Universitat Pompeu Fabra Barcelona

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P4 - CDN & Docker

1. Download Docker for the command line or for Desktop and install it.

```
PS C:\Users\isall\OneDrive\UNI\4_uni\P4_Vid3o> ffmpeg -version
ffmpeg version 2024-09-26-git-f43916e217-full_build-www.gyan.dev Copyright (c) 2000-2024 the FFmpeg developers
built with gcc 13.2.0 (Rev5, Built by MSYS2 project)
configuration: --enable-gpl --enable-version3 --enable-static --disable-w32threads --disable-autodetect --enable-fontcon
fig --enable-iconv --enable-gnutls --enable-libxml2 --enable-gmp --enable-bzlib --enable-lzma --enable-libsnappy --enabl
e-zlib --enable-librist --enable-libsrt --enable-libssh --enable-libzmq --enable-avisynth --enable-libbluray --enable-li
bcaca --enable-sdl2 --enable-libaribb24 --enable-libaribcaption --enable-libdav1d --enable-libdavs2 --enable-libopenjpeg
 --enable-libquirc --enable-libuavs3d --enable-libxevd --enable-libzvbi --enable-libqrencode --enable-librav1e --enable-
libsvtav1 --enable-libvvenc --enable-libwebp --enable-libx264 --enable-libx265 --enable-libxavs2 --enable-libxeve --enab
le-libxvid --enable-libaom --enable-libjxl --enable-libvpx --enable-mediafoundation --enable-libass --enable-frei0r --en
able-libfreetype --enable-libfribidi --enable-libharfbuzz --enable-liblensfun --enable-libvidstab --enable-libvmaf --ena
ble-libzimg --enable-amf --enable-cuda-llvm --enable-cuvid --enable-dxva2 --enable-d3d11va --enable-d3d12va --enable-ffn
vcodec --enable-libvpl --enable-nvdec --enable-nvenc --enable-vaapi --enable-libshaderc --enable-vulkan --enable-libplac
ebo --enable-opencl --enable-libcdio --enable-libgme --enable-libmodplug --enable-libopenmpt --enable-libopencore-amrwb
--enable-libmp3lame --enable-libshine --enable-libtheora --enable-libtwolame --enable-libvo-amrwbenc --enable-libcodec2
--enable-libilbc --enable-libgsm --enable-liblc3 --enable-libopencore-amrnb --enable-libopus --enable-libspeex --enable-
libvorbis --enable-ladspa --enable-libbs2b --enable-libflite --enable-libmysofa --enable-librubberband --enable-libsoxr
--enable-chromaprint
libavutil      59. 40.100 / 59. 40.100
libavcodec     61. 20.100 / 61. 20.100
libavformat    61.  8.100 / 61.  8.100
libavdevice    61.  4.100 / 61.  4.100
libavfilter    10.  5.100 / 10.  5.100
libswscale      8.  4.100 /  8.  4.100
libswresample   5.  4.100 /  5.  4.100
libpostproc    58.  4.100 / 58.  4.100
PS C:\Users\isall\OneDrive\UNI\4_uni\P4_Vid3o>
```

