

# Ηχητική Τέχνη



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Διδάσκων / Ερευνητής  
Τμήμα Τεχνών Ήχου & Εικόνας  
Ιόνιο Πανεπιστήμιο

AUDIO  
VISUAL  
ARTS



## 02. Σταθμός Εργασίας

# Λογισμικό Ψηφιακής Επεξεργασίας

- **Text-based Coding**

Εισαγωγή κώδικα

Ορισμός διεργασιών και παραμέτρων

Ανάκληση αναπαραγωγής εντός/εκτός πραγματικού χρόνου

- **Visual Programming**

Ρουτίνες ως οπτικά αντικείμενα

Διασύνδεση αντικειμένων για ροή πληροφορίας

Συναρμολόγηση διαδραστικών συστημάτων

- **Graphical Interface**

Έτοιμο περιβάλλον διεπαφής με επιλογές εξατομίκευσης

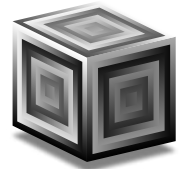
Εισαγωγή ηχητικού υλικού προς επεξεργασία

Ολοκληρωμένη αλυσίδα παραγωγής

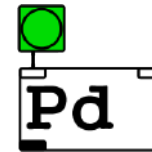
GNU Octave



SuperCollider



PureData



Max



Reaper



Audacity



Cubase

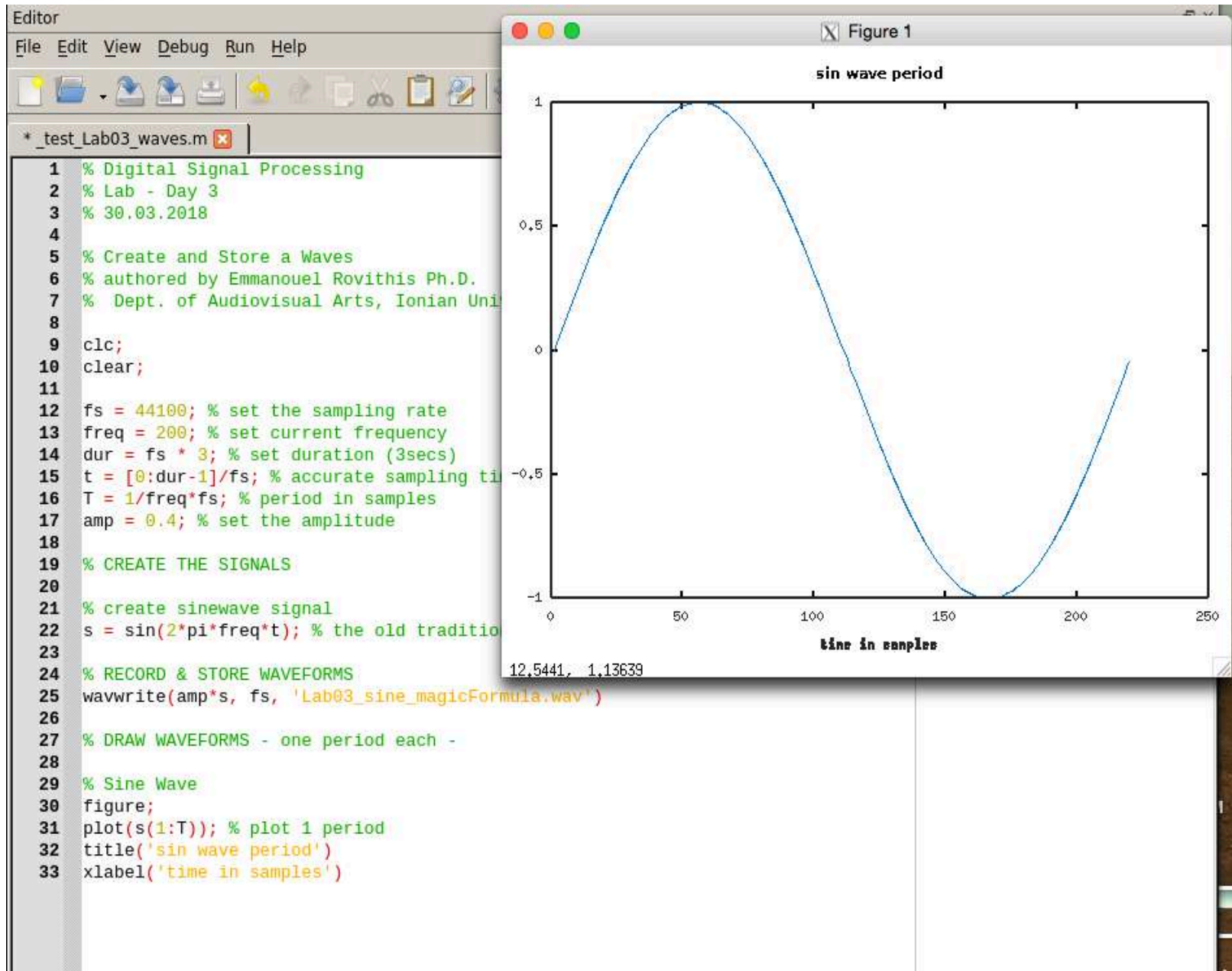


Pro Tools

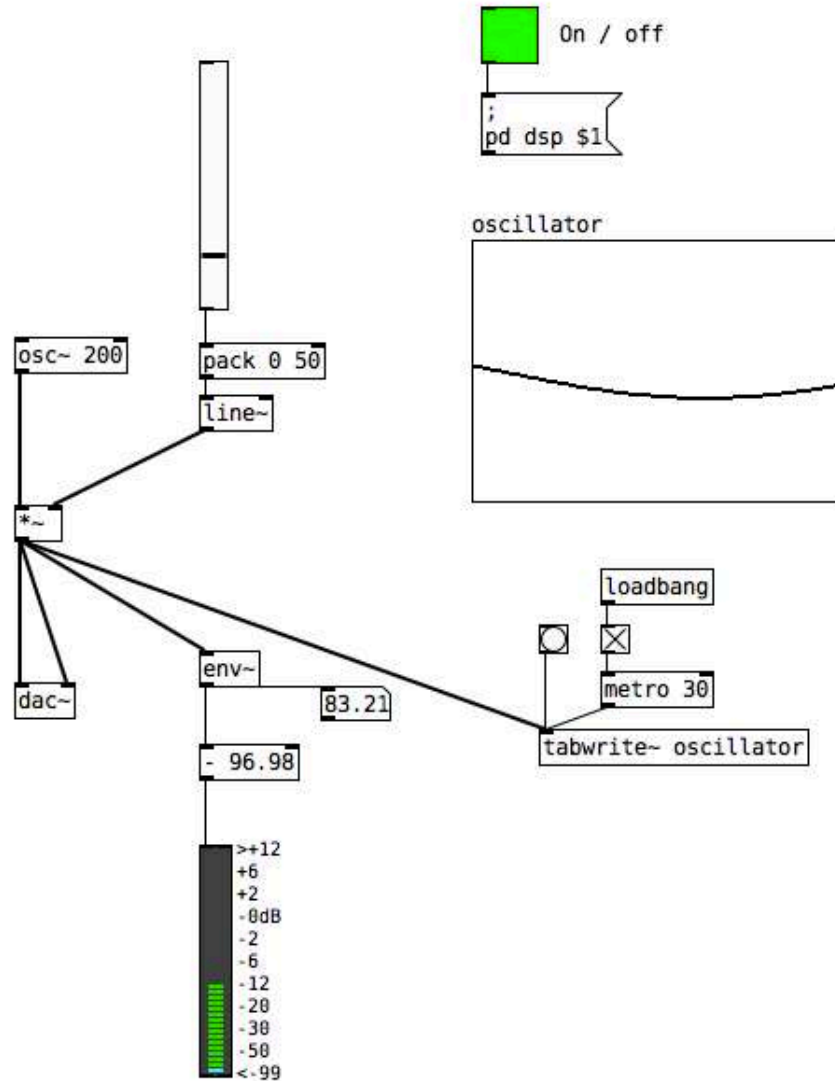
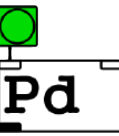




