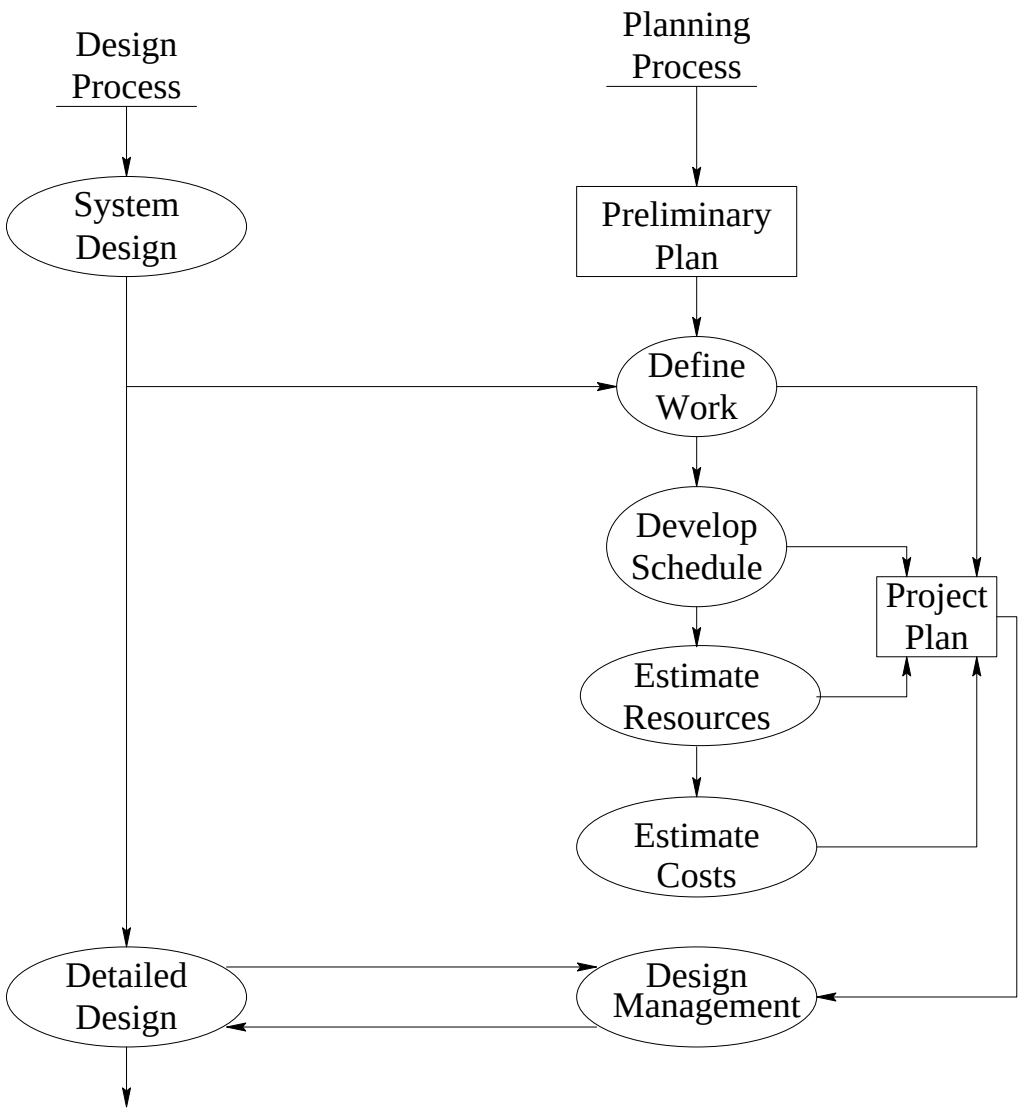
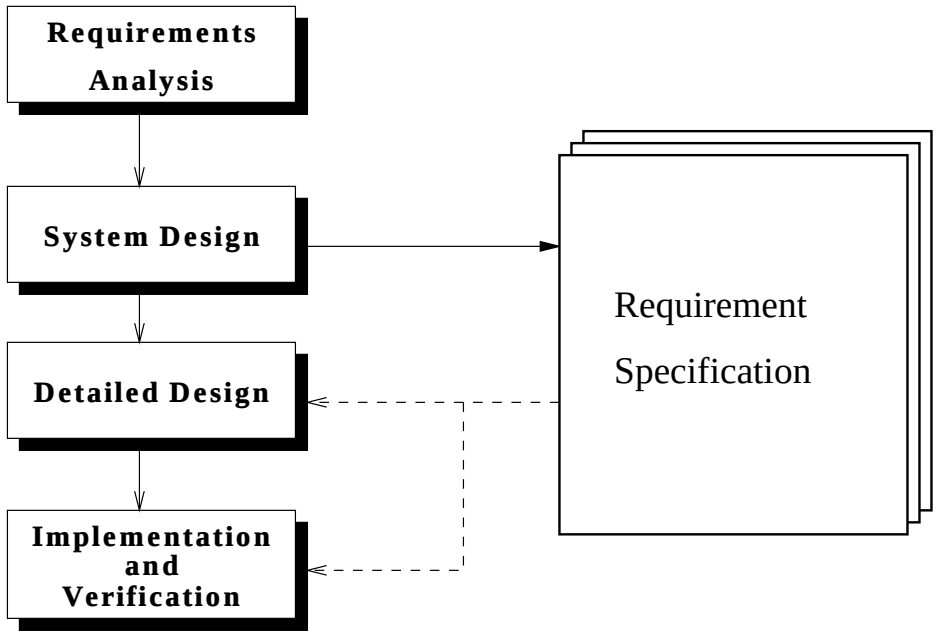
Parallel Activities



