Digital Watermark Copyright Protection with QR Code

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Abstract— **Human Technology field is growing rapidly that innovation is happening way faster than we can adapt. In this era of rapid developing technology, changes occur constantly and the creation of smartphones has cultivated such improvements as people are more connected now more than ever due to the Internet. In this paper, a digital watermark copyright protection with QR code will be built of which be able to provide more advantages in the time of protecting copyright. Introducing a windows-based or standalone program where QR code will be the new feature of the watermark program. . The QR code generator will be the new feature introduce where user can put any preferable link that will direct user who scanned the QR code to the website**

Keywords— Watermark, Window-based, QR Code

I. INTRODUCTION

As the fast improvement within the communication and information technology the copyright security or protection of the digital multimedia like article, image, audio, and video is very important. Hence, watermarking plays a critical part in this part by putting copyright such as the company name and author name into the original multimedia or article [2].

Visible watermark is the translucent overlaid into the essential picture. The watermark shows up visible to a casual viewer. Nowadays some of people still using manual handwriting to make the copyright of their own on their article or multimedia photo, as well as on identity card they usually draw 2 parallel line before handing the document for some purpose used. With this ways it takes such a long time for people to handwriting it one by one of their documents. Other than that some officer might cannot accept such "protecting" action and end up their personal images can be used for some illegal cases. In future frequency of plagiarism will keep on increasing [2].

Fig. 1 QR code sample

Other than that this visible watermark will come out with new function which QR code will be introduced in the software. A QR code is an abbreviation of Quick Response Code – is a square shaped identifier which contains encoded information and can be scanned with specific software as shown in figure 1. User might have seen the square dark design of QR code in some other place, in a magazine or daily paper, as well as on the food labels at the groceries store [4].

QR codes are an extraordinary new way to pass data along to individuals on their portable gadgets or smartphone. A common way use of QR codes is to put links within the shape of a QR code so people looking at the code can just scan the code and browse to the link instead of having to manually type it in their browser. [4] User will be able to do the same thing by including the links as a QR code on the article or photo of them as a watermark. To include a QR code watermark all the user need to do is just click on the function they prefer. By sharing these article or photos with QR code on it around people, they may scan the code out of interest and can directly browse to your site easily.

II. LITERATURE REVIEW

In today's current situation, as mentioned above, some publishers are still using a manual way to mark or to "sign" their masterpiece [6]. This will lead to waste of time and energy. Copying photos off the Internet is just a matter of right clicking on a photo and save it on the

computer. People around the world can just search for images on Google and save the photos and use them for any purpose, it is either personal or commercial. If people upload photos on the Internet and the photos will help to make a living, it must be prevented from people using them without consent. The system that is going to be implement is a watermark copyright protection with QR code. This new system will enhance the user to become faster and efficient according to the need. The purpose of QR code feature is to give information about the photos or documents. By putting the prefer link into the QR code, the technical information can be accessed by the user once they scan the QR code.

Recently the use of QR code for data coding becomes significantly increasing especially for coding identity and other specific data. Therefore, this watermark copyright protection system will be inserting the QR code feature. QR code is a two-way dimensional square-shaped barcodes that comprise many black square dots on a white seeing. There are mainly four kinds of data such as numeric, alphanumeric, byte or binary and Kanji which are encoded into information or through supported extensions. The processor locates the three distinctive squares at the corners of the image, and to normalize image size, orientation, and angle of viewing, with the aid of a smaller square near the fourth corner. The small dots are then converted into binary numbers and the validity is checked with an error-correcting code.[4]

QR codes are ubiquitous in Japan, where they originated, and have been popular for years. They appear in store windows, on posters, billboards, and buildings; they are on receipts, in doctor's offices, TV commercials, and on McDonald's wrappers, where the code is scanned for ingredients/nutritional content [5]. A Japanese gravestone maker has even embedded QR codes within gravestones so that people are able to find out more about the person buried there [6].

Other than having the new QR code feature, this system will also provide a platform to do the watermark for images as well as documents for certain format. As in the market now, there are only mostly digital watermarks (images), or only documents watermark [11]. But in this system, it comes in a package.

III. DEVELOPMENT OF APPLICATION

This project will be referring to the Agile Unified Process (AUP) where AUP has four main phases (inception, elaboration, construction, transition). The basic application is in a simplified view of basic activities and so the three disciplines, business modelling, process applications, and analysis and design are replaced with only one discipline modelling.

1) Inception

In this phase the project scopes and risks will be defines, in addition to preparing the project environment such as hardware and software required as well as the requirement gathering and all the information about watermark copyright protection with QR code. The primary goal of the Inception phase is to establish the case for the capability of the proposed system. The task that performs during Inception includes the following:

a. Identifying the problem identification by researching thru the applications that have been made before this and coming out with objectives as a solution for the problems that have been identified.

b. Defining the scope of my system.

c. Analysing the important data and the requirement for the software.

2) Elaboration

During this phase determines the system requirement for the process. Define the construction of system by providing the UML diagrams. After gathering the information, systems requirement will be determined for the process. Then, a detail plan for construction phase is created by using UML diagrams where it allows the developer to build the application or software. The primary goal of the Elaboration phase is to establish the ability to build the new system given the schedule restrictions, and other kinds of restrictions that the development project will be facing.

The task that performs during Elaboration includes the following:

a. Getting know the software requirements for developing this system. This is an important thing because, each projects have the own software requirements.

b. Constructing UML diagrams to show the architecture of the project. The type of diagram that has been constructed are Requirement List, Use Case Diagram, Class Diagram, Sequence Diagram, State Machine Diagram, Communication Diagram and Activity Diagram. Using this 7 diagrams, the project will be explained clearly to the project stakeholder how does this software created will be working.