2. d
3. d

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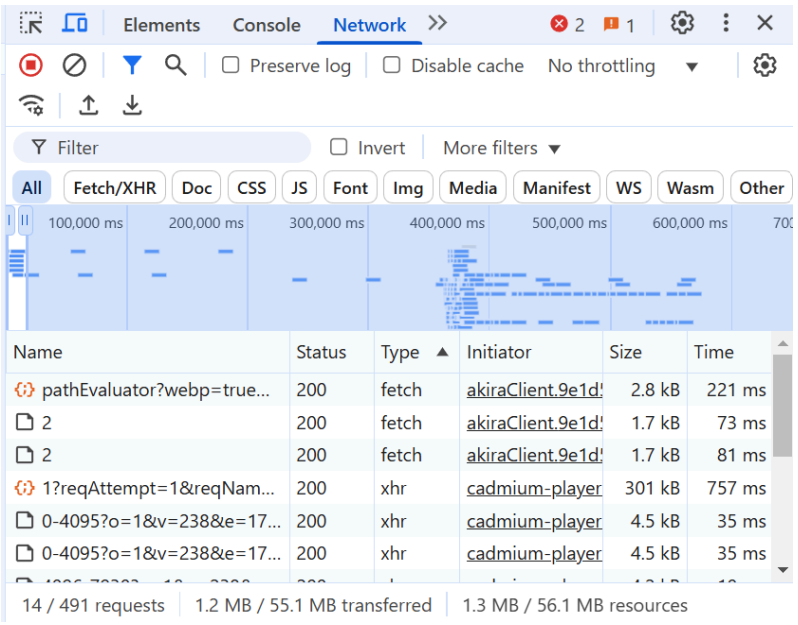
4. We have connected into *Netflix*, a VOD platform. Then, we used the *F12* command to open *Developer Tools*, navigated to the *Network* tab, and examined the *Type* column.

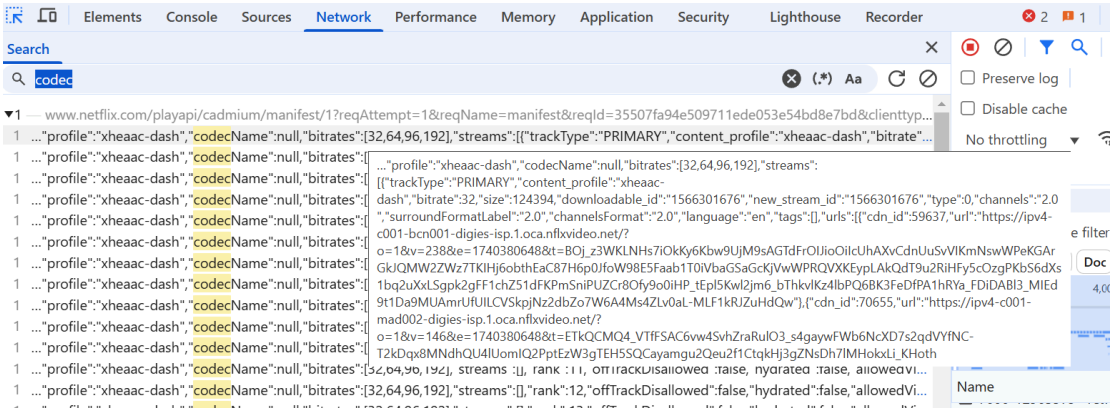
   Then we have click play *"The Fast and the Furious"* and observe the following:



We see that the video is not downloaded as a single file but in small chunks. This indicates that Netflix uses **DASH**, a system that adjusts video quality based on internet speed to prevent buffering or interruptions during playback.

By accessing one of the types, we found the following url: https://www.netflix.com/nq/website/memberapi/release/pathEvaluator?webp=true&drmSystem=widevine… which includes the term "widevine." Widevine is a DRM system developed by Google, confirming that Netflix uses DRM to protect its content.

In order to find the type of codec, we have search for it in the search bar, and have found:



But we can see that it says that it is "*Null*". So Netflix is not giving us the details. We have searched for other ways to find it, but still no answer. So we searched on the internet and found out that Netflix uses Av1.

