



Microprogramming

Microprogramming Main Points/Terminology

- Difference between **hardwired** control unit and **microprogrammed** control unit
- **Microprogram**
 - **Microinstruction**
 - **Macroinstruction**
- **Control store** and **micro-branching**
- **Horizontal** and **vertical** microprogramming

Important Trends/Concepts that Led to Microprogramming

- 1940's – **Stored program computers**
 - Program instructions can be stored in memory along with data and can be manipulated like data
- 1947 – MIT Whirlwind
 - real-time flight simulator
 - **control store**
 - **two-dimensional lattice**
 - rows – time sequence
 - columns – control signals