3) Construction

This phase the system software will develop by using the web based software with implementing all system features. Software will be tested then and used to get user's feedback. Once the requirement for the system has been finalized, the system software will develop by using the software. All system features will be implemented in the system. Software will be tested to make sure the features achieve the objective of the project and get user's feedback.

The primary goal of the Construction phase is to build a system capable of operating successfully based customer environments and their needs. During Construction, performs tasks that involve building the system iteratively and incrementally, making sure that the viability of the system is always marked in executable form. All the debug and error will be corrected for the full development being accomplished.

a. Build the interface for the software based on the design and featuresز

b. Write the coding to develop the software. Other than that using Xamp for Phpmyadmin.

c. Software testing will be done by the programmer to counter the error in the code and if there is an error countered then it will be corrected and will be tested again until there is no error. The method that had been used is the Ad-hoc Testing. The Ad-hoc testing will be done by the programmers who created the software because the programmers are the person who will have a good understanding of the workflow of the software. Therefore, the programmers will be eligible to find out the errors in the software that have been developed and can correct the errors in the software.

4) Transition

This phase the complete system will be given to the user. The complete system will test for the full run to check the condition. The functionality of the features provided in system will be checked. After completing the full system which is completely tested, the system will be given to the user. The primary goal of the Transition phase is to roll out the fully functional system with a perfect working. During Transition, the project focuses on correcting errors and modifying the system to correct the previous problems.

The task that performs during Transition include the following:

a. The software will be tested by the user to counter check on the software. The method that have been used in this software testing is the Acceptance Testing. As this is a formal type of software testing, it will be done by the user when the feature is delivered to them by the developer. The aim of the testing is to check the satisfaction level of the user and does the software fulfil the user's requirements. If there is any error, then it will be corrected according to previous problems.

b. When there is any modification that need to be done in the software, then the programmer will do the modification until the user is satisfy.

c. Once every error and modifications are done completely then the software will be passed to the user.
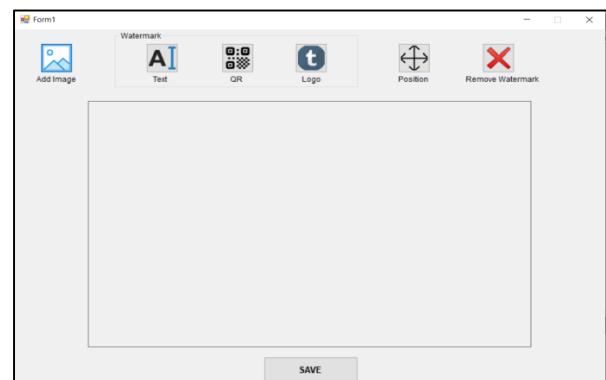

Fig. 3 program interface

In order to start the process, user first need to add image. They can select any JPG and JPEG format image. Before that, this is the basic interface of the program.

Fig. 2 User add text

This is after image is added. After image added, text watermark inserted onto the image.
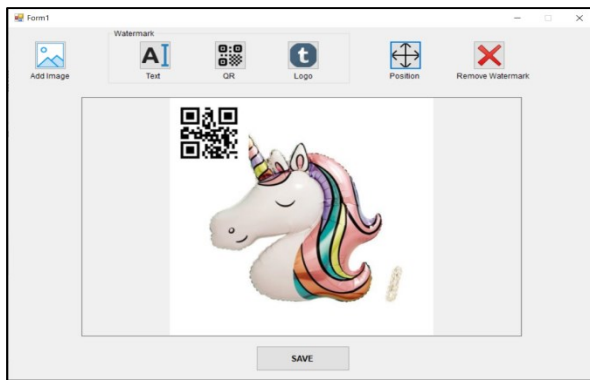
FIG. 3 USER ADD QR CODE

Once QR button selected, user required to put preferable link or URL so that the QR Code can generate the QR Code as watermark.

FIG. 4 USER ADD LOGO

In this process is where after press on logo button, select logo as input and then put as watermark.
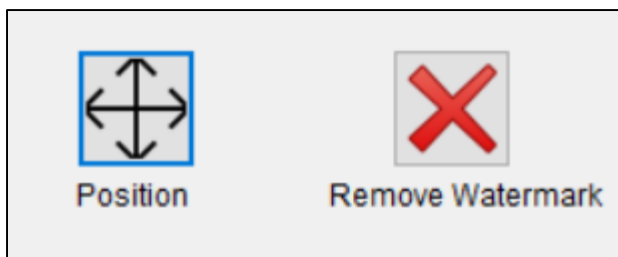

FIG. 5 POSITION & REMOVE WATERMARK

This feature is where user can adjust the position of the watermark inserted by using the pixel adjuster. Remove watermark used to remove the existing watermark.
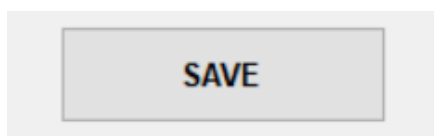

FIG. 6 USER SAVE

User be able to save the final result into any file by pressing the save button.

IV. DISCUSSION

The software that have been developed is a software consist of one features that is QR code watermark. I have identified the problems that been used manually nowadays for marking the masterpiece. Therefore, there is a need to improvise the existing watermark system for upcoming technology. To overcome the problem, the system which is been created "Digital Watermark Copyright Protection with QR Code System" will develop a new way of watermark system that require fast method and does not consume much time to do so as the user can save the softcopy and print it whenever needed. The project will be using the agile methodology to produce a higher quality product development of the project. This will help the user to be more flexible and satisfied for the users.

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