# Summary of final year project

Submitted to:

**University of Passau**

Submitted by:

**Ahmed Mohamed Kamal**

Project Code: https://github.com/ahmedkamal77/Test

# EduCoRights


## Abstract

The last few years have witnessed a vast evolution in the communication and computational fields. The presence of social media makes data transferring easier, which raises a flag of unauthorized usage and redistribution of digital content. This copyright scenario is hardly affecting the publishing rights of authors and publishers. This project presents a desktop application that protects the copyright property where only the authorized users legally use the data and prevents the illegal use or copying of data. The proposed application includes two robust cryptosystems; Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) algorithms. The multimedia contents are encrypted using the AES-256 and 3DES algorithms.


### Introduction

Digital contents become more widespread and used than any other physical content. These contents are widely distributed on the internet and consequently easy to be exchanged cross over wired or wireless sort of communication. Not all of these contents are currently shared legally. Usually, a person who has a license for a product can copy or give it to other people worldwide within minutes without too much trouble. It is hard to detect and stop these transactions. Besides, the illegal use and redistribution of digital content may harm the materials providers or rights holders. This business makes the industry lose billions every year. Consequently, the proposed project gives an answer that secures intellectual property rights. It strictly prevents unauthorized usage and illegal distribution processes and preserves the author's rights. This goal is achieved by applying some constraints and restrictions on data usage and controlling the use of data by authorized users. The proposed project depends basically on encryption to manage the use of copyrighted materials and to prevent illegitimate access to digital content. The two basic entities are digital content and users. Usually, digital content can be videos, audio, text, images, or PDFs. Users can be content authors, publishers, or consumers. As simple as that the relationship between them is users who have rights can use the content. The module is content protection. It is in charge of content transformation and recovery. Content transformation produces content that is difficult to read and inaccessible, so any attempt to copy and redistribute the data is meaningless. The most popular solution for content transformation is the encryption algorithms since its grantee's full protection of data by completely reversing and changing the plain text in a highly secure way.

## The proposed system

The implemented system aims to prevent the illegal copying of data from unauthorized users and preserve the publisher's rights. This goal is achieved by applying some restrictions on the process of using these data. Accordingly, the consumer has no way to use the data except in a legal way. The proposed system provides a desktop application that enables the content's author to upload its digital contents to the database and permits the user who pays the price of the content to use it. From this point, the authorized user can download the desired contents through another desktop application which acts as a media player or PDF viewer to play the encrypted media only on the user permitted machines, in order to prevent the redistribution of these contents it is downloaded in an encrypted manner. The database of the system is launched on a cloud, to make use of cloud pros such as low cost, availability, platform independence, reliability, and scalability.

## System Components

- **Cloud-based server:** is responsible for storing users' information, and digital content. For every user who downloads the application and signs up, his data is stored in the system database. As well as digital content that publishers upload is stored in the database. It is built using an SQL server.
- **Web application:** is responsible for advertising the content of the publisher for the consumer to discover and buy the desired one and enable him to download the desktop application. It is developed by WordPress.
- **User desktop application:** is responsible for acting as media player decoder for encrypted media to display the video and PDF files and show the available content on the website. It provides two modes dark mode and light mode for a better experience. It is developed using C# and the Telerik framework.
- **Publisher desktop application:** is responsible for adding, deleting, and editing contents in the system and permitting the user to download the content and decrypt the content before uploading. It is developed using C# and the Telerik framework.

## System constraints

- **Disallow users to record:** the user cannot be able to record this media (for example video) using any program as well as cannot take any screenshots from the screen. This prevents an authorized user from taking any part of encrypted data and redistributing it to an unauthorized one. In case that licensed user attempt to use any screen shooting or recording programs, the system will give him a black screen.
- **Disallow users to copy:** the consumer cannot copy the purchased file from its device to any other device. Since the file loaded on the end user's device in encrypted mode and the only way to decrypt and play it is using the desktop application even the user cannot copy text from pdf files.
- **View on registered devices only:** The system allows the user to register only one device.