TestOut 2.4.11

William Elizondo

1. *Explain the concepts of sampling and sampling rate. Then, listen to this 2 kHz file, this 8kHz file, and this 44.1 kHz file and compare their sound. Depending on your speakers, you may not notice any difference.*

So when it comes to **sampling** the easiest way to explain it is as sound waves go through the air recording devices capture these waves and divide them into segments. A value is then assigned to each segment . As for **sampling rate** you can think of it as, similar to a camera recording a video, the amount of samples or “segments” are taken each second. It’s measured in hertz.

Based on the samples I listened to it was clear as day to notice the difference between the compressed audio vs the bigger files.Not only is the sound worse and more distorted the smaller in size you go but it makes sense when you keep in mind the sampling rate which is measured in hertz. The more samples per second means the more sound and as you go to the bigger files the sound becomes much more crisp and clear and you can hear things you couldn’t.

1. *Explain the concept of compression and the difference between lossy and lossless compression. Then, compare this 601 kB file and this 33.7 kB file. Was lossy or lossless compression used? How did compression affect the image?*

**Compression** is when you take the contents of a file or stream of data and reduce its size. The goal of it is to make the file take up less space which makes it easier and faster to send, download and store. Now we also have two main types of compression which are called **Lossless** **Compression** and **Lossy Compression**.

* **Lossless compression** is when the data is compressed in a way that it can be reconstructed from its compressed version with ALL of its original data. It keeps all its information.
* **Lossy Compression** is compression that leaves out some data during compression. It’s usually for data that’s not as important such as small detail in an image or sound file that would go unnoticed. Its good when you don’t need to recreate the file perfectly such as in video, music or JPEG images.

1. *Explain the concept of bit depth in audio recordings. Then, listen to this 8-bit recording and this 32-bit recording and compare their quality.*

So recording programs have to allocate a certain amount of memory to store the value of each sample. The **bit depth** is the amount of memory used. Generally the more bit depth, the better the sound since it’s allowing for more data in each sample by choosing how much memory to give it.

As for the recording comparison I noticed a white noise in the 8 bit recording which kinda ruins the essence of the song but they do sound pretty close other than that. On the 32 bit there was no white noise and it was much sharper and easier to listen to.

1. *Describe the difference between raster and vector images. Then, compare this raster image and this vector image. In both images, the bottom TestOut logo is an enlarged version of the top logo.*

Well to start, **Raster** images are the most common form of digital image. They store each individual pixel so they can be very detailed. They’re also super easy to create unlike vectors, you can make a raster image off your phone right now! Now unlike rasters **Vectors** aren’t as common and they don’t store pixels either, instead they store points and curves. The cool thing they can do that rasters can’t is be scalable without losing it’s quality. Now they’re also difficult to create as you need certain training and software so they typically aren’t very colorful pictures.

Now when you look at the photos it’s exactly as I mentioned. The testout logo in raster form loses its quality as it gets bigger giving us a fuzzy photo whereas the vector image of both sizes of the logo look great!

1. *Describe the concept of image resolution. Then, compare this 94 x 140 image and this 604 x 900 image.*

Resolution can be thought of as the detail level in the picture. It’s the measure of how many pixels wide and tall each frame of digital video/image is. The higher the resolution the clearer the image will be. |  
  
So the lower resolution was much more blurry with most details taken out. You can tell it’s mona lisa but it’s not a pretty picture of her. However on the higher resolution you can clearly see it’s mona lisa with all the details up close. It’s clear the higher resolution is the better choice here for anyone wanting to see the mona lisa image.