

# SE 116 Introduction to Programming II

Lab	1
Topic	Classes

In the second half of the 1990s the world of music changed with the introduction of the MP3 format. This file format allowed high levels of audio compression so that a 3 minute song would be around 3MBs. The most common bit rate was 128 kbps - where kbps is “kilo bits per second” - so 128 kilobit per second is 16 kilobyte per second. A three minute song is then 16 times 60 times 3 which is 2880 kilobytes, which is around 2.88MBs.

MP3 files had one more important feature: they allowed song information to be included. The MP3 file could store the name of the song, the artist, the album and the year of the song along with other information. Even though the file name is, for example, song.mp3, the MP3 player would display the file information correctly, as in “Iron Maiden - Fear of the Dark”.

After all this historical information, here is what your program should do.

1. The program should emulate the handling of MP3 files. It will not play them, but you should be able to create MP3 files that contain the following information:
  - a. The compression rate in kbps
  - b. The duration of the song
  - c. Artist name
  - d. Album name
  - e. Song name
  - f. Album year
2. The program should be able to return the size of the MP3 file. This is done by calculating the number of bytes by using the “compression rate” and “song duration” properties. For example, a song that has 128 kbps compression rate and 3 minutes of length is 2880 kilobytes. Now, we also have the song information; the size of the strings in Artist, album, and song names, and the integer size of the album year should also be added to the 2880 kilobytes. The method should return the file size in a human readable format. That is, if the file size is greater than 1 KB, then KB should be used; if it is greater than 1 MB, then MB should be used.
3. Your program should be able to accept a list of MP3 files and then create a list for each album in these files. For example, if it receives the following MP3 files, then it should create separate lists for each of the 3 albums mentioned.
  - a. Song: The Wizard, Album: Demons and Wizards, Artist: Uriah Heep
  - b. Song: Traveller in Time, Album: Demons and Wizards, Artist: Uriah Heep
  - c. Song: Heavy Horses, Album: Heavy Horses, Artist: Jethro Tull
  - d. Song: The Temple of the King, Album: Ritchie Blackmore’s Rainbow, Artist: Rainbow

Good Luck!