Programming II

Assignment 2 – Implement a TikTok Class.

Due: Submission date will be decided by your instructor. Recommended due date at the end of week 6.

TikTok is a video-sharing social networking service owned by ByteDance, a Chinese company founded in 2012 by Zhang Yiming. It is used to create short dance, lip-sync, comedy and talent videos. … As of 2018, TikTok has been made available in over 150 markets, and in 75 languages. TikTok was downloaded more than 104 million times on Apple's App store during the full first half of 2018, according to data provided to CNBC by Sensor Tower. It surpassed Facebook, YouTube and Instagram to become the world's most downloaded iOS app (https://en.wikipedia.org/wiki/TikTok).

This assignment attempts to model this social phenomenon. It involves an enum and two main classes: Audience, TikTok and TiktokManager. You will load a set of tikoks from a local file into a List collection. You will perform some simple queries on this collection.

The Tikok and the TikokManager classes must be in separate files and must not be in the Program.cs file. The Audience enum may be implemented in the Tiktok.cs file.

The Audience Enum   4 Marks

This enum specifies the intended audience for this tiktok. It consists of three constants as shown in the table below:

4 marks

Audience Enum
Constants
World   Group   Special

The TikTok Class   23 Marks

The TikTok class consist of ten members that include two static ones (the members decorated with the **$** symbol). You will implement this and all of the classes in Visual Studio. A short description of the class members is given below:

TikTok Class
Fields
-$ _ID   : int
Properties

+ «property setter absent» Originator   : string
  + «property setter absent» Length   : int
  + «property setter absent» HashTag   : string
  + «property setter absent» Audience   : Audience
  + «property setter absent» Id   : string

Methods

+ «constructor»TikTok(
       originator   : string,
       length   : int,
       hashTag   : string,
       audience   : Audience)
  + «constructor»Tikok(
       id   : string,
       originator   : string,
       length   : string,
       hashTag   : string,
       audience   : string)
  + ToString()   : string
  +$ Parse(line : string)   : TikTok

The **$** symbol is used to denote that this member belongs to the type rather than a specific object and you must use the type to access that member.

Fields:

1 mark

1. **_ID** – this private field is a class variable, it represents the number to be used in setting the id of this item.

Properties:

All of the properties are readonly and are self-explanatory.

1 mark

1. **Originator** – this property is a string representing the originator of this tikok. The getter is public and the setter is absent.

1 mark

2. **Length** – this property is an int representing the length in second recipient of this tikok. The getter is public and the setter is absent.

1 mark

3. **HashTag** – this property is a string representing the hashtag of this tikok. The getter is public and the setter is absent.

1 mark

4. **Audience** – this property is a string representing the distribution of this tikok. The getter is public and the setter is absent.

1 mark

5. **Id** – this property is a string representing the id of this tikok. The getter is public and the setter is absent. This is used to uniquely identify a tikok.

Methods:

5 marks

1. **public TikTok(string originator, int length, string hashTag, Audience audience)** – This public constructor takes four string parameters. This constructor does the following:

> This is an example of constructor overloading

   a. Assigns the arguments to the appropriate properties.
   b. Sets the **Id** property using the class variable **_ID**.
   c. After the **Id** property is set, the **_ID** is then incremented so that the next assignment will be unique. (see description of Id above)

4 marks

2. **private TikTok(string id, string originator, int length, string hashTag, Audience audience)** – This public constructor takes five string parameters. This is called by the **static TikTok Parse(string)** method. This constructor does the following:
   a. Assigns the arguments to the appropriate properties.

Methods:

2 marks

1. **public override string ToString()** – This method overrides the same method of the Object class. It does not take any parameter but return a string representation of itself. You decide on the format for the output.

6 marks

2. **public static TikTok Parse(string line)** – This is a public class method that takes a string argument and returns a TikTok object. It is used to create a TikTok object when loading the TikToks from a file. The argument represents a single line of input read from the file. This method does the following:
   a. Uses the method of the string class is to chunk the input into four strings. The default delimiter for the **Split()** method is a space, however in this case the delimiter should be a tab. To specify an argument for the Split() method use the following code: **Split('\t');**

b. Invokes the five arguments constructor. Because all the arguments are string, it is easy to inter-change the order. You need to examine the text file to make sure that you are sending the arguments to the constructor in the required order.

c. Return the result of the above invocation

The TikTokManager Class   21 Marks

This static class consist of five static members. You will also implement this in Visual Studio. A short description of the class members is given below:

```
TikTokManager
Static Class
Fields
    -$ TIKTOKS                      : List<TikTok>
    -$ FILENAME                     : string

Methods
     $ TikTokManager()
    +$ Initialize()                 : void
    +$ Show()                       : void
    +$ Show(hashtag : string)       : void
    +$ Show(length : int)           : void
    +$ Show(audience : Audience)    : void
```

ALL MEMBERS ARE STATIC!

Fields:

1 mark 1. **TIKTOKS** – this private field is a class variable; it is a collection of all the tiktoks in the system. It is initialized and populated in the static constructor.

1 mark 2. **FILENAME** – this private field is a class variable; it represents the name of the file that contains all the tiktoks. It is used in the static constructor to read in the tiktoks. You will have to set this to the name of file that has the information about the tiktoks.

Methods:

7 marks 1. **static TikTokManager()** – This is the static constructor. It does not require any

> A static constructor does not take any arguments, nor does it require any accessibility modifier. Infact specifying one will raise a compiler error
>
> It is called before any member is accessed and never ever again.

parameter. This constructor does the following:
   a. Initialize the **TIKTOKS** field to a new list of tiktok
   b. Opens the file specified by the filename field for reading
   c. Using a looping structure it does the following:
       i.   Reads one line from the file.
       ii. Passes this line to the static **Parse()** method of the **TikTok** class to create a tiktok object.
       iii. The resulting object is added to the tiktok collection.
       iv. This is repeated until the input from the file is empty (**null**).

2 marks   2. `public static void Initialize()` – This class method it used to facilitate the development of this project. It will not be used in the production code, just while developing. This method does the following:

> This will be used to test your code in the event you cannot figure out the file reading part.

   a. Assigns the TIKOKS field
   b. Creates about 5 tiktoks objects and add them to the tiktok collection.

2 marks   3. `public static void Show()` – This is a public class method that does not take any argument that does not return a value. It displays all the tiktoks in the collection.

> This is good example of method overloading, i.e. methods with the same name.

2 marks   4. `public static void Show(string tag)` – This is a public class method that takes a string argument that does not return a value. It displays all the tiktoks with hashTag matching the argument. This comparison must be case in-sensitive.

2 marks   5. `public static void Show(int length)` – This is a public class method that takes an int argument that does not return a value. It displays all the tiktoks with length greater than the argument.

2 marks   6. `public static void Show(Audience audience)` – This is a public class method that takes an int argument that does not return a value. It displays all the tiktoks with audience matching the argument.

2 marks   ## Testing   2 Marks

In your test harness (the Main() method in the Program Class), write the code to test all the methods of the TikTokManager class including the **Initialize()** method.