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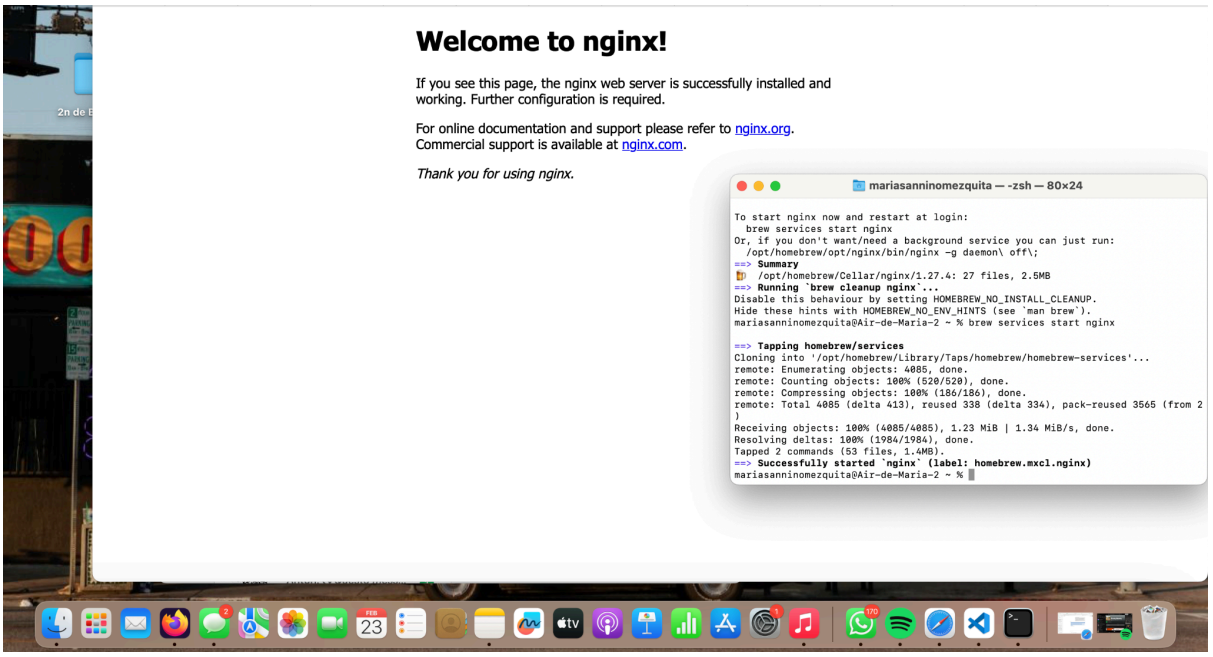
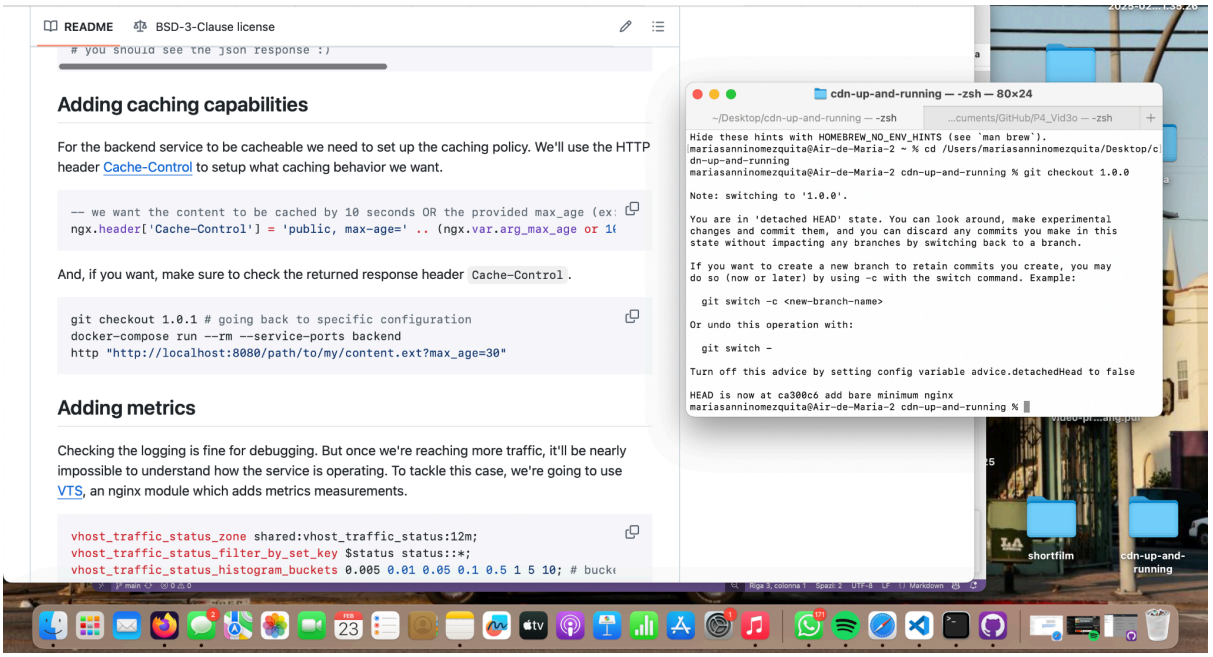
5.





