Challenge Description : # Hidden Beeps

Participants receive an audio recording that sounds like a noisy telephone line with irregular beeping sounds.

The objective is to determine that these sounds are not random noise but are encoded using DTMF tones, a signaling system used in telecommunication.

What is DTMF?

DTMF (Dual-Tone Multi-Frequency) is the system used by telephone keypads.
Each key press generates two simultaneous frequencies.

Key	Frequencies (Hz)
1	697 + 1209
2	697 + 1336
3	697 + 1477
4	770 + 1209
5	770 + 1336
6	770 + 1477
7	852 + 1209
8	852 + 1336
9	852 + 1477
0	941 + 1336
*	941 + 1209
#	941 + 1477

Each beep in the audio corresponds to one of these keys.

File Analysis

Listening to the audio reveals:

short beeping tones

irregular spacing

telephone-line style noise

These indicators suggest tone-based encoding rather than voice data.

Tool Used ////////////////////////////////
multimon-ng

Full Name: MultiMon-NG
Type: Signal decoder
Purpose in this challenge: Decode DTMF tones

Installation :
```
sudo apt install multimon-ng
```
Command Used :
```
multimon-ng -a DTMF -t wav call_recording.wav
```

Output Obtained :

```
[kali@kali]—[~/Desktop/cscc tour /challenge6-w4v]
└──- multimon-ng -a DTMF -t wav call_recording.wav

multimon-ng 1.3.1
  (C) 1996/1997 by Tom Sailer HB9JNX/AE4WA
  (C) 2012-2024 by Elias Oenal
Available demodulators: POCSAG512 POCSAG1200 POCSAG2400 FLEX
FLEX_NEXT EAS UFSK1200 CLIPFSK FMSFSK AFSK1200 AFSK2400
AFSK2400_2 AFSK2400_3 HAPN4800 FSK9600 DTMF ZVEI1 ZVEI2 ZVEI3
DZVEI PZVEI EEA EIA CCIR MORSE_CW DUMPCSV X10 SCOPE
Enabled demodulators: DTMF
DTMF: 6
DTMF: 7
DTMF: #
DTMF: 8
DTMF: 3
DTMF: #
DTMF: 6
DTMF: 7
DTMF: #
DTMF: 6
DTMF: 7
DTMF: #
DTMF: 1
DTMF: 2
DTMF: 3
DTMF: #
DTMF: 1
DTMF: 0
DTMF: 0
DTMF: #
DTMF: 1
DTMF: 1
DTMF: 6
DTMF: #
DTMF: 1
DTMF: 0
DTMF: 9
DTMF: #
DTMF: 1
DTMF: 0
DTMF: 2
DTMF: #
DTMF: 9
DTMF: 5
DTMF: #
DTMF: 5
DTMF: 2
DTMF: #
DTMF: 1
DTMF: 1
DTMF: 7
DTMF: #
DTMF: 1
DTMF: 0
DTMF: 0
DTMF: #
```

```
DTMF: 4
DTMF: 9
DTMF: #
DTMF: 4
DTMF: 8
DTMF: #
DTMF: 9
DTMF: 5
DTMF: #
DTMF: 1
DTMF: 1
DTMF: 6
DTMF: #
DTMF: 1
DTMF: 1
DTMF: 4
DTMF: #
DTMF: 5
DTMF: 2
DTMF: #
DTMF: 1
DTMF: 1
DTMF: 0
DTMF: #
DTMF: 1
DTMF: 1
DTMF: 5
DTMF: #
DTMF: 1
DTMF: 0
DTMF: 9
DTMF: #
DTMF: 4
DTMF: 9
DTMF: #
DTMF: 1
DTMF: 1
DTMF: 5
DTMF: #
DTMF: 1
DTMF: 1
DTMF: 5
DTMF: #
DTMF: 4
DTMF: 9
DTMF: #
DTMF: 4
DTMF: 8
DTMF: #
DTMF: 1
DTMF: 1
DTMF: 0
DTMF: #
DTMF: 1
DTMF: 2
DTMF: 5
sox WARN rate: rate clipped 112 samples; decrease volume?
sox WARN dither: dither clipped 115 samples; decrease volume?
```

Reconstructed sequence:

```
[kali@kali]—[~/Desktop/cscc tour /challenge6-w4v]
└──╼ echo "67 83 67 67 123 100 116 109 102 95 52 117 100 49
48 95 116 114 52 110 115 109 49 115 115 49 48 110 125" | awk
'{for(i=1;i<=NF;i++) printf "%c",$i; print ""}'
```

CSCC{dtmf_4ud10_tr4nsm1ss10n}