Requirements Specifications



Two-stage approach for developing a requirements specification

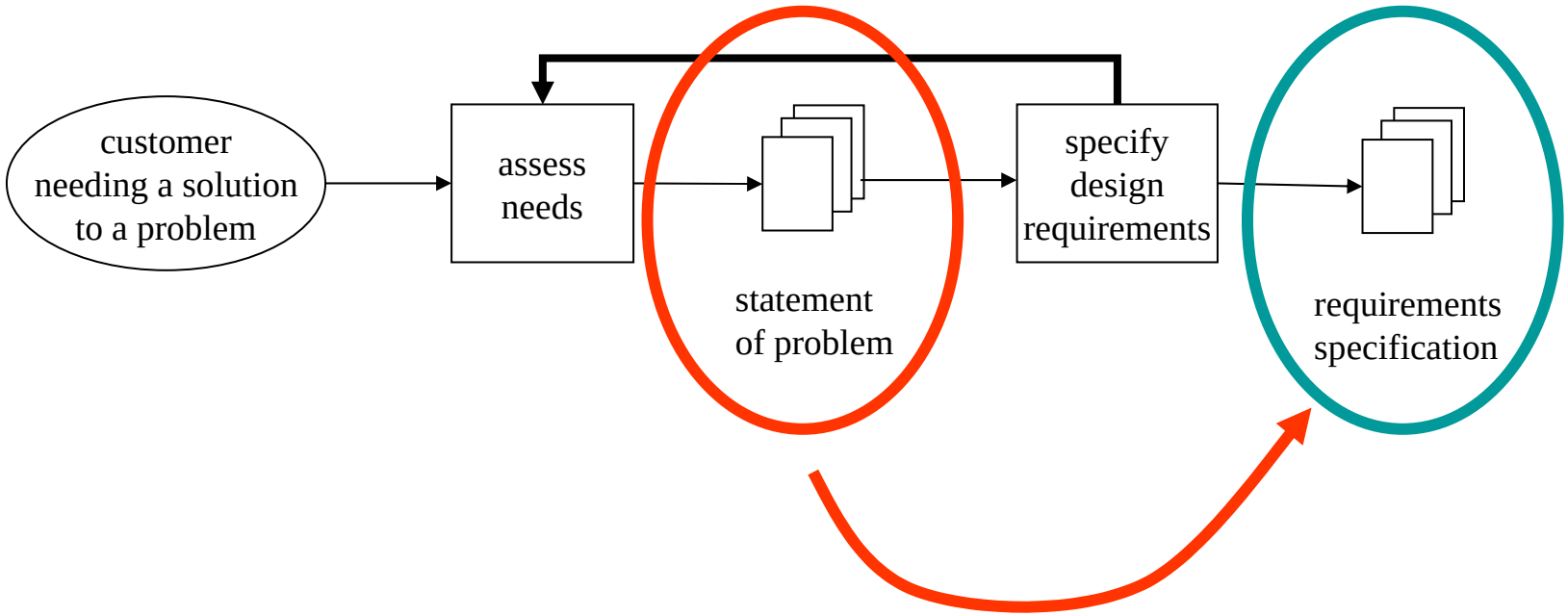


Illustration:
Digital Logic Probe

(go to Acrobat)