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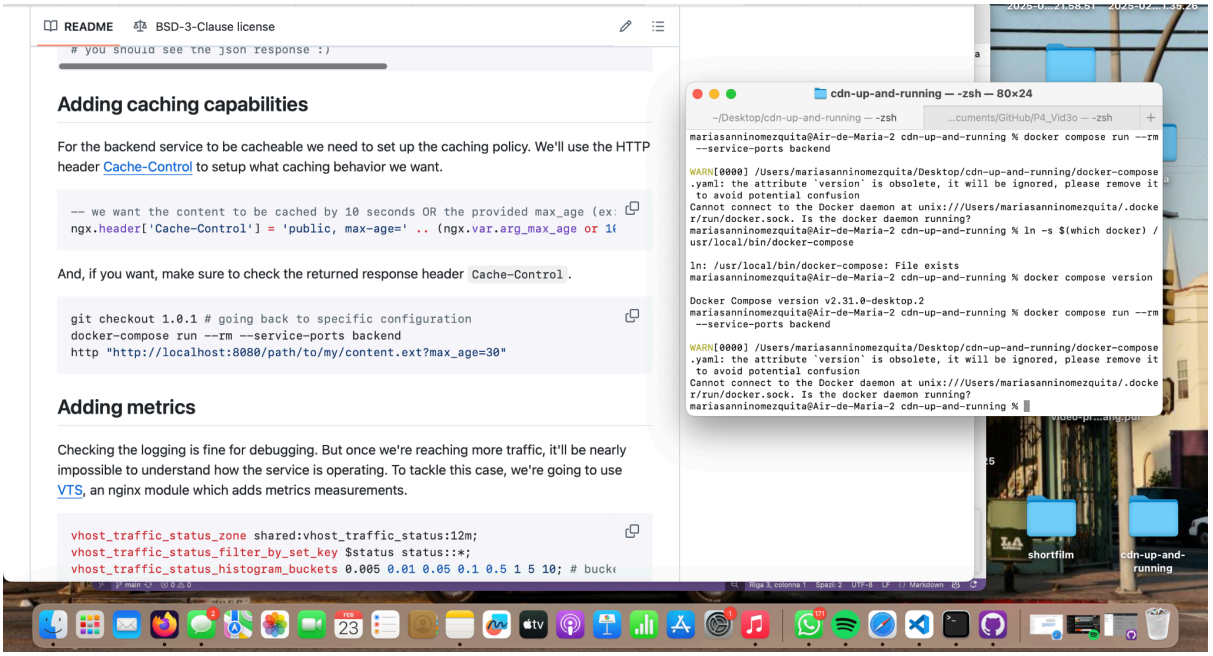

