BLG252E

The First Assignment

Due to March 17, 2013 23.00

In this assignment, you will design a C++ class that stores "ID3 tags" located at the end of digital audio files. "ID3 Tags" have the fixed size of 128 bytes (in other words 128 characters) and can be obtained easily with binary file reading operation which is employed to digital audio files such as mp3s. Organization of an ID3 Tag can be given as follows (sizes are given in order to specify data length, you should define these arrays dynamically).

- **char tag[3]** : This field indicates the start of tag information and always has the value of "TAG"
- **char title[30]** : Title of the audio file
- **char artist[30]** : Performer(s) of the audio file
- **char album[30]** : The name of the album that contains the audio file
- **char year[4]** : Just year, for instance 1987
- **char comment[30]** : Comments about audio file
- **int genre** : Each integer value between 0 and 155 specifies a different category for the audio file

Variables given above constitute the attribute set of the class named "**Tag**". You should define these char arrays dynamically (not as "char tag[3]" but as "char *tag"). Place these variables in "Tag" class with necessary getter and setter methods that belong to them (if you look at the given main function you'll realize that 'tag' and 'genre' aren't used at all – they can be omitted). On the other hand, beside necessary constructor(s) and destructor(s), you should implement following methods in "**Tag**" class.

- **"void print()"** prints the "title", "artist", "album" and "comment" attributes of the class as in sample output.
- **"void readTag(char*)"** reads ID3 Tag from an mp3 file to the class variable. The only parameter for this method is the name of source mp3 file.
- **"void writeTag(char*)"** writes ID3 tag contained by the class variable to an mp3 file. This method takes the name of destination mp3 file as parameter.

Once you complete your class implementation, your code should be compiled and executed properly with the given main function and sample mp3 files. You should take the following output after the execution of the given main function. Please be careful with the output format.

```
all my friends are dead
        artist: turbonegro
        album: party animals
        comment: they got kicked in the head!
staring at the sun
        artist: offspring
        album: americana
        comment: no comment
she hates me
        artist: puddle of mudd
        album: come clean
        comment: video clip: BYE4CVhVkhw
```

Submissions will be accepted through Ninova only and you should submit a single C++ source code (a file with the cpp extension) that contains your class implementation and the given main function together. Before you submit your source code, make sure of that your source code is compiled properly with g++. If you have any questions about the assignment, you can ask it to teaching assistants via e-mail or in person. Also, please see the "notes" section in the next page before you start doing your assignment. Note that, academic dishonesty including but not limited to cheating, plagiarism, collaboration is unacceptable and subject to disciplinary actions. Any student found guilty will get grade F.

NOTES & HINTS

- As mentioned in the previous section, "tag" variable always has the value "TAG". On the other hand, "genre" isn't used in the given main function. You may omit these attribute from the class you designed (it is up to you).
- You can perform a binary file reading operation with following the steps below.
  - Open a file for binary reading
  - Place the cursor (or pointer or whatever its name) 128 bytes before the end
  - Read the file byte by byte
    - Read 3 bytes for tag attribute (even if you omit it from your file you should read it – maybe you can use a dummy variable or maybe you can start reading from 125 bytes before the end)
    - Read 30 bytes for title attribute
    - Read 30 bytes for artist attribute
    - ...
    - Read a byte for genre attribute – if you omit this attribute from your design, you can skip this step
  - Close the file.
- You can perform a binary file writing operation with following the steps below.
  - Open a file for binary writing
  - Place the cursor (i wonder what its correct name) 128 bytes before the end
  - Write the file byte by byte
    - Read 3 bytes for tag attribute (even if you omit it from your class design, you should read it maybe you can use a dummy variable)
    - Write 30 bytes for title attribute
    - Write 30 bytes for artist attribute
    - ...
    - Write 1 byte for genre attribute – even if you omit this attribute in your class design, you have to write a byte for it to preserve file format (you can write a random char for it)
  - Close the file.
- You can see these tags with tag editors, however in Windows, file properties and Windows Media Player are not dependable. Just take the sample output from the given main function. It will be enough.
- If you face with an anomaly with the assignment, given main function or sample mp3 files, contact me (responsible research assistant from this assignment) as soon as possible via e-mail (ataka@itu.edu.tr) or in person (office no: 4308).

<div align="right">

Res. Asst. Ahmet Aycan ATAK
04.03.2013

</div>