**Document Management System**

**A picture containing holding, person, guitar

Description automatically generated**UML DIAGRAM & PORJECT DESCRIPTION

**UML DIAGRAM**

A close up of a map

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**Code Detailed Description**

**Classes:**

There are total five total Classes in the project which are following:

* Category
* Topic
* Tag
* Document
* Document Handler

**Category Class:**

This class having **two private data** members:

1. **Category ID**
2. **Category Name**

The following screen shots having all the functions implemented in this class.

![A screenshot of a cell phone

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**In public Section we have:**

1. **Three Constructors (Default, Parameterized, Copy)**
2. **Setters Functions**
3. **Getter Functions**
4. **Destructor**
5. **Operators Overloading**
6. In Operators Overloading, there are 4 friend functions for Ostream, Istream, Ofstream, and Ifstream.
7. The Boolean operators like == and != are also overloaded because of specific reason which will be discussed later.

**Topic Class:**

This class having **two private data members**:

1. **Topic ID**
2. **Topic Name**

The following screen shots having all the functions implemented in this class.

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![A screenshot of a cell phone

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**In public Section we have:**

1. **Three Constructors (Default, Parameterized, Copy)**
2. **Setters Functions**
3. **Getter Functions**
4. **Destructor**
5. **Operators Overloading**
6. In Operators Overloading, there are 4 friend functions for Ostream, Istream, Ofstream, and Ifstream.
7. The Boolean operators like == and != are also overloaded because of specific reason which will be discussed later.

**Tag Class:**

This class having **one private data member**:

1. **Tag Name**

The following screen shot has all the functions implemented in this class.

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**In public Section we have:**

1. **Three Constructors (Default, Parameterized, Copy)**
2. **Setters Functions**
3. **Getter Functions**
4. **Destructor**
5. **Operators Overloading**

In Operators Overloading, there are 4 friend functions for Ostream, Istream, Ofstream, and Ifstream.

**Document Class:**

This class having **6 private data members**:

1. **Document ID**
2. **Document Name**
3. **File Topic**
4. **File Category**
5. **File Tags**
6. **Count Tags**
7. File Topic variable having composition relationship with document class because every document has a topic. File topic variable belongs to Topic Class.
8. File Category variable having composition relationship with document class because every document has a Category. File Category variable belongs to Category Class.
9. File Tags variable having composition relationship with document class because every document has a tag. File Tags variable belongs to Tags Class. This is pointer array member because each document can have any number of tags. Count tags variable is to count the current number of tags to a document.

The following screen shots having all the functions implemented in this class.

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![A screenshot of a cell phone

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**In public Section we have:**

1. **Three Constructors (Default, Parameterized, Copy)**
2. **Setters Functions**
3. **Getters Functions**
4. **Destructor**
5. **Tag Separator Function**
6. **Operators Overloading**
7. In Operators Overloading, there are 4 friend functions for Ostream, Istream, Ofstream, and Ifstream.
8. The Boolean operators like == and != are also overloaded because of specific reason which will be discussed later.
9. Tag Separator function actually implemented to separate the tags from the single char array into different number of tags. This function having one parameter passed which is char array. This function is called in Ifstream operator. Because in document.txt file we have tags written in square brackets like this [Nice, Great].

**Document Handler Class:**

This class having many private data members:

1. **Docs**
2. **No of Docs**
3. **Topics List**
4. **No of topics**
5. **Category List**
6. **No of Categories**
7. **Some Extra Functions**

* Docs is having a data type of Document class pointer, Topics List is having a data type of Topic class pointer, and Categories List is having a data type of Category class pointer. These 3 variables having a composition relationship with Document Handler Class.
* No of Docs, No of topic, and No of Lists are static integers. “**Static variables** are used when only one copy of the **variable** is required. So, if you declare **variable** inside the method there is no **use** of such **variable** it's become local to function only **Variables** declared **static** are commonly shared across all instances of a class”

The following screen shot having the private data members and functions of this class:

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* There are some ID searching functions and all are bool functions whether the ID presents in the array or not.
* There is function named as set\_doc\_and\_car\_and\_top\_names\_by\_id, is used for making collaboration of document categories and topic id’s with there topic and categories names.
* There is set tags function, used for setting up tags at particular document id.
* There are 3 functions of array size increaser. Initially, variable names docs, topics\_list, and cat\_list having 30 and 50 size. After reaching to this limit these functions increase their size to 200.