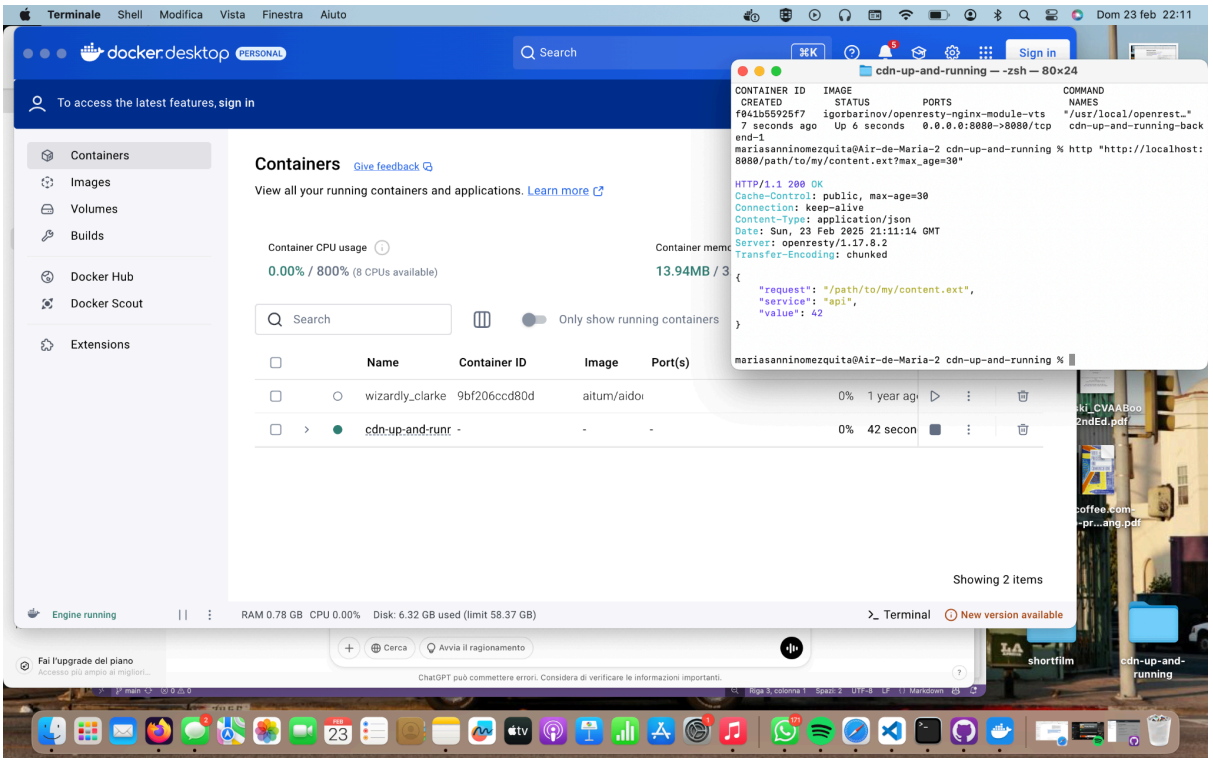

