Week 1 - Session 1

CW Academy

- Go over Homework and On-The-Air (OTA) activities
- We’re in the middle of the winter contest season:
  - NAQP SSB Exchange is NAME and STATE
  - ARRL VHF+ Exchange is Grid Square (4-chars)
  - <SOAPBOX> **USE PROPER PHONETICS !!!** </SOAPBOX>
- Get on the air!
  - There’s always rags to chew, DX/POTA/SOTA/SES stations ...
- Sending
- Word game drill
  - Animals
  - Colors

CW Sending

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- Sending clean and crisp code is as important as copying
  - Your “fist” is your signature on the air
- General rule of thumb is to never send faster than you can comfortably copy
  - Will depend on conditions and context
- But, as you head copy skills improve, you will likely outpace your “clean” sending speed
- Most CONTEST OPS are using a computer for sending
  - You are encouraged to do this, especially in fast-paced events like the CWTs
- However, a well-rounded CW operator must have a decent “fist” so you need to devote time to practicing sending
- **For class sessions, keep your speed under 18-20 WPM!!!**

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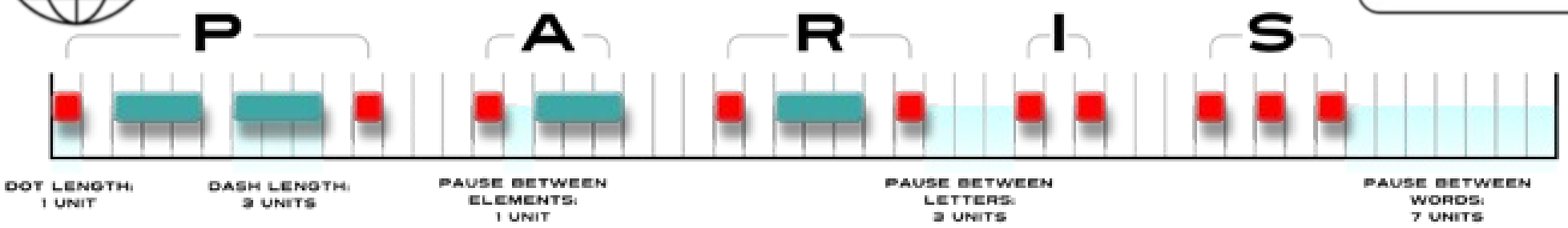
PROPERLY SPACED MORSE CODE TIMING



"PARIS" [at 50 units in length] is used to represent 1 word which can then be divided into a minute to get the WPM rate.

- T = Duration of a dit (seconds)
- "Paris" is the "standard" word length = 50 dits
- WPM = No. Times we can send this standard word in a minute = 60 sec. / (50 T)
- **T = 1.2/WPM seconds**
- e.g. For 25 WPM, each dit is 1.2/25 = 0.048 s = 48 ms

Sending Practice Ideas

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- Devote at least 5-10 min. each day to practicing with your paddles
- List of Panagrams
- List of Call Signs (e.g. from DX Cluster)
- Look around the room and/or send whatever comes to mind or what you might say in a QSO
- BEST: Get on the air and rag chew
- Use your paddles in SST or POTA activations
- Try sending slightly above your comfort zone (off the air)