# Παράδειγμα Text-based Coding: GNU Octave

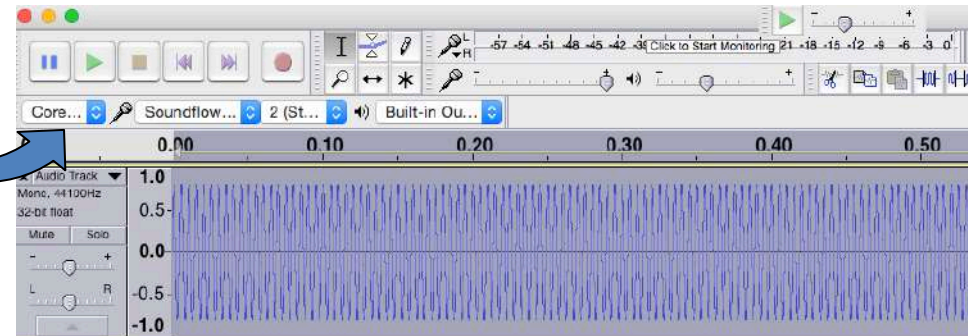
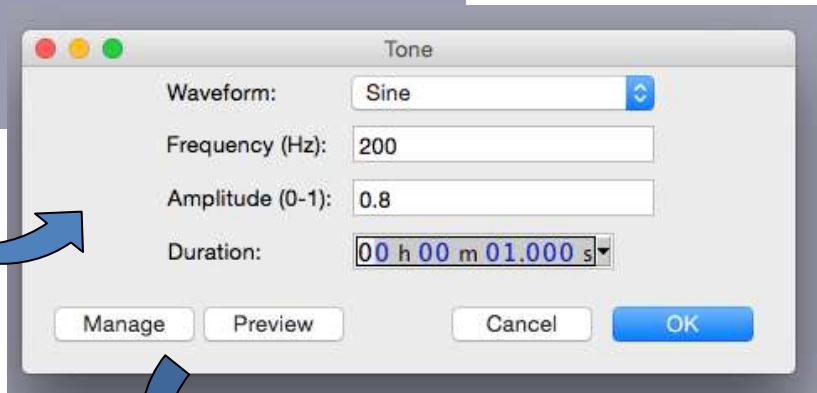
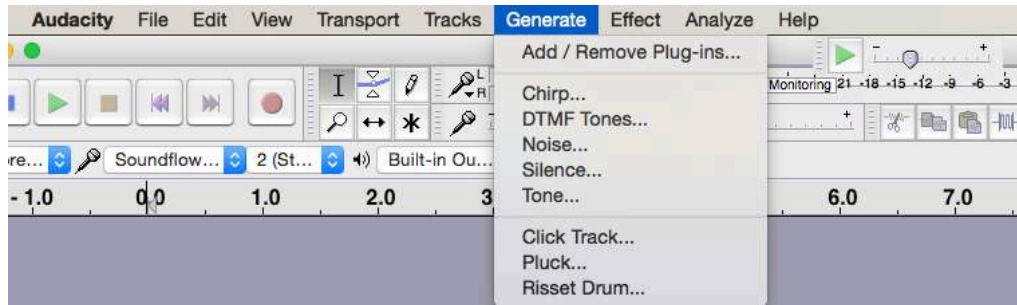


# Παράδειγμα Visual Programming: Pure Data





# Παράδειγμα Graphical Interface: Audacity





# Σταθμοί εργασίας ήχου (DAW – Digital Audio Workstation)

- **Software/Hardware Modules**

**Sampler** >> φόρτωση και ανάκληση ηχητικού αρχείου, editing, pitch-shift, time-stretch, reverb

**Sequencer** >> τοποθέτηση ηχητικών συμβάντων σε επαναλαμβανόμενη σειρά, σε “πλέγμα” (grid)

**Editor** >> απομόνωση ήχου για εξειδικευμένη επεξεργασία ηχητικών παραμέτρων

- **Software VST (Virtual Studio Technology)**

**Virtual Instruments** >> εικονικές αναπαραστάσεις φυσικών και ηλεκτρικών μουσικών οργάνων, ηλεκτρονικοί συνθετητές

**Plug-in Fxs** >> μονάδες ηχητικής επεξεργασίας

- **Διασυνδεσιμότητα**

**Πρωτόκολλο MIDI (Musical Instrument Digital Interface)**

>> προδιαγραφές ηχητικού συμβάντος

**Πρωτόκολλο OSC (Open Sound Control)**

>> δυναμική αποστολή ηχητικών δεδομένων μέσω δικτύου

**Ελεγκτές / Αισθητήρες**

>> χειροκίνητος έλεγχος, ενδείξεις πίεσης, εγγύτητας, φωτεινότητας



# Παράδειγμα DAW: Cubase SX

The image shows the Cubase SX software interface. At the top, the title bar reads "Cubase SX Project - BackSelf.cpr". Below it is a menu bar with options: File, Edit, Project, Audio, MIDI, Scores, Pool, Transport, Devices, Window, Help. A toolbar contains various icons for playback and editing, including a "Touch Fader" dropdown, and a status bar showing "1/16".

