

Proposed Algorithm to Protect the Graduate Document from Hacking Application

Prof.Dr.Abdul Monem S.Rahma

Dr.Hala Bahjat

University of Technology

Amani Yousif Noori

Al-Mustansiriyah University

Abstract

This paper proposed a method for hacking and protection Document which is Graduation certificates Document by taking advantage of the Automation technique which provided by Microsoft for use word Automation for reprogramming document of Microsoft Word document 2003 with C# code. This document will be falsification and change the student's Name, student's picture , degrees, year of Graduation, average of Graduation of one student to another inform don't drawing subspecies that there are any forgery. The protection method it will take Graduation Certificate Falsifying Documents and insert watermarking to it and locked the document from any modification.

1. Introduction

Hacking refers to the re-configuring or re-programming of a system to function in ways not facilitated by the owner, administrator, or designer. The term(s) have several related meanings in the technology and computer science fields, wherein a "hack" may refer to a clever or quick fix computer program problem or to what may be perceived to be a clumsy or inelegant solution to a problem [3].

The terms "hack" and "hacking" are also used to refer to a modification of a program or device to give the user access to features that were otherwise unavailable, such as by circuit bending. It is from this usage that the term "hacking" is often used to refer to more nefarious criminal uses such as identity theft, credit card fraud or other actions categorized as computer crime [3].

2. Hacking Applications

There are a number of such applications as follows:

Proposed Algorithm to Protect the Graduate Document from Hacking Application

Prof. Dr. Abdul Monem S.Rahma , Dr. Hala Bahjat ,Amani Yousif Noori

2.1 Forgery

Is the process of making, adapting, or imitating objects, statistics, or documents, with the intent to deceive. The similar crime of fraud is the crime of deceiving another, including through the use of objects obtained through forgery. Copies, studio replicas, and reproductions are not considered forgeries, though they may later become forgeries through knowing and willful misrepresentations. In the case of forging money or currency it is more often called counterfeiting. But consumer goods are also *counterfeits* when they are not manufactured or produced by designated manufacture or producer given on the label or flagged by the trademark symbol. When the object forged is a record or document it is often called a false document [5].

2.2 Falsifying Documents

There is another example of unethical behavior such as falsifying documents. Falsifying documents, for example, means that the records of a business are being altered. Whether those records are the timecard recording a person's hours at work, financial documents, or records of sale, anything that defrauds the business or its customers is ultimately harmful to everyone involved. It means that you will need to make up for the work that the unethical employees fail to accomplish, and if the falsifying documents leads to a decrease in profits, as is often the case, then pay cuts or layoffs may result[4].

3. Usege of Hacking Application

Documents that have been forged in this way include driver's licenses (which historically have been forged or altered as an attempt to conceal the fact that persons desiring to consume alcohol are under the legal drinking age), birth certificates and Social Security cards (likely used in identity theft schemes, or to defraud the government), and passports (used to evade restrictions on entry into a particular country).Such falsified documents can be used for identity theft, age deception, illegal immigration, and organized crime[5].

4. ABBYY FineReader program

Intelligent, professional level OCR software for creating editable and searchable files from scanned documents, PDF, and digital camera images. ABBYY FineReader gives you the power to unlock the data inside paper-based documents, images, and PDF. It is the only OCR application featuring ABBYY's Adaptive Document Recognition Technology (ADRT)[6].

Proposed Algorithm to Protect the Graduate Document from Hacking Application

Prof. Dr. Abdul Monem S.Rahma , Dr. Hala Bahjat ,Amani Yousif Noori

ABBYY FineReader 9.0 delivers superior accuracy in converting almost any type of documents, including various office documents, tables and spreadsheets, magazine articles, books, and even faxes and digital photographs. With its new ADRT, an Adaptive Document Recognition Technology, FineReader is capable to recognize not only the text and basic layout of document images, but the logical structure of a document across multiple pages [6].

4.1 Optical Character Recognition (OCR)

Optical character recognition, usually abbreviated to OCR, is the mechanical or electronic translation of images of handwritten, typewritten or printed text (usually captured by a scanner) into machine-editable text[8].

