

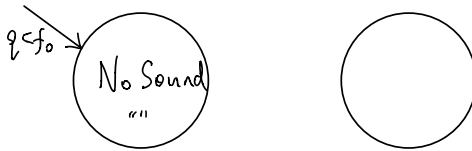
Main Logic (processFreq) state machine diagram:

current frequency :  $q$   
expected frequency :  $a$   
error allowance rate :  $\epsilon$   
error range :  $[2^{-\frac{\epsilon}{12}} a, 2^{\frac{\epsilon}{12}} a]$   
least stable time :  $\Delta t$   
detect sound threshold :  $f_0$

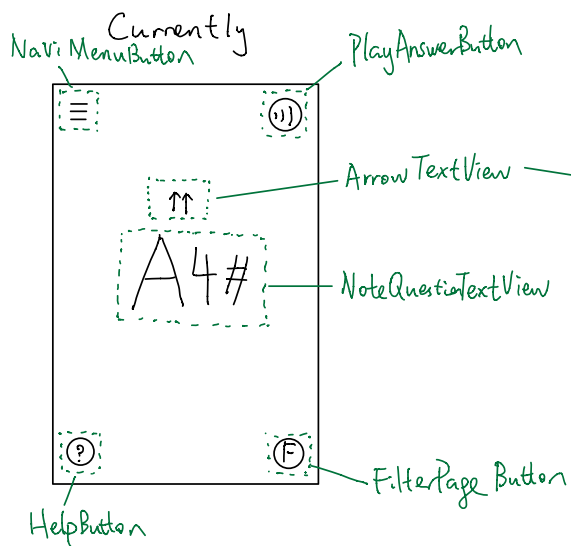
error warning factor :  $C$

second error range :  $C \times \text{error range}$

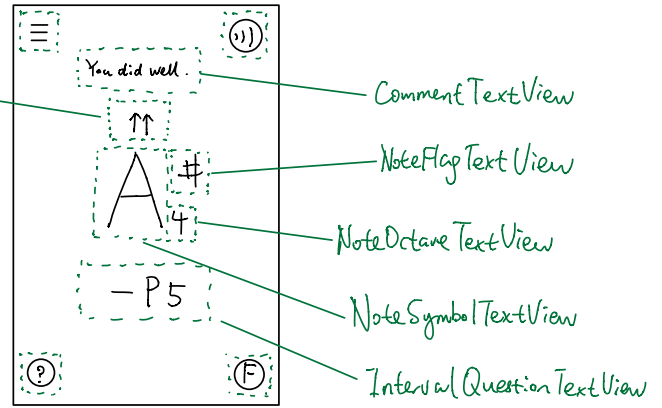
TOPO



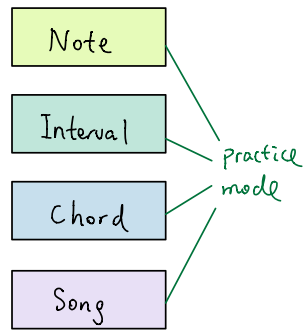
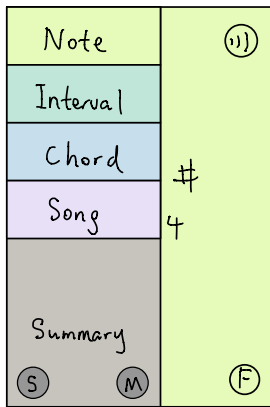
## General Main Screen



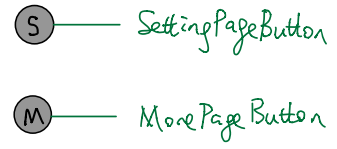
## Ideally



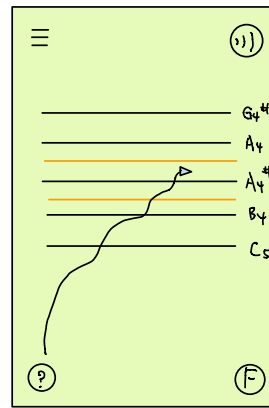
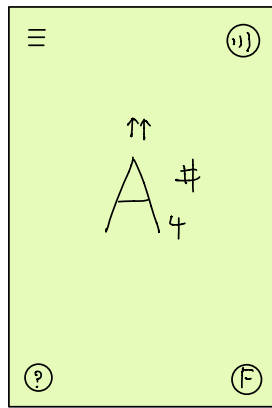
## Navi Menu