The main workspace is divided into several sections:

- Left Panel:** Contains controls for "FloatLoop 02", including volume and pan knobs, and a list of "Inserts" (Equalizers, Sends, Channel, Notepad).
- Mixer:** Shows tracks 1 through 6. Track 1 is "Audio 01" (Stereo). Tracks 2 and 3 are "MIDI 02" and "MIDI 01" respectively. The mixer includes sections for "VST Instruments", "Embracer" (with Embracer and Master Volume), and "V-Station" (with V-Station and No Title).
- Piano Roll:** Displays a grid for tracks 1, 2, and 3. Track 1 has a loop labeled "Loop, Loop, Loop, Loop" starting at measure 4. Tracks 2 and 3 have MIDI notes starting at measure 4.



# Παράδειγμα DAW: Audition

The screenshot displays the Adobe Audition interface for a session named "InNoSense.ses". The interface is divided into several panels:

- Files Panel:** Lists audio files such as "ChordDoppler.wav", "HappyHit.wav", "HitRvb.wav", "IntroElafaki.wav", "Loop02Doppl.wav", "Loop03.wav", "Loop03rev.wav", "LoopAb\_01.wav", "MeloHits.wav", "OpenNote.wav", "OpenNoteEnv.wav", "OpenNoteRevRvb.wav", "piano\_couperinFast2 [Missing].w", and "Xe-krousiHigh.wav".
- Mixer Panel:** Shows the main mix with tracks for "move", "L 25", "MAIN", "R 25", "SUPP", "Track 6", and "Master". Each track has volume and pan controls.
- Waveform Panel:** Displays the audio waveforms for the selected tracks, with a time axis from 0:00 to 2:00.
- Transport Panel:** Contains playback controls (stop, play, record, etc.) and a time display showing 2:10.000.
- Selection/View Panel:** Shows a table with columns for "Begin", "End", and "Length".

	Begin	End	Length
Selection	2:10.000		0:00.000
View	0:00.000	3:14.215	3:14.215

# Παράδειγμα DAW: Ableton Live

File Edit Insert View Options Help

The screenshot displays the Ableton Live software interface. At the top, the menu bar includes 'File Edit Insert View Options Help'. Below it, the transport controls show a tempo of 130.00, a time signature of 4/4, and a bar count of 0. The main session view features 14 tracks: 1 Audio, 2 L80s-1, 3 Audio, 4 Audio, 5 Z-Groove, 6 Tom Designe, 7 Harmoni, 8 Techtoni, A Return, B Return, and Master. Each track has a clip slot with a play button and a volume knob. The '1 Audio' track contains a clip named 'LOOP\_mAR'. The '2 L80s-1' track contains a clip named '1 2-Spectral'. The '3 Audio' track contains a clip named '\_Gbalcony'. The '4 Audio' track contains a clip named 'IMPRO\_2\_F'. The '5 Z-Groove' track contains a clip named 'Intro'. The '6 Tom Designe' track contains a clip named 'Tom Designer R'. The '7 Harmoni' track contains a clip named '7 Harmoni'. The '8 Techtoni' track contains a clip named '8 Techtoni'. The 'A Return' track contains a clip named 'A Return'. The 'B Return' track contains a clip named 'B Return'. The 'Master' track contains a clip named 'Master'. Below the tracks, there are two rows of 'Sends' controls, each with two knobs labeled 'A' and 'B'. The 'A Return' track has a 'Solo' button and a 'Post' button. The 'B Return' track has a 'Solo' button and a 'Post' button. The 'Master' track has a 'Solo' button and a 'Post' button. On the left side, there is a 'Library: Presets/Audio Effects' panel with a list of effects including Vinyl Distortion, Utility, Spectrum, Simple Delay, Saturator, Reverb, Resonators, Redux, Ping Pong Delay, Phaser, Grain Delay, Wirness.adv, Rush.adv, Rubberband.adv, Grains.adv, Five.adv, Bubbles.adv, Borg.adv, Ascent.adv, Gate, Flanger, Filter Delay, and Erosion. At the bottom, there are three panels: 'Tap Tempo' with a description of the tapping feature, 'Clip' with settings for '1 2-Spectral' (Signature: 4/4, Groove: Swing 8), 'Notes' with settings for 'Orig. BPM: 120.00', 'Start: 1 | 1 | 1', 'End: 2 | \*2', 'Bank: 18 | 1 | 1', 'Sub-Bank: None', 'Position: 1 | 1 | 1', 'Length: 5 | 0 | 0', and 'Envelopes' with settings for 'Pitch Bend', 'Volume', 'Pan', and 'Region/Loop: Linked'. On the right, there is a piano roll view with a red clip on the '1 2-Spectral' track.