5. Office Automation

office Automation /OLE Automation (later renamed by Microsoft to just *Automation*) is an inter-process communication mechanism based on Component Object Model (COM). It provides an infrastructure whereby applications called automation controllers can access and manipulate (i.e. set properties of or call methods on) shared automation objects that are exported by other Applications in OLE Automation the automation controller is the "client" and the application exporting the automation objects is the "server" [2].

In order to working with Word data and want application to exchange data with other applications, Automation technique allows return, edit, and export data by referencing another application's objects, properties, and methods and so to work with COM objects exposed by the Office applications 2003 Microsoft created a set of a primary interop assembly (PIA), Primary interop assembly allows managed Visual C#.net to communicate with the host application's COM-based object model, Visual studio Tools for the Microsoft Office System uses PIA.

In order to automate an application, must know the object model that is employed by the target application exporting activation objects. This requires that the developer of the target application publicly document its object model. Development of automation controllers without knowledge of the target application's object model is "difficult to impossible". Because of these complications, automation components are usually provided with Type libraries which contain metadata about classes, interfaces and other features exposed by an object library.

Microsoft has publicly documented the object model of all of the applications in Microsoft Office, Microsoft has provided a wealth of

Proposed Algorithm to Protect the Graduate Document from Hacking Application

Prof. Dr. Abdul Monem S.Rahma , Dr. Hala Bahjat ,Amani Yousif Noori

objects that allow developers to manipulate word and some other software developers have also documented the object models of their applications. Object models are presented to automation controllers as type libraries.

5.1 PIA for Microsoft Office 2003

The following tables list the PIAs available for use with Office 2003 Table (1) lists Microsoft Office 2003 applications and component type libraries that have the same version number and that are signed with the same key [1].

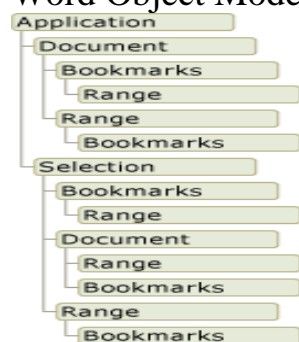
Table (1) Office 2003 applications and component type libraries with the same version number, signed with the same key [1]

Office 2003 Application or component	PIA Name	PIA Namespace
Microsoft Office 11.0 Object Library	Office.dll	Microsoft.Office.Core
Mirosoft Word 11.0 Object Libyrar	Microsoft.Office.Interop.Word.dll	Microsoft.Office.Interop.Word

5.2 Word Object Model [7]

Word provides hundreds of objects with can interact. These objects are organized in a hierarchy that closely follows the user interface. At the top of the hierarchy is the Application object. This object represents the current instance of Word. The Application object contains the Document, Selection, Bookmark, and Range objects. Each of these objects has many methods and properties that can access to manipulate and interact with it. The following illustration shows one view of these objects in the hierarchy of the Word object model.

Word Object Model Abstract



At first glance, appears to be a lot of overlap. For example, the Document and Selection objects are both members of the Application object, but the Document object is also a member of the Selection object. Both the Document and Selection objects contain Bookmark and Range objects. The overlap exists because there are multiple ways can access the same type of object. For example, apply formatting to a Range object; but

Proposed Algorithm to Protect the Graduate Document from Hacking Application

Prof. Dr. Abdul Monem S.Rahma , Dr. Hala Bahjat ,Amani Yousif Noori

may want to access the range of the current selection, of a particular paragraph, of a section, or of the entire document.

The following sections briefly describe the top-level objects and how they interact with each other. These objects include the following five:

- ☒ Application object
- ☒ Document object
- ☒ Selection object
- ☒ Range object
- ☒ Bookmark object
- ☒ **Application Object**

The Application object represents the Word application, and is the parent of all of the other objects. Its members usually apply to Word as a whole can use its properties and methods to control the Word environment.

☒ Document Object

The Document object is central to programming Word. It represents a document and all of its contents. When open a document or create a new document, create a new Document object, which is added to the Documents collection of the Application object.

☒ Selection Object

The Selection object represents the area that is currently selected. When perform an operation in the Word user interface, such as bolding text, select, or highlight the text and then apply the formatting. The Selection object is always present in a document. If nothing is selected, then it represents the insertion point. In addition, a selection can encompass multiple blocks of text that are not contiguous.