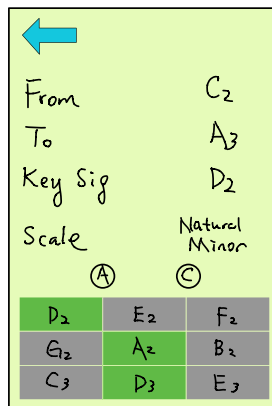
## Summary



## Note Practice Mode



## Note Practice Filter Page



↙ can be more intuitive design  
 Ⓐ: select/unselect all  
 e.g. toggle to select all  
 toggle again to unselect all

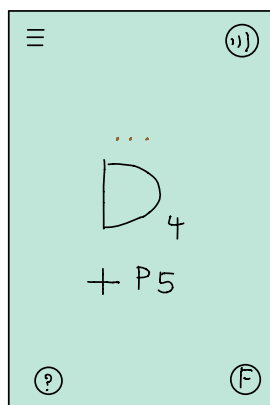
Ⓒ: select complement  
 e.g.  $U = \{1, 2, 3, 4, 5\}$

selected  $\rightarrow S = \{3, 5\}$

toggle  $\Rightarrow S \leftarrow U \setminus S$

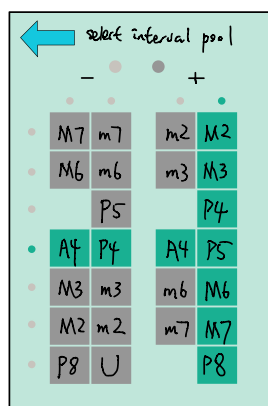
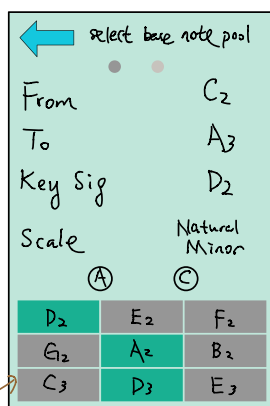
toggle again  $\Rightarrow S \leftarrow U \setminus S$

# Interval Practice Mode



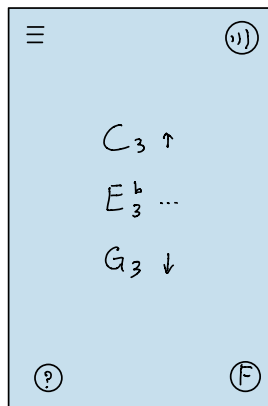
- ①)
- single tap:  
play D<sub>4</sub>
  - long press:  
play A<sub>4</sub>

## Interval Practice Filter Page



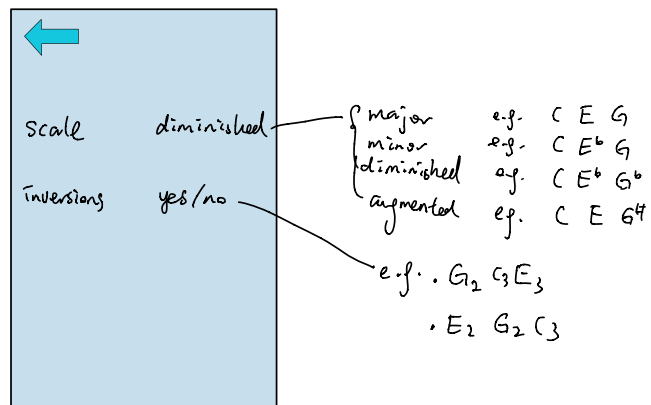
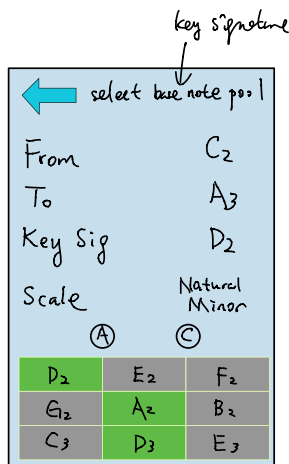
note pool generated by the filters  
(candidate notes) above

# Triad Practice Mode



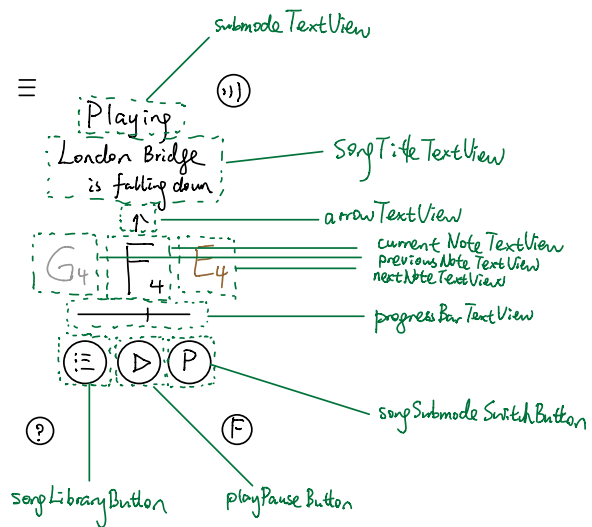
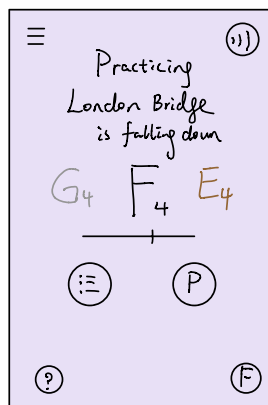
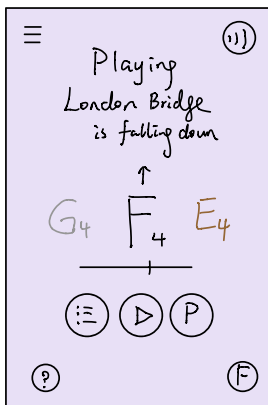
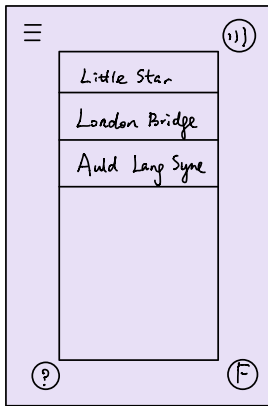
- single tap:  
play chord
- long press:  
play notes  
in order

# Triad Practice Filter Page

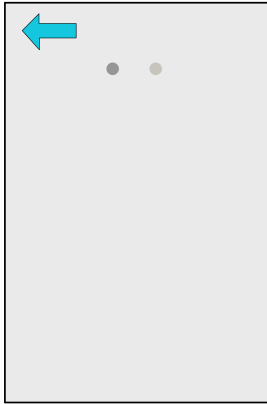


# in this case  
key signature pool will be  
{D2, A2, D3}

# Song Practice Mode



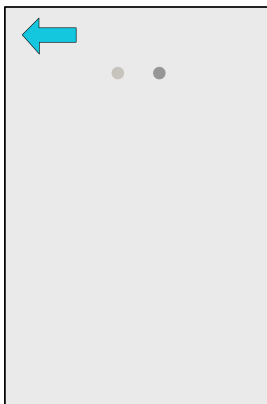
# Setting Page



toggle

- auto play back  
answer when  
correct
- debugging mode  
(show current pitch...)

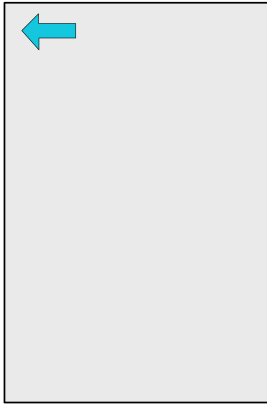
hardcore



error allowance rate :  $\epsilon$   
error warning factor :  $C$   
least stable time :  $st$   
detect sound threshold :  $f_0$



## More Page



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## Summary Page



- Graph ?
- Top 10 notes mastered :
- Need to practice notes :