AGMC

\+ **tuner**

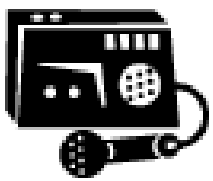
manufacturer/marketer acoustic guitars

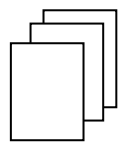
Lynn Strum
Director of Technology

Sarah Defoe
Systems Design LTD
Senior Engineer

Rob Sullivan
consulting engineer

guitar tuner

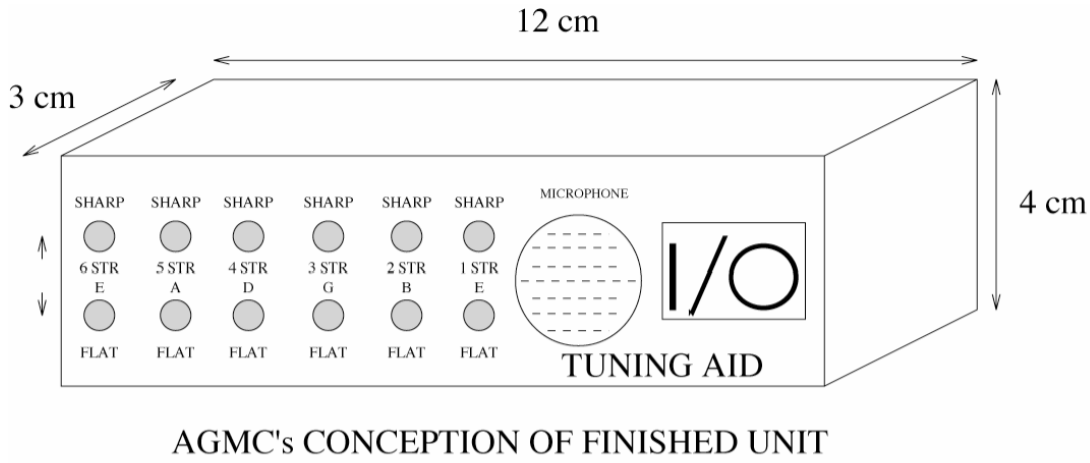




requirements specification

Rob Sullivan
consulting engineer

requirements specification



AGMC's CONCEPTION OF FINISHED UNIT

Statement of Problem

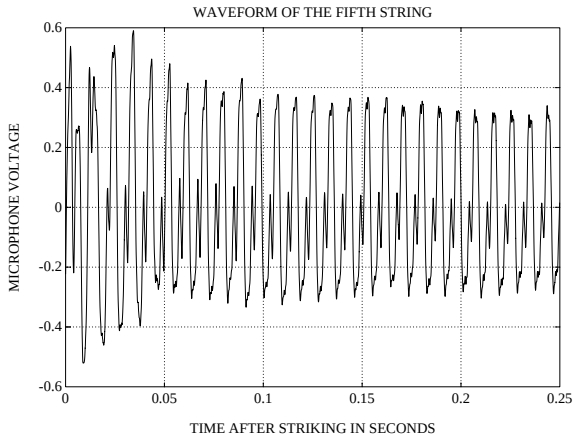
- Background
- The Design
  - blah
  - blah
  - blah
- Deliverables of Design Project

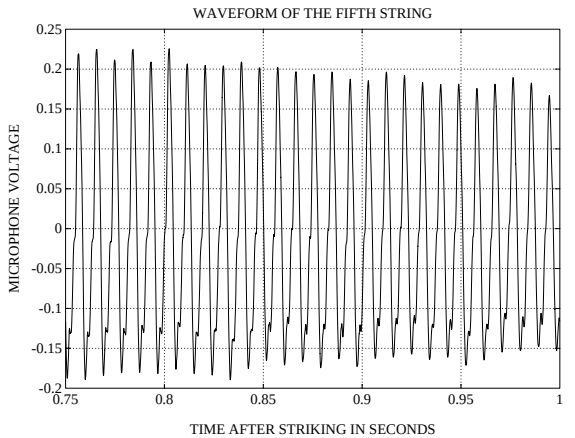
Requirements Specification

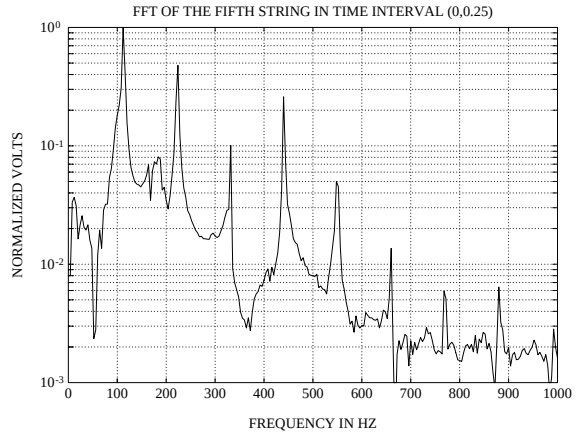
- Background
- The Deliverables
- Principle of Operation
- User Interface
  - Input
  - Output
- User's Manual
- Acceptance Tests
  - Tuning
  - LED Brightness and lighting sequence
- Product Cost
- Dispute Resolution Mechanism