☒ Range Object

The Range object represents a contiguous area in a document, and is defined by a starting character position and an ending character position, not limited to a single Range object but define multiple Range objects in the same document.

☒ Bookmark Object

The Bookmark object represents a contiguous area in a document, with both a starting position and an ending position can use bookmarks to mark a location in a document, or as a container for text in a document. A Bookmark object can consist of the insertion point, or be as large as the entire document.

6. Proposed System

The proposed system is an implement of working of hacker that introduced inform of hacking algorithm and programming protecting

Proposed Algorithm to Protect the Graduate Document from Hacking Application

Prof. Dr. Abdul Monem S.Rahma , Dr. Hala Bahjat ,Amani Yousif Noori

algorithm for this hacking method. The hacker will be falsification Graduation Certificate document, first will be used Abby fine reader to convert Graduation Certificate document from jpg. File to doc. File and will reprogram word Automation (*see section 5.office Automation*) Word Automation almost completely involves working with objects and references types that. The proposed system change the student's Name, student's picture, degrees, Average of Graduation, year of Graduation of original person to another person. The protected method will protected document using Watermarking and locked the falsifying document from any modification.

Hacking Algorithm

Input: Graduation Doc. Certificate

Output: Graduation Doc. Certificate falsification

Step 1: Scanning the Certificated document using scanner to input it to computer

Step 2: Convert it from jpg to Doc. File using Abbyfine reader program

Step 3: Hacking Graduation Doc. Certificate for change:

- a- Student 's Name
- b- Student 's picture
- c- year of Graduation
- d- average of Graduation
- e- degrees

Protection Algorithm

Input: Graduation Doc. Certificate falsification

Output: Graduation Doc. Certificate falsification locked

Step1: Insert watermarking that represent name of student.

Step2: Locked Document from any modification.

6. System implementation

The proposed system is built using Microsoft Visual C sharp. net 2003 Under windows XP as O.S , Abby fine Reader program , Microsoft word document 2003 , office Automation technique provided by Microsoft

Step 1: we will take B. Sc. graduation certificate for one student his name is Akera D. Yoki and average (80.9) which is marked as V.Good and his degrees : Structure Programming = 60, Logic design = 83, Discrete Structure = 63, Computer Organization = 89 , Statistics =84.....

Step 2: scan B. Sc. Graduation certificate using Epson CX4300 scanner

Step 3: using **ABBYY FineReader** to convert file from jpg. To doc. File . the output document as in figure (1).

Proposed Algorithm to Protect the Graduate Document from Hacking Application

Prof. Dr. Abdul Monem S.Rahma , Dr. Hala Bahjat ,Amani Yousif Noori

Republic of Iraq
Ministry of Higher Educational
Scientific Research
Al-Mustansiriyah University
College of Science

No 4433
Date 27/4/2005

To Whom it may concern

This is to certify that **Ahmed D. Yeki**
Whose photo grade is affixed above has successfully completed the course of study in
the Computer department College of Science, Al-Mustansiriyah University in the
academic year 2003-2004. He was awarded the B. Sc degree in Computer on 26/6/2004.
His graduation was with an average of (80.9), which is marked as Good. This average is
for the four years of study.

Following are the marks for the courses of his study:

First Year			Second Year		
Subject	Marks	Units	Subject	Marks	Units
Structure	80	S	Computer Software	79	+
Pre programming	83	+	Microprocessor	87	+
Logic design	83	+	Data Structure	80	+
Discrete Structure	83	+	Computational	71	+
Computer	88	+	theory	83	+
Organization	84	+	Numerical Methods	84	+
Statistics	84	+	Advanced Math	84	+
National Society	70	+			

Third Year			Fourth Year		
Subject	Marks	Units	Subject	Marks	Units
Computer	74	+	Operating System	81	+
Computer	89	+	Artificial	88	+
Architecture	89	S	Intelligence	88	+
System analysis	83	+	Software	88	+
Pre programming Lang	79	+	Engineering	88	+
Computer Graphics	80	+	Research Project	88	+
Data Security	80	+	Image Processing	80	+

Al-Mustansiriyah University
Registration Office

Figure (1) B. Sc. Graduation certificate

Step 4: Apply hacking algorithm to change name of student to **Mohand S. Oklo** and change his graduation was with an average of **(90.9)**, which is marked as **Excellent**, change degrees like Structure Programming = 90 As in figure(2).