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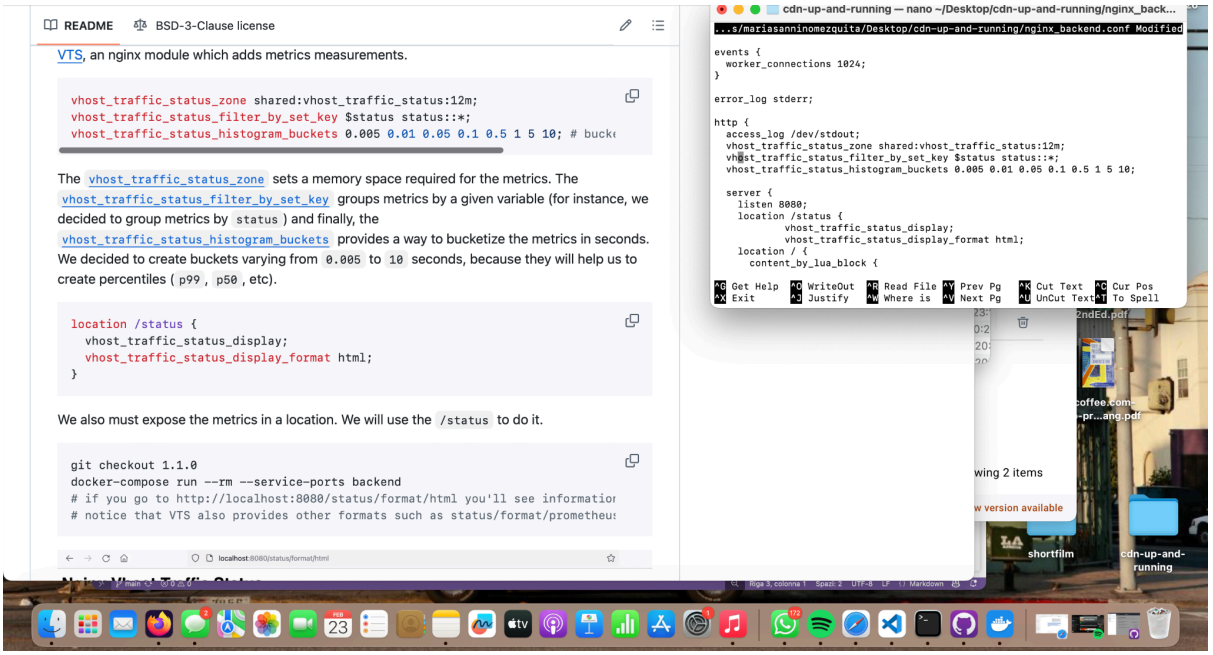