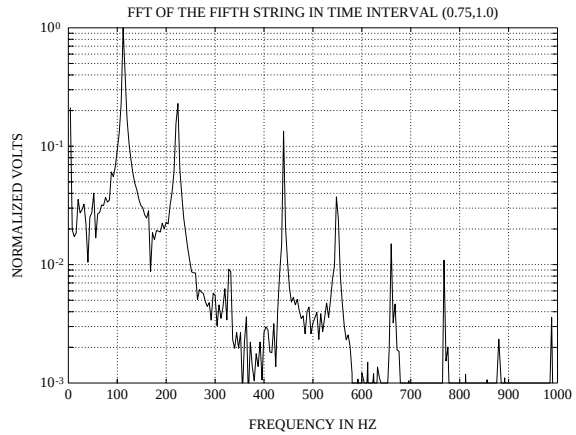
Input: Rob does tests

5th string A below middle C









time domain

frequency domain

Specification of Input

Device placed 1 to 2 feet from the center of the hole at any angle from 0 to 30 degrees off the perpendicular. Measurements have suggested that these levels can vary from 70 to 84 dB. The background noise levels during tuning should be less that 60 dB and relatively broad band in nature

String	Note	Fundamental (Hz)	Deviation of 6 cents (Hz)
6	E	82.41	0.286
5	A	110.00	0.382
4	D	146.83	0.510
3	G	196.00	0.680
2	B	246.94	0.857
1	E	329.63	1.144

Specification of Output

LED output

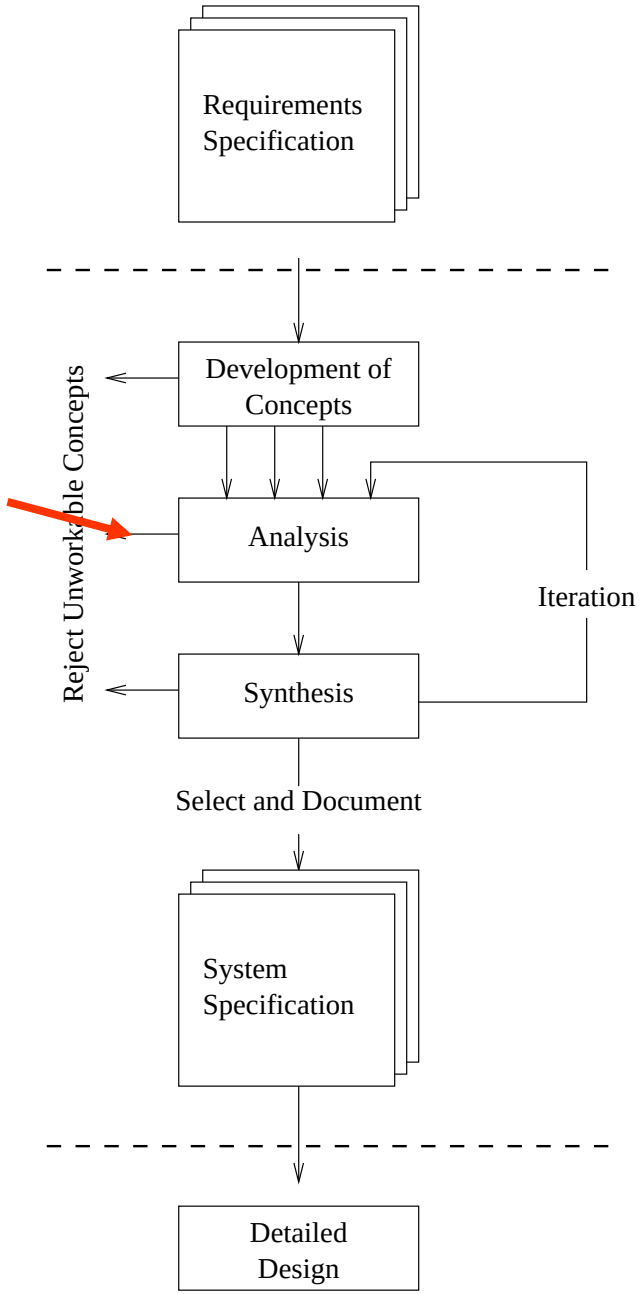
- With no input, both LEDs off.

