

## Design and Implementation of DRM in Distance Education

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### Abstract

Distance Education is the best way to spreading education among of all walks of the society. Now a days learners chooses distance education to complete their educational requirement for many reasons. However, to maintain the quality of education we have to make a secure system by using Intellectual Property protection laws .It practically laws cannot protect the digital contents. We need some technical support. In this paper we introduced a well structured design of distance education that is protected by DRM techniques. In our system unauthorized user may not use the content. We are using UML tools, an efficient Object Oriented Software engineering to represent different components of the system. We are also implemented using Object Oriented Programming (OOP) tool JAVA, that is a popular and powerful programming language.

**Keywords:** Distance Education, DRM, UML, OOP.

### 1. Introduction

The system of education in which the interaction between Teacher and Learner is less physical than virtual is called distance education. Distance education is the easiest way to spreading knowledge. Owing to the evaluation of technology, distance education becomes effective and popular .This is an important support for our education. We cannot imagine education without distance education.

Due to the population explosion traditional education is not enough to meet the requirement of education. Therefore, we opt distance education to solve the problem. There is in fact a global scope for distance education one can avail from anywhere and any time. This is the beauty of distance education. However, apart from the advantage of it, we have the dark side of distance education. As learner can have access to it from

anywhere and any time, several unauthorized users may misuse the contents. We have many Intellectual property protection[7] laws but laws are not enough. We need DRM technology to solve the problem.

## 2. Methodology

We are using Object Oriented technology[5]. Our system provides an effective solution for distance education that protects digital content so that unauthorized users cannot use it. Our class diagram may describe the following information for the system.

**Course Designer:** A course designer class (course\_name,duration\_of\_course, subject\_combination,designation, designer\_id ) represent a group of expert who are designing the course by data\_collection() and using design\_tools(). Many designer design one course.

**Content Writer:** Content writer(subject, designation, writer\_id ) class represent person who digitize() and protect() digital contents like text, audio, video etc.

**Administrator:** Administrator class ( manager\_id, designation) represent the supreme power of our system. Student registration(),fee\_calculation(), taking\_exam() are the responsibility of administration class.