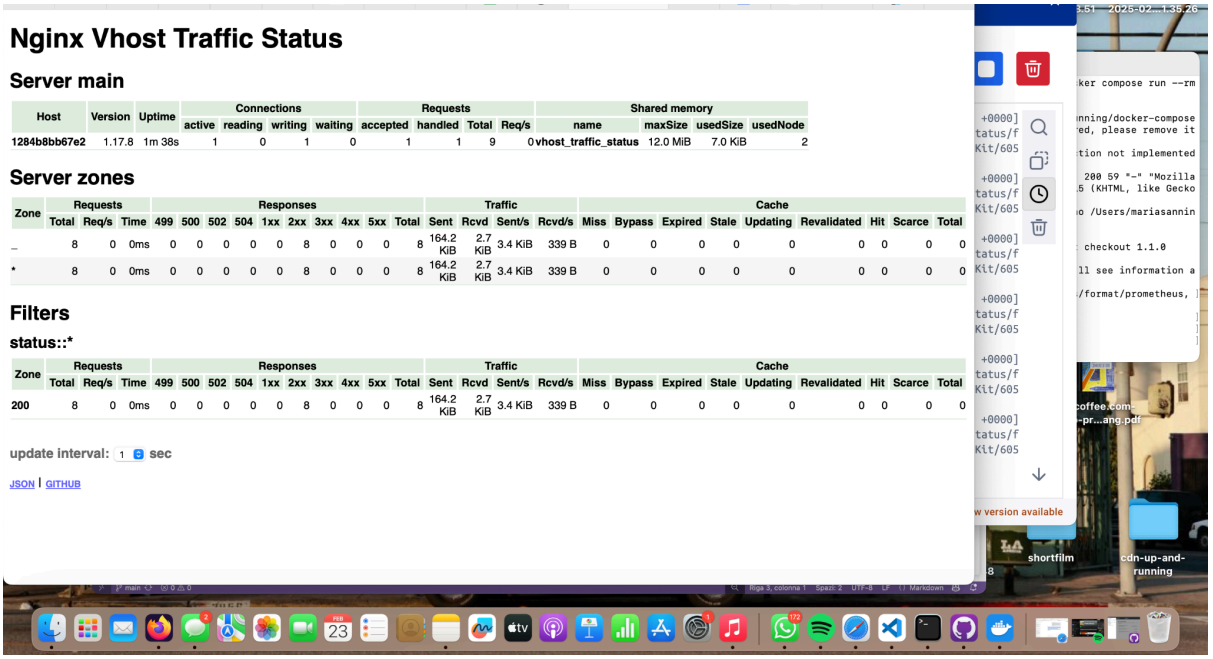

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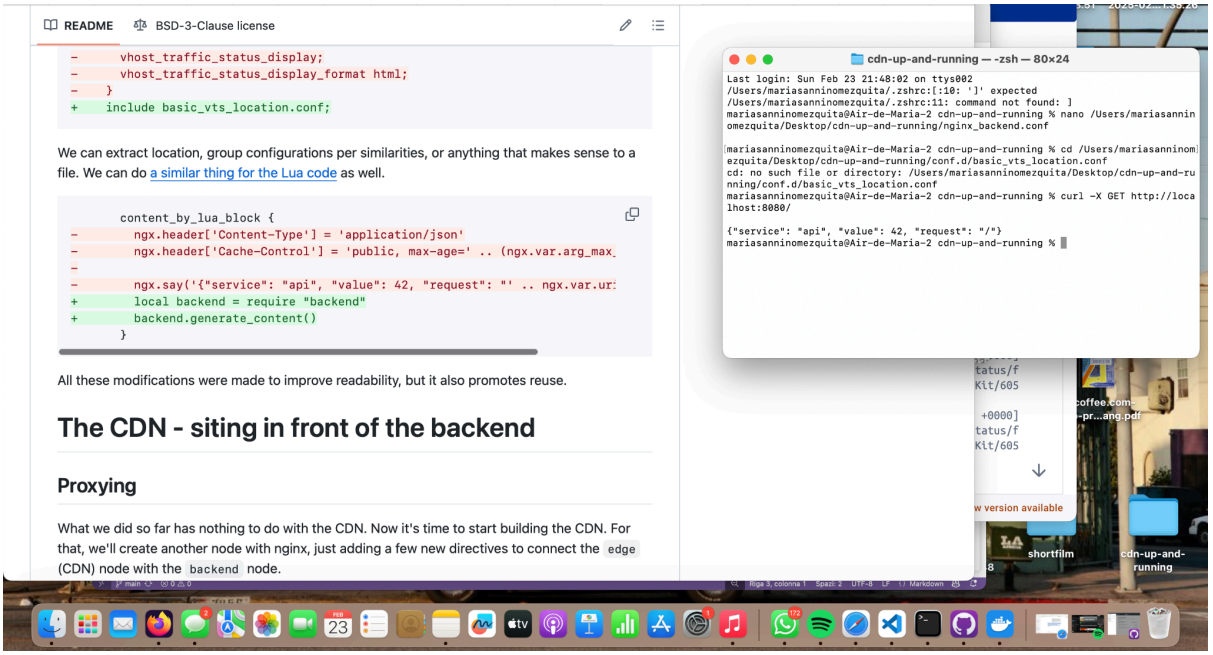

