

## **Exercises on Audio Storage**

### **1. Distinguish Audio Formats:**

- List and compare popular audio formats like MP3, WAV, FLAC, and AAC. Highlight the advantages and disadvantages of each format.

### **2. Convert Audio Formats:**

- Use an audio conversion tool (such as Audacity) to convert an audio file from WAV to MP3. Compare the file size and audio quality before and after conversion.

## **Exercises on Image Storage**

### **3. Analyze Image Quality:**

- Take an image and save it in different formats: JPEG, PNG, GIF, BMP, and TIFF. Compare the file size and image quality of each format, focusing on details such as sharpness, color, and resolution.

### **4. Compress Images:**

- Use an image compression tool (such as TinyPNG) to compress a PNG and a JPEG file. Record the file sizes before and after compression and compare the reduction in file size.

## **Exercises on Video Storage**

### **5. Compare Video Formats:**

- List popular video formats like MP4, AVI, MKV, MOV, and WMV. Highlight the pros and cons of each format and their common applications.

### **6. Convert Video Formats:**

- Use video conversion software (such as HandBrake) to convert a video file from AVI to MP4. Compare the file size and video quality before and after conversion.

## **Comprehensive Exercises**

### **7. Create and Manage Metadata:**

- Create an image or video file and add metadata (e.g., title, author, creation date). Use a tool to view and edit the metadata (such as ExifTool for images or VLC for videos).

### **8. Lossy and Lossless Compression:**

- Take an audio file and compress it using lossy compression (MP3) and lossless compression (FLAC). Compare the file sizes and audio quality before and after compression.

## **Advanced Exercises**

### **9. Create a Video Project:**

- Use video editing software (such as Adobe Premiere Pro or DaVinci Resolve) to create a short video clip. Export the video in different formats (MP4, AVI, MKV) and compare the quality and file size of each format.

### **10. Analyze Compression Efficiency:**

- Take a large video file and compress it using different codecs (H.264, H.265, VP9). Compare the file size, video quality, and processing time of each codec.

### **General Guidelines**

#### **- Necessary Tools:**

- Editing and conversion tools: Audacity (audio), TinyPNG (images), HandBrake (video).
- Metadata management software: ExifTool (images), VLC (video).
- Video editing software: Adobe Premiere Pro, DaVinci Resolve.

#### **- Expected Outcomes:**

- Understand different file formats and their applications.
- Master compression methods and their impact on file quality and size.
- Develop practical skills in using software tools to convert, compress, and manage audio, image, and video files.