- If the string is sharp by more than 6 cents, the top LED should turn on within one second of the plucking and stay on for one to two seconds.
The bottom LED should remain off.

- If the string is sharp by 2 to 6 cents, the top LED should turn on within one second of the plucking and stay on for one to two seconds, as above.
The bottom LED may remain off or act as the top LED.

- If the string is within 2 cents of the true pitch, both LEDs should turn on within one second of the plucking and stay on for one or two seconds.

system block diagram
(assignment #3)

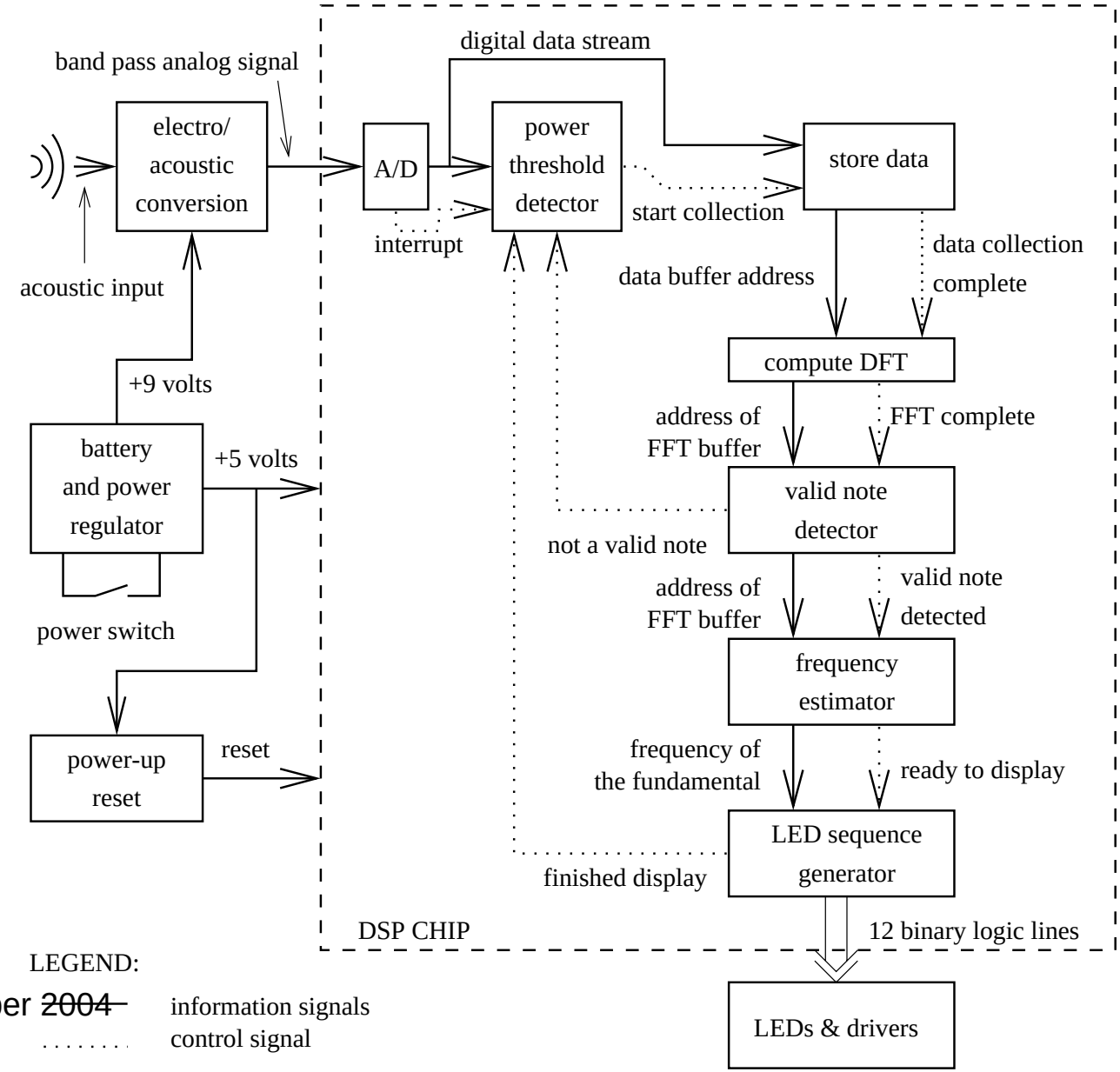


System Design

guitar tuner
pp. 147 - 156

System Block Diagram

due 14th October, 2004



Reading Assignment

Section 4.1 – 4.4
Section A.4.1 – A.4.8

All-course meeting next week
7 October 2004