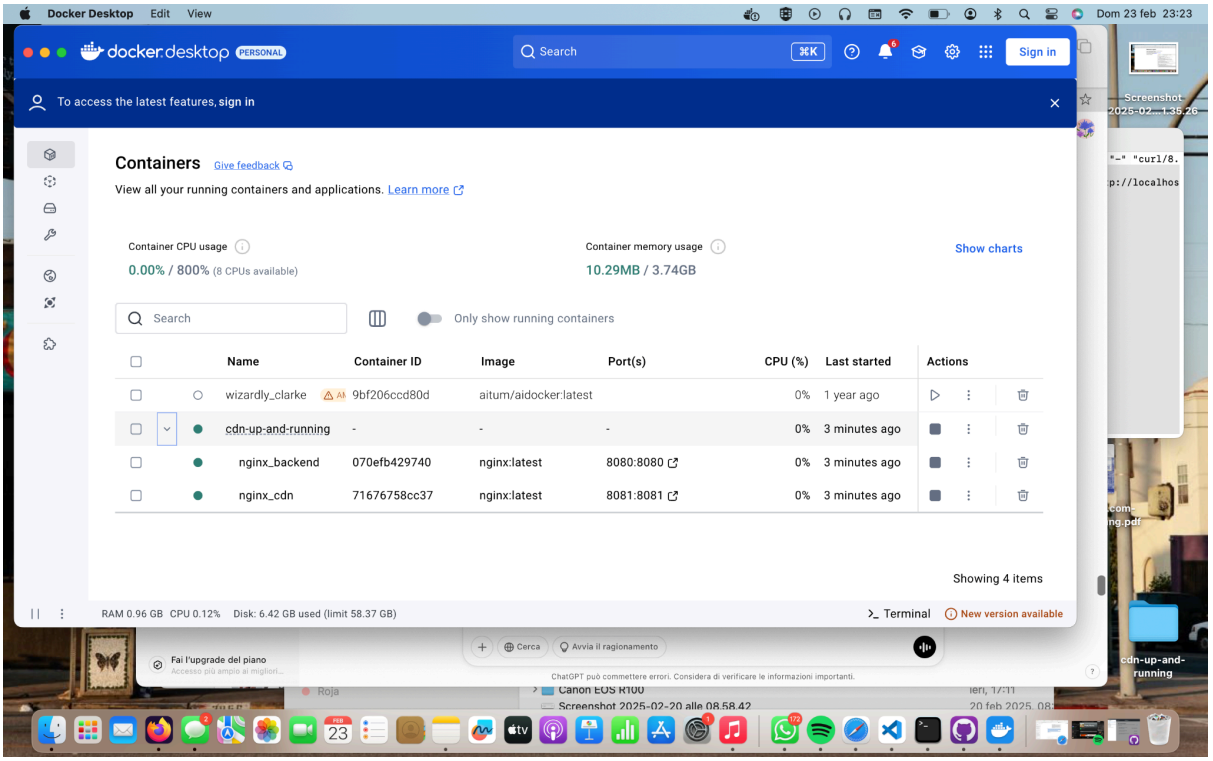

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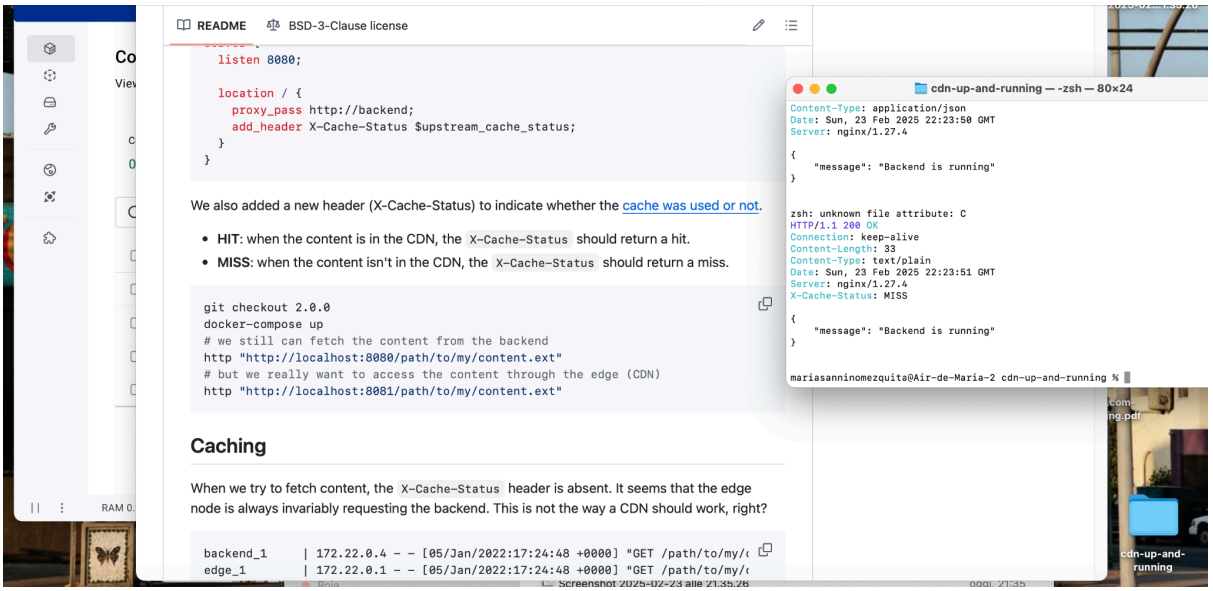

getting an error: