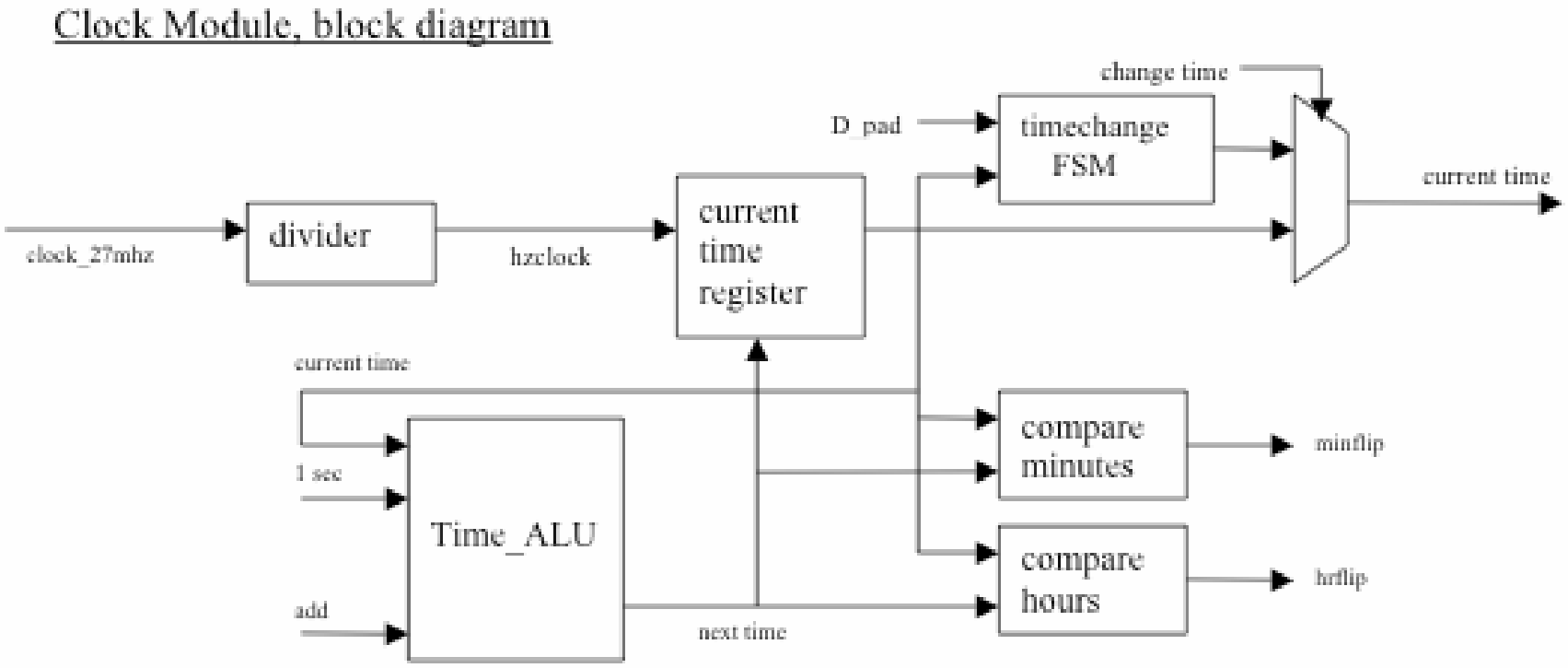
Alarm Module



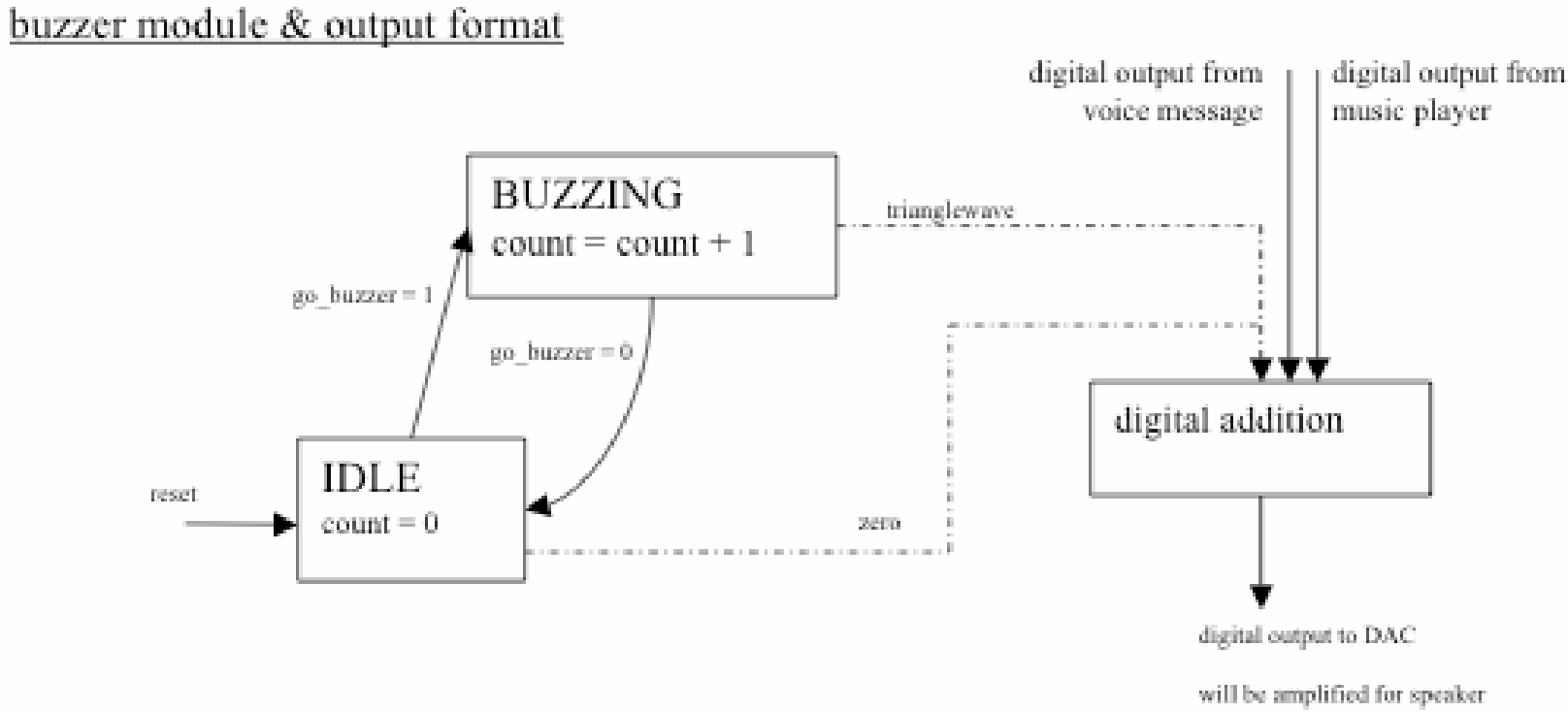
Menu Module


Menu Module, block diagram
D_pad
reset
setlight
setbuzzer
setmusic
setvoice
MENU CHOOSE
light enable
buzzer enable
music enable
voice enable
Light: MenuFSM
Buzzer: MenuFSM
Music: MenuFSM
Voice: MenuFSM
light_t
buzz_t
music_t
voice_t
feature_number
setsomething
Message Generator
dots (640)
Display
current time