**Tap Tempo**

Click here once per beat to set Live's tempo. The metronome and all warped audio clips will follow your tapping. Tapping can also be used to count in: With a 4/4 time, tap four times to start playback at the tapped tempo. Instead of having to click with a mouse, use the KEY or MIDI switches at the right side of the Control Bar to assign Tap Tempo to a remote control.

**Clip**

1 2-Spectral

Signature: 4 / 4

Groove: Swing 8

**Notes**

Orig. BPM: 120.00

Start: 1 | 1 | 1

End: 2 | \*2

Bank: 18 | 1 | 1

Sub-Bank: None

Position: 1 | 1 | 1

Length: 5 | 0 | 0

**Envelopes**

Pitch Bend: Start, End

Pitch Bend: Start, End

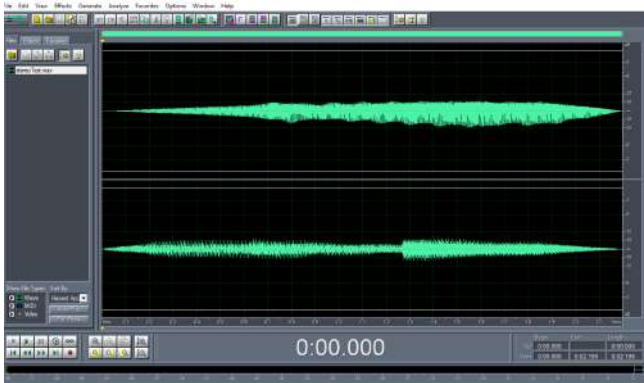
Volume: Start, End

Pan: Start, End

Region/Loop: Linked

The piano roll view shows a red clip on the '1 2-Spectral' track. The clip is positioned at the start of the first measure and extends across the first two measures. The piano roll has a vertical axis for pitch (C2) and a horizontal axis for time (measures 1, 2, 3, 4, 5). The clip is labeled '1 2-Spectral' and has a duration of 5 measures. The piano roll also shows a 'Fold' button and a 'C2' label.

# Παραδείγματα Επιμέρους Εργαλείων



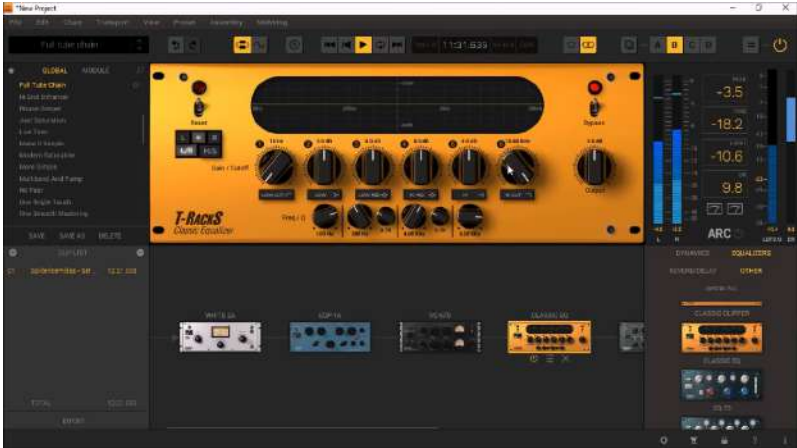
Editor in Cool Edit



Sequencer in FL Studio



Novation Launchpad Mini MK3



T-RackS 5 plugin



Sequencer in Sound Forest

# Αναρωτήσεις..

- Παγκόσμια διάδοση των μέσων ηχητικής σύνθεσης και επεξεργασίας

Ομοιογένεια ήχου

Εξέλιξη ηχητικής σκέψης

Παγκόσμια κουλτούρα

Τεχνολογική εξάρτηση

Νέα εποχή δημιουργών/εκτελεστών

>> the “looping multi-instrumentalist” <https://www.youtube.com/watch?v=uB6pYdO7Dr8>