Evaluate Your Fist

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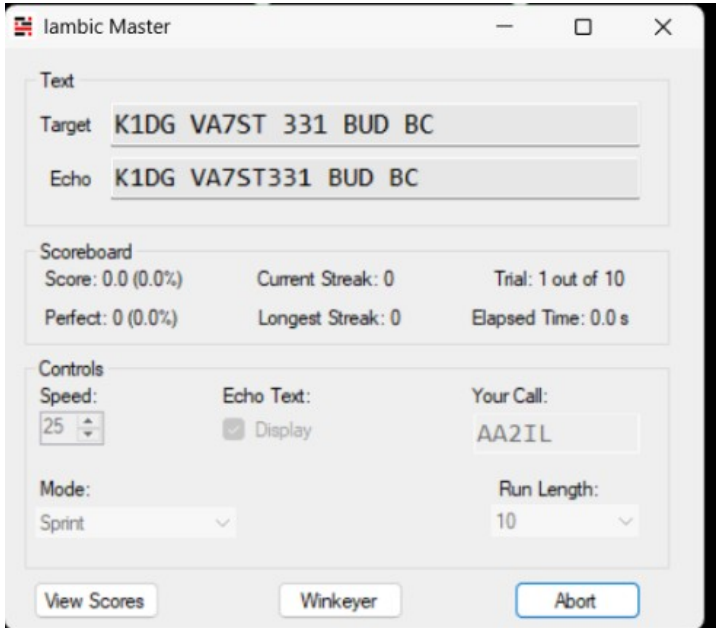
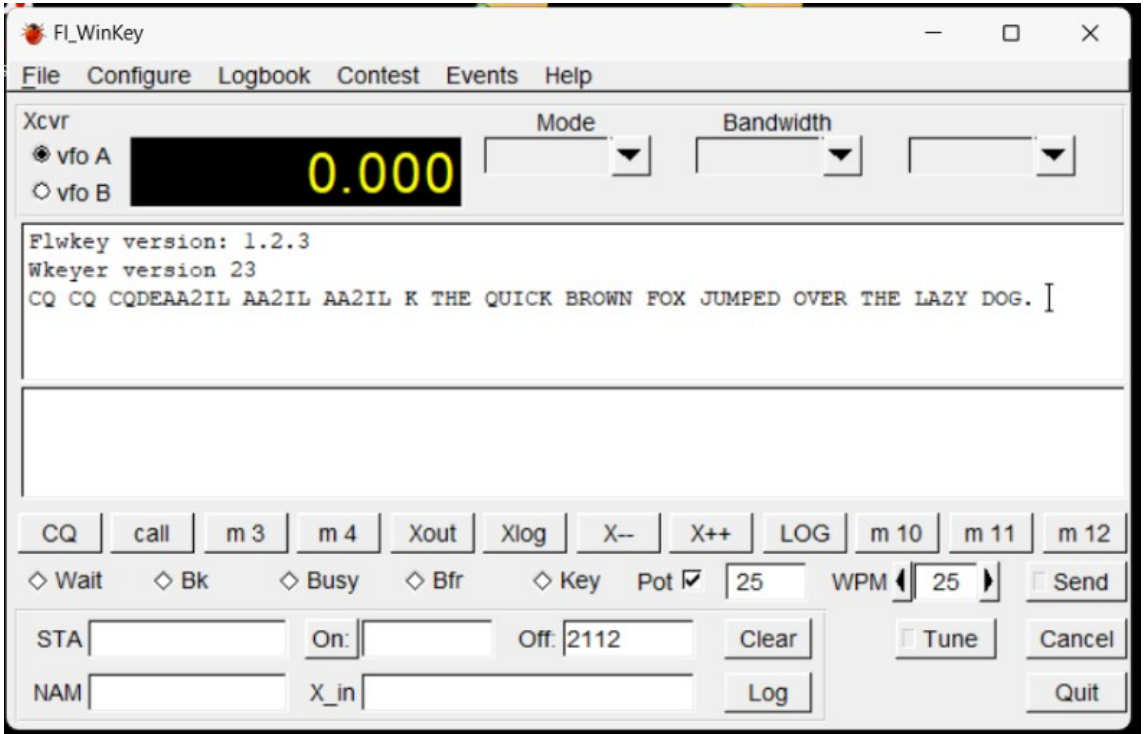
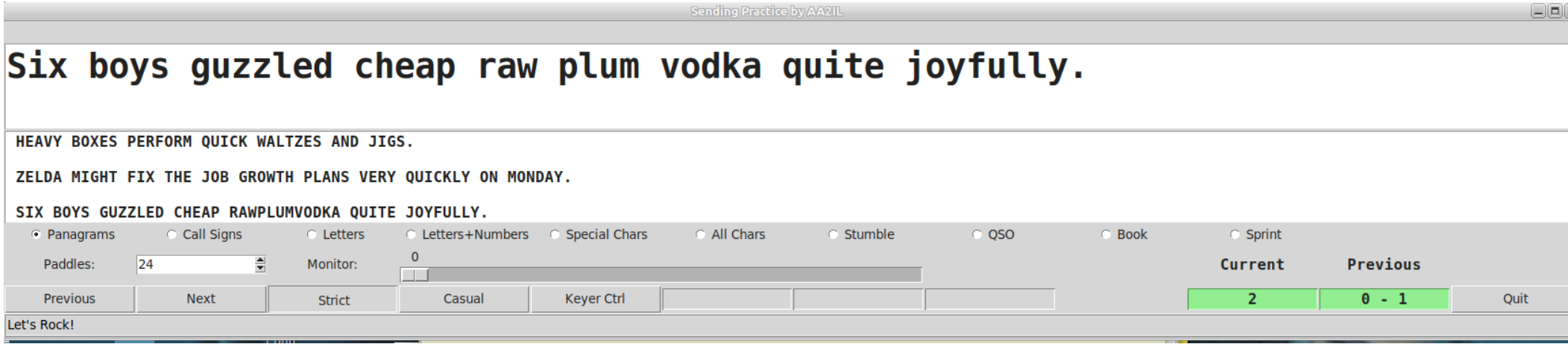
- Programs exist that evaluate your sending
  - Iambic Master + Winkeyer
  - FLwkey + Winkeyer
  - Morseino
  - G4FON Trainer, ...



- Easy/cheap to “role your own” keyer that works with these programs
- Listen to a recording of yourself



Paddling Practice With My Keyer



- Python code is available at https://github.com/aa2il/pyKeyer
- Runs under Linux and Windoz (see README.md)
- Should work with Winkeyer

“Squeeze” Sending

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- CWops encourages use of paddles and electronic keyers
  - Cleaner fist at faster speeds
  - Most ops “hit a wall” at 15-20 wpm using a straight key
  - Eventually, you will hit a wall with a keyer also → keyboard sending
- There are two types of paddles
  - Single lever
  - Dual lever
- With a dual lever paddle, you can “squeeze” the levers together to form letters with alternating dit/dah patterns:
  - Reduces number of “motions” required to form a symbol
  - A, C, K, N, R, period, …
  - Can even combine squeeze technique with “non-squeeze” to form most other symbols
    - L, F, Q, Y, ...