Protected Functions:

The following Screen Shot having protected functions of this class:

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* There are 4 functions which are for adding entry purposes. Add\_Document is for the adding of the new document entry. Add\_topic is for the adding the new topic entry. Similarly, add\_cat is for the adding the new category entry. Last one is add\_more\_tags function to the existing documents.
* There are 5 removal entries functions. First one is remove\_document\_by\_doc\_id, this used to delete the document by the user entered ID. Second one is remove\_docs\_by\_cat\_id, this is used for to delete the al those functions which having the Category. Third one is remove\_docs\_by\_topic\_id, this is used to delete all those documents which having the same topic. Fourth one is remove\_topics, this function is used to delete the specific topic. Last one is remove\_cat, this function is used to delete specific category.
* There are 6 filing functions. Three of them are used for entering data in the file and other three are used for reading data from the file.

![A screenshot of a cell phone

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There are two main things in 3 functions which are used for entering data in file.

* ios::trunc: This is file opening mode, this mode every time clears the all previous data of file and make the file empty.
* As we talked about the Boolean function of above classes. Here is the reason to check whether the existing category, topic, or document list is equal to zero or not. Indirectly we are check whether their id is equal to zero or not.
* There are 3 functions of editing the docs, topics and categories list again.
* Last function is search the documents having same tags.

**Public Functions**:

The following screen shot having the functions included in public part of this class.

![A screenshot of a cell phone

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1. **Constructor**
2. **Menu Function**
3. **Destructor**

**Inline Function:**

**The keyword inline is used with void menu() is used for specific reason. “C++ provides an inline function to reduce the function call overhead. Inline function is a function that is expanded in line when it is called. When the inline function is called whole code of the inline function gets inserted or substituted at the point of inline function call.”**

At the end there are the static member initialization. The screen shot is following:

![A close up of a logo

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**Menu Function:**

This function is the core function which is used to call in main cpp function. There is the following screen shot having the complete menu function.

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Description automatically generated]()![A screenshot of a cell phone

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![A close up of text on a black background

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![A close up of text on a black background

Description automatically generated]()![A screenshot of a cell phone

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**Key Details:**

1. **Three functions at the start are for reading data from file every time when the menu functions call.**
2. **Then there is while loop in which all the options are present.**
3. **Color function is used to change the console text color attribute.**
4. **\_getch() is used to wait for the user input**

**Main Function**:

The screen shot is following:

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* This main function includes only one header file “document.h” and we call menu function because menu function having the access of all the function through options.

**Output Details**

There is following screen shot of output on console:

![A screen shot of a smart phone

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The options are available we can avail it by entering the numbers of each option.

1. Option 1:

![A screenshot of a cell phone

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1. Option 2:

![A screenshot of a cell phone

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1. Option 3:

![A screenshot of a cell phone

Description automatically generated]()

1. Option 4:

![A picture containing drawing, light

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1. Option 5:

![A picture containing clock

Description automatically generated]()

1. Option 6:

![A picture containing clock

Description automatically generated]()

1. Option 7:

![A close up of a screen

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1. Option 8:

![A close up of a screen

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1. Option 9:

![A close up of a screen

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1. Option 10:

![A picture containing clock

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1. Option 11:

![A picture containing clock

Description automatically generated]()

1. Option 12:

![A screen shot of a computer

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1. Option 13:

![A picture containing sitting

Description automatically generated]()

1. Option 14:

![A close up of a screen

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1. Option 15:

![A screen shot of a computer

Description automatically generated]()

1. Option 16:

![A close up of a screen

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.**txt Files**

The following data in the files are pre-written:

* Docment.txt

1 2 5 [Comedy, Funny] fun.txt

2 4 4 [heavy] course.txt

3 1 3 [Nice, Good] Happy.txt

4 3 2 [Marketing, Promotions] Digital.txt

5 5 1 [plans, future] Draft.txt

* Topic.txt

1 English

2 Pk

3 OOP

4 LA

5 MM

6 Programming

* Category.txt

1 Reports

2 Media

3 Comedy

4 law

5 romantics

6 horror