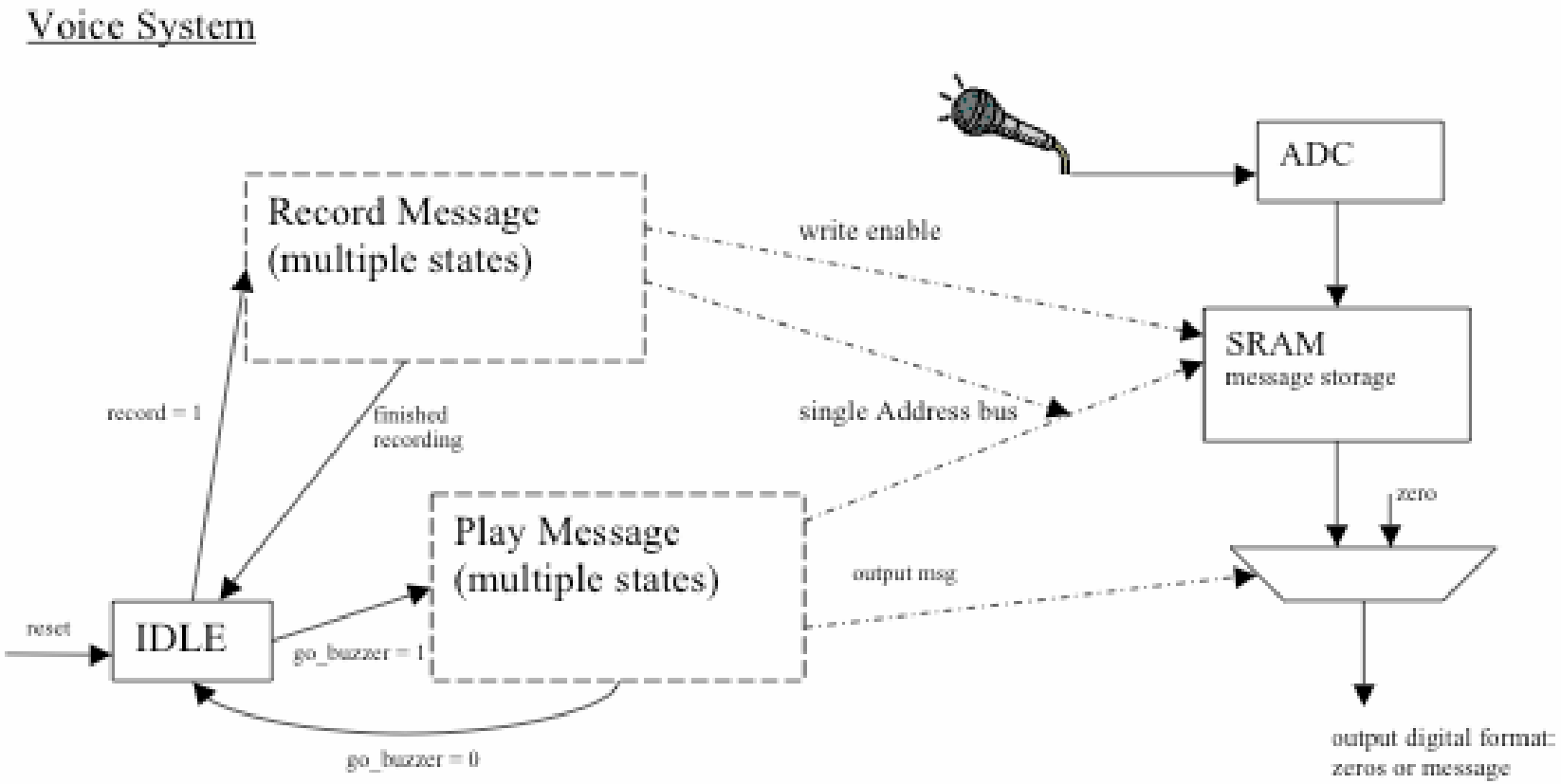
Clock Module



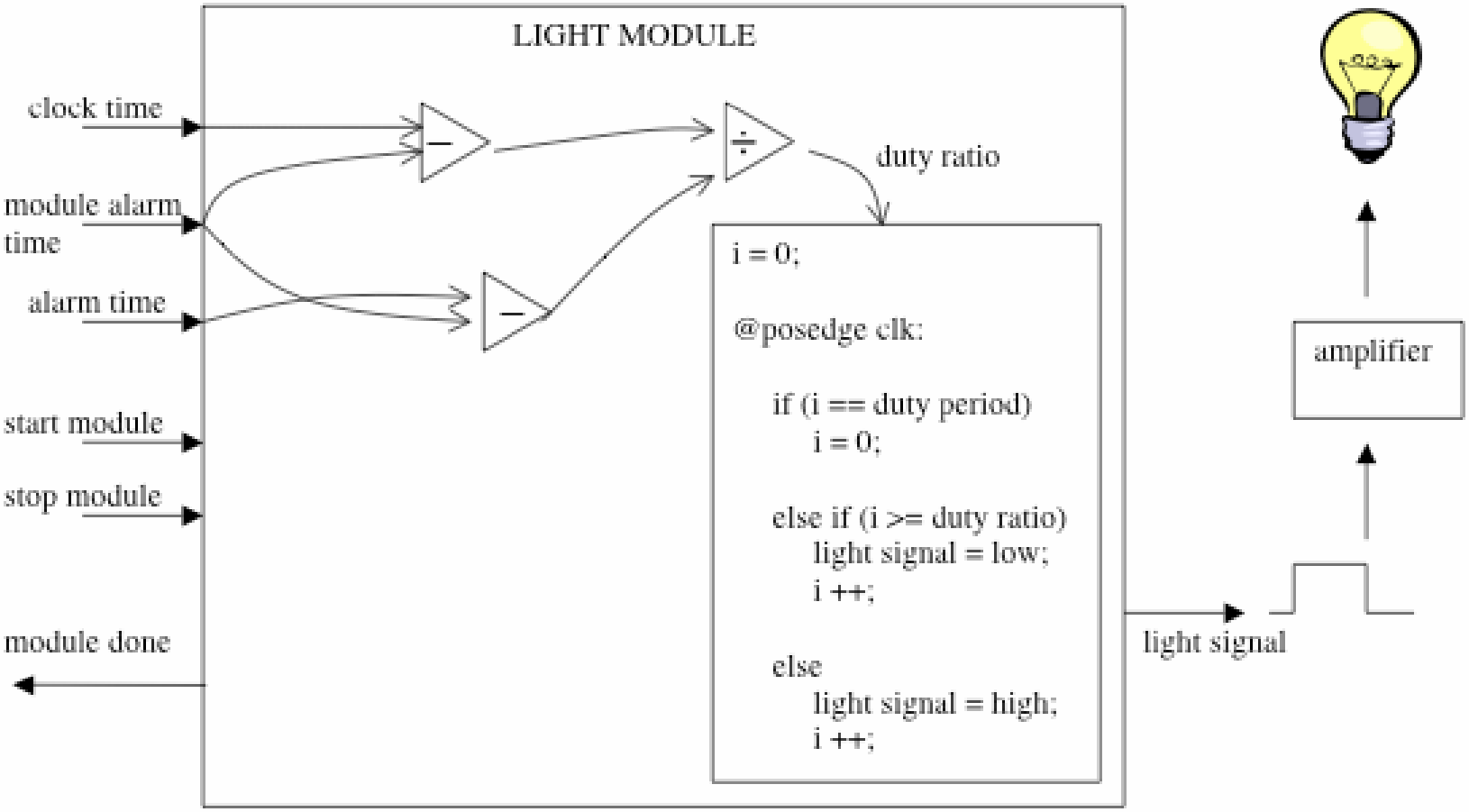
Buzzer Module



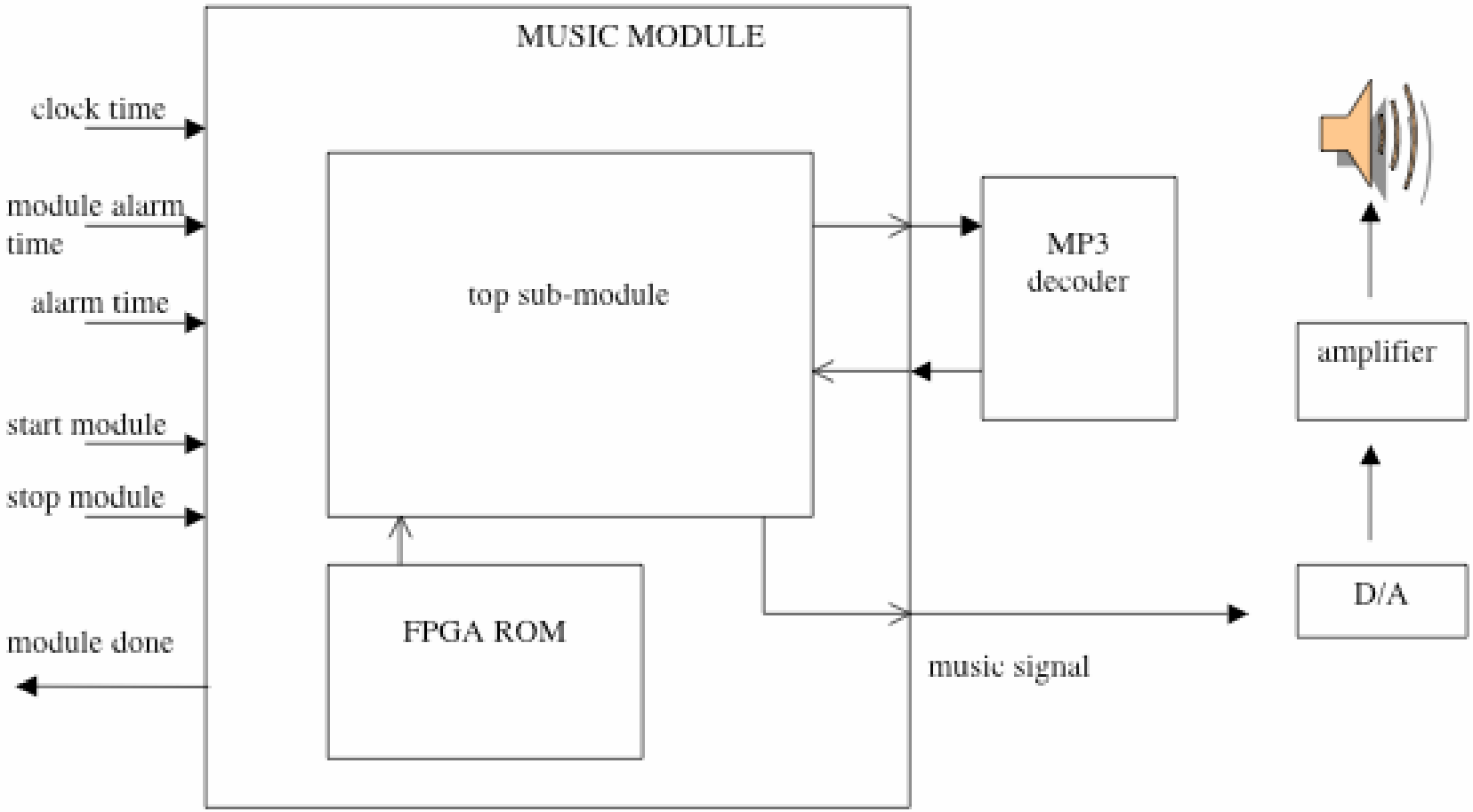
Voice Memo Module



Light Module



Music Module



If there’s time…

- Read MP3’s from a directory/file structure on a Flash card
- Provide fade-in/fade-out for individual audio sources to prevent overlap
- Add additional options for each alarm function
- Multiple alarms
- Gradually increasing rate of change for menu parameters

QUESTIONS?