“Squeeze” Sending (cont.)

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- If you don’t “squeeze,” there is no real difference between single and dual-lever paddles
- The advantage of squeezing dual-paddles over a single-lever paddle is not nearly as much as using an electronic keyer over a straight key
  - The HST guys use single-lever paddles because less prone to making mistakes
- There are two Iambic “squeeze” modes:
  - Mode A: Sending stops after current element is sent
  - Mode B: Alternate element is sent before sending stops
- Excellent video demonstration by AA4OO:
  - https://www.youtube.com/watch?v=6R4t3Wq1Gic

Homebrew Arduino Nano Keyer/Code Practice Oscillator

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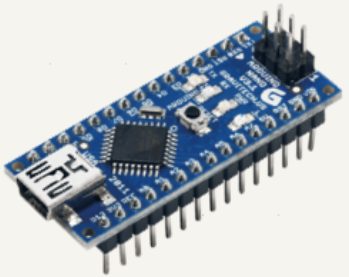
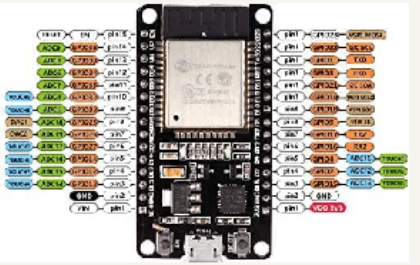
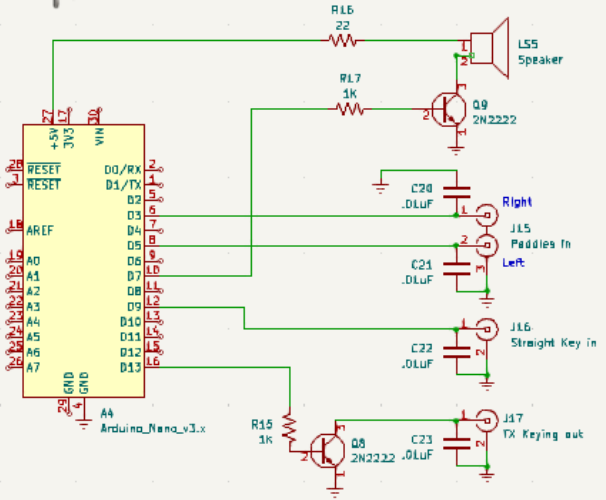
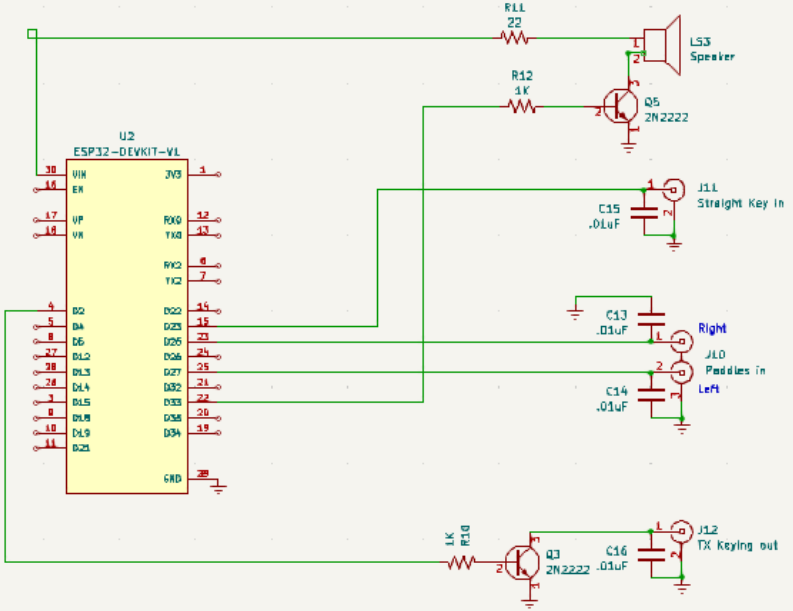
- A number of keyers are commercially available and are quite popular, e.g.
  - Winkeyer
  - Morseruino
- You can easily “roll your own” using a micro-controller (Arduino, ESP-32, ...)
  - This is a much cheaper option, especially if you have a well-stocked junk box
  - K3NG – Has every feature imaginable and includes Winkeyer emulation
  - Fldigi Nano IO (W1HKJ) – easily fits in an arduino nano
- I use adaptations of both the Nano IO and K3NG/Winkeyer emulator
  - Full schematics and firmware source are available at https://github.com/aa2il/nanoIO
  - Doubles as a code practice oscillator and gives you feedback on your timing
  - Minimal parts count









AA2IL

Sheet: /ESP32 Keyer1/

File: ESP32-Keyer.kicad_sch

Title: Two versions of bare-bones keyer

Size: A4	Date:	Rev:
KiCad E.D.A. kicad 7.0.10-7.0.10-ubuntu22.04.1		Id: 4/4