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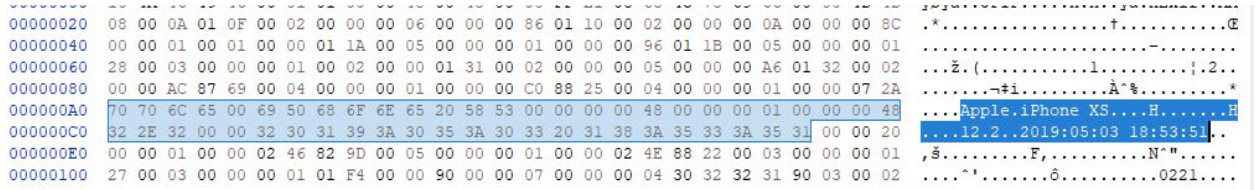
CS477

Special Fergus-File Carving Report

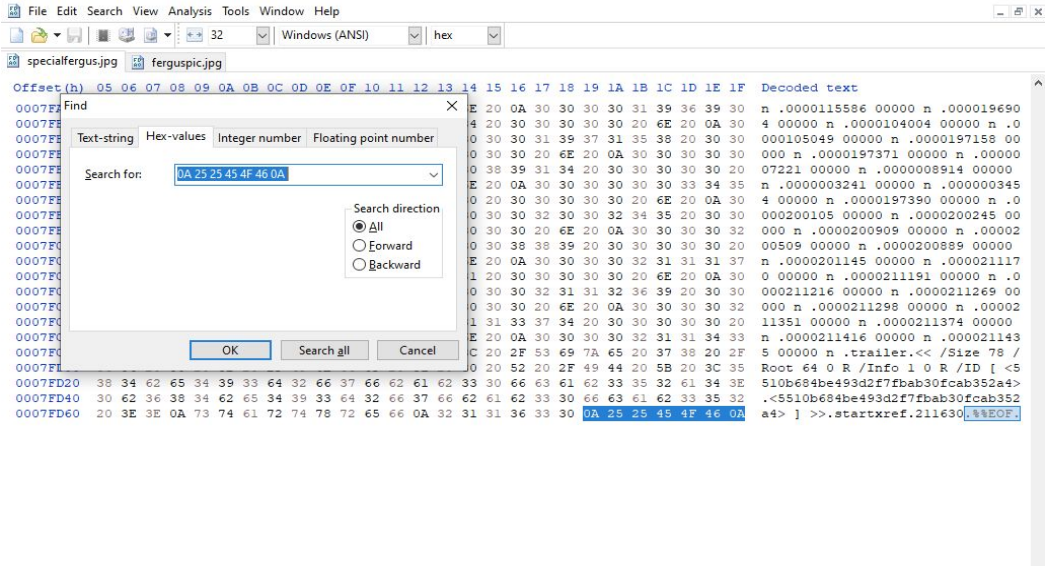
I began the assignment by opening the special fergus image with hex editor HxD. First thing I found before starting to carve is the information of the fergus picture. The photo was taken in 2019, May 3rd, around 6:53pm, using Apple iPhone XS. I was also able to find the exact camera that took the picture, which is the back dual camera on iPhone XS.

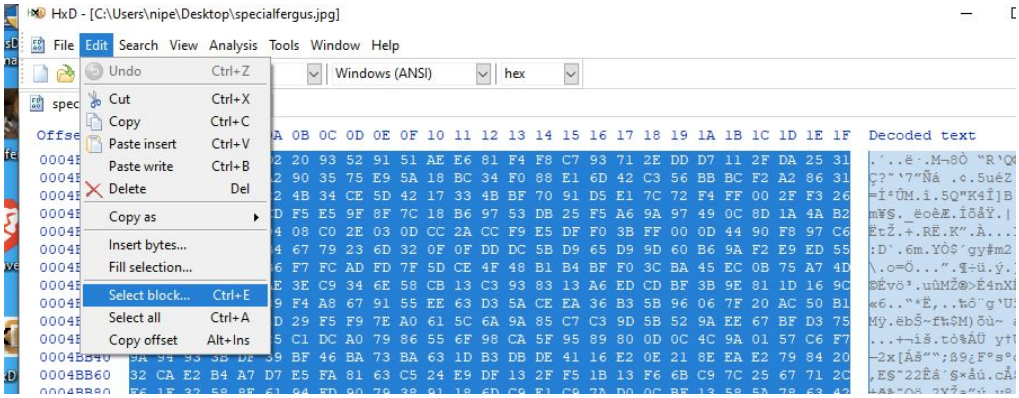


After analyzing the picture of Fergus(specialfergus.jpg), I found that beside the picture of Fergus, there's also a pdf file hiding under the jpg file. The pdf file includes two pictures of Fergus, one of them is a flipped version of the picture of Fergus(specialfergus.jpg).

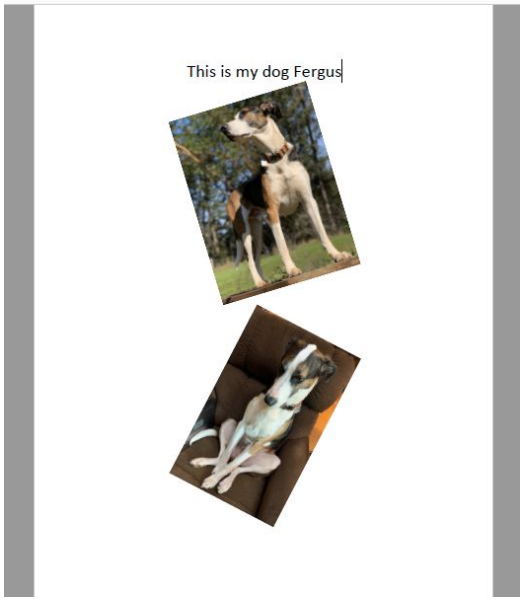
At first, I didn't know where to begin. Using the file signature table, I know that the trailer of jpg is FF09. I did a search to locate all the FF09. With the help of a search function, I was able to find the first image. I didn't really need to find the first image. However, by doing that, I can filter out search results that aren't relevant, since I know exactly where I should begin to investigate.

While searching, I found one part of the decoded text said "PDF", that indicates that there is a pdf file in this specialfergus.jpg. I found the hex of PDF by highlighting the decoded text "PDF". I compared that with the file signatures table and found the list of trailers for the PDF file. Since I don't know which one is the correct one, I performed a search on each of the trailers to see if there's any match. I found the match on my third attempt, the end-of-file mark that I found is "0D 0A 25 25 45 4F 46 0D 0A". I used the select block function to quickly select the PDF block.





I created a new file named “fergus.pdf”in HxD, pasted the selected block to the file. By opening the file with pdf reader, I got the following:



I was amazed by the fact that you can hide so much under a jpg file. I was also really surprised that data like the device that used to take photos and when they were taken can be found on the jpg hex file.One thing that I found interesting in the pdf file is that I found 4 hidden images on the pdf file. I am not sure what those are, I didn’t see any other jfif files beside the two photos of Fergus in HxD. I tried to copy the image and it looks very blurry. I guess it is part of the background of these two photos.

One of the “hidden” image looks like this: