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Basics of Audio Systems

Audio

- The Electronic representation of Sound

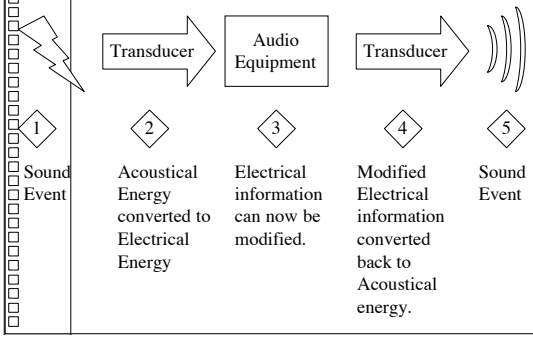
Basic Signal Path

- Outputs always connect to:
- Inputs

Signal Flow Charts

- Critical to design of systems
- Drawn by designer
- Used by crew to build system

High level View

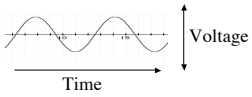


Transduction

- The conversion of one form of energy into another
- In our case, acoustical to electrical
- Or, electrical to acoustical

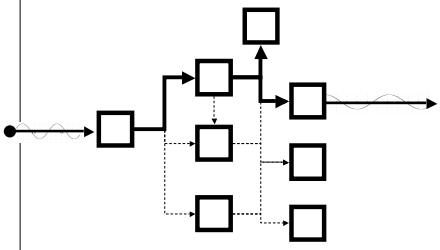
Signal

- Audio information
- Can be either analog or digital
- Analog is a voltage
- Must travel along circuitry at close to speed of light or be stored.
- Otherwise, information is lost.



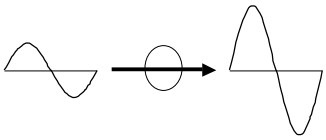
Signal Path

- The specific route that a signal travels through the possible circuits



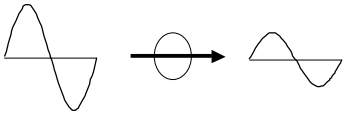
Gain

- Amplification factor of a circuit
- Expressed in power or voltage
- Every circuit has a gain between input and output



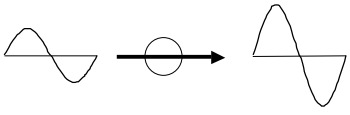
Negative Gain

- If the Output power < Input Power



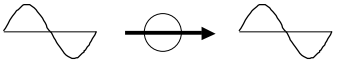
Positive Gain

- If the Output power > input power



Unity Gain

- If the power of the input = power of output



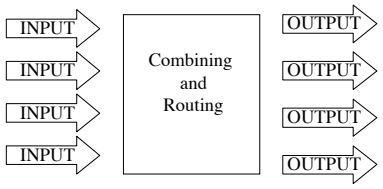
Gain Stage

- Every circuit in the signal path that has a control to modify the gain of that circuit.

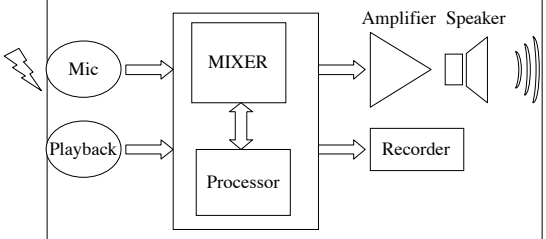
Three levels of audio

- Mic level
- Line Level
- Power Level

The Signal Paths in any System



Basic System Relationships



Types of Inputs

- Microphone
- Playback
- Synthesis

Types of Outputs

- Outputs to speaker systems
- Outputs to recorders
- Outputs to broadcast
- Outputs to Analysis or Monitoring

Microphone

- Converts sound to electricity

Playback

- Plays back recorded audio data

Mixer

- Mixes multiple sources into one or more outputs

Processing

- Changes the audio in some way

Amplifier

- Boosts line level signal to power level to drive speakers

Speaker

- Converts electricity to sound