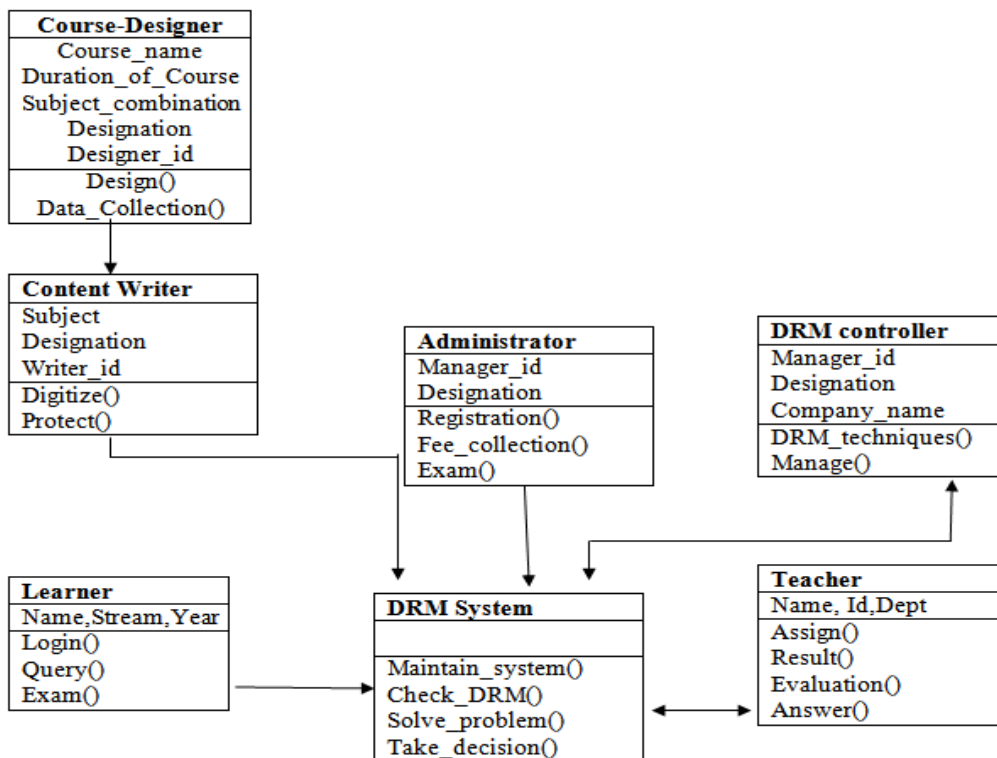


Figure 1: Class Diagram.

**DRM Controller:** DRM controller class (contain manager\_id, designation, company\_name) are a group of person who are responsible for protecting digital contents. They are using different DRM techniques to protect the digital document and manage all the problems.

**Learner:** Class learner (name, stream, address ,year) are the end user of our system each are using the system after getting an user id and password. Learner can query() to the system and getting an answer exam is taken by the system and results are published by the system.

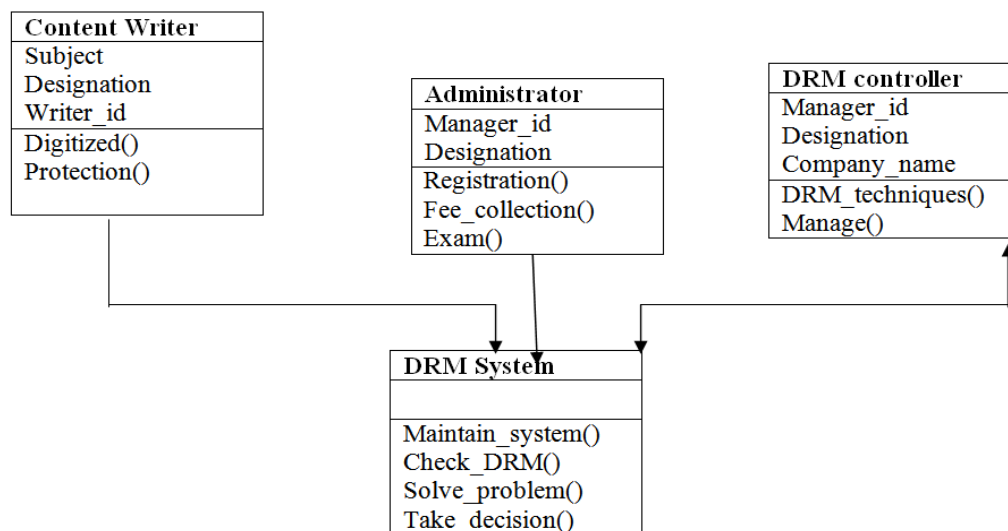
**Teacher:** Teacher class (contain name,id, dept,date\_of\_joining) may assign assignment to the learner and evaluate the answer script and answer the query of student.

**DRM System:** DRM system class is the heart of our system. It has the power to maintain the system, taking decision to protect contents ,solve any security related problem etc.

### 3. Implementing the Class

#### 3.1 Diagram

We have found an example of multiple inheritance in our class diagram. However we all know that in java multiple inheritance is not supported directly we achieved it by interface the code for above system is:



**Figure 2:** Multiple Inheritance.

```

interface Administrator
{
    void registration();
    void fee_calculation();
    void take_exam();
}
  
```

```

    }
    interface DRM_Controller
    {
        void use_drmtechniques();
        void manage_drm();
    }
    class DRM_System extends ContentWriter, implements Administrator,
    Dm_Controller
    {
        void maintain_system();
        void check_drm();
        void solve_problem();
        void take_decision();
    }

```

#### 4. Conclusion

Though education is for everyone but if we are not protecting unauthorized user to enter our system then we can't maintain quality of distance education, the quality of distance education is maintained if we are using DRM techniques to protect the digital content. In this paper we are discussing how we use DRM to protect Digital content, how learner interact with the system etc. Our system provides a better solution for the distance education system. The main advantage of our system is easy to use and provide high security.

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