Republic of Iraq
Ministry of Higher Educational
Scientific Research
Al-Mustansiriyah University
College of Science

No 4433
Date 27/4/2005

To Whom it may concern

This is to certify that **Mohand S. Oklo**
Whose photo grade is affixed above has successfully completed the course of study in
the Computer department College of Science, Al-Mustansiriyah University in the
academic year 2003-2004. He was awarded the B. Sc degree in Computer on 26/6/2004.
His graduation was with an average of (90.9), which is marked as Excellent. This
average is for the four years of study.

Following are the marks for the courses of his study:

First Year			Second Year		
Subject	Marks	Units	Subject	Marks	Units
Structure	90	S	Computer Software	89	+
Pre programming	88	+	Microprocessor	87	+
Logic design	88	+	Data Structure	89	+
Discrete Structure	83	+	Computational	91	+
Computer	88	+	theory	83	+
Organization	84	+	Numerical Methods	83	+
Statistics	84	+	Advanced Math	84	+
National Society	70	+			

Third Year			Fourth Year		
Subject	Marks	Units	Subject	Marks	Units
Computer	88	+	Operating System	81	+
Computer	89	+	Artificial	80	+
Architecture	92	S	Intelligence	80	+
System analysis	83	+	Software	88	+
Pre programming Lang	79	+	Engineering	88	+
Computer Graphics	80	+	Research Project	88	+
Data Security	80	+	Image Processing	89	+

Al-Mustansiriyah University
Registration Office

Prof. Ilham Shafiq Dawood gh. (Ph.D.)
Dean

Figure (2) hacking B. Sc. Graduation certificate

Proposed Algorithm to Protect the Graduate Document from Hacking Application

Prof. Dr. Abdul Monem S.Rahma , Dr. Hala Bahjat ,Amani Yousif Noori

Step 5: Apply protection Algorithm

Insert watermarking that represent name of student
mohand S. Oklo

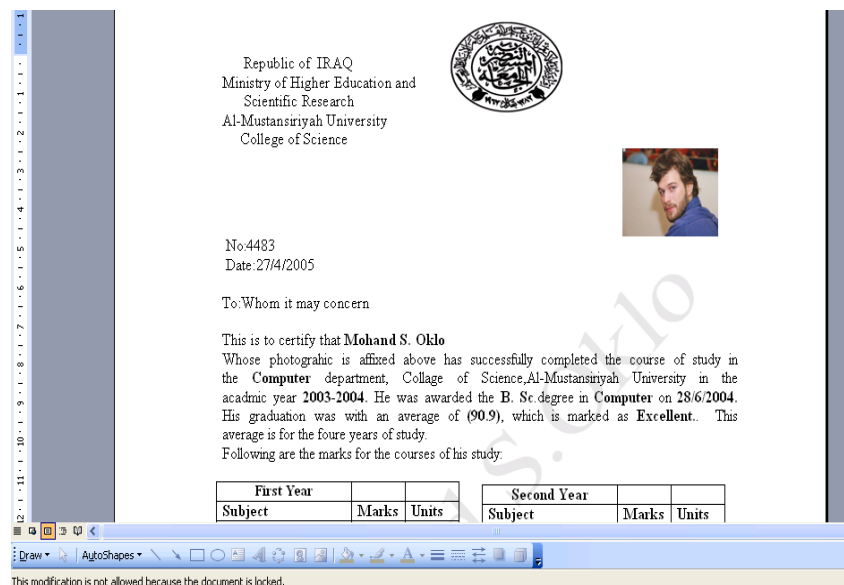


Figure (3) B. Sc. Graduation certificate flassificated protected
Conclusions

- 1- No long time is taken for falsification document compared to working with paint or Photoshop program that must works hours to change one item just but in this method it will change five things in seconds.
- 2- The output Graduation Certificate falsification is no during subspecies that there is any modified.
- 3- It proposed new method for protect Document from any modification because it's locked document from any change.

References

- [1] Khor, S., M. and Leonard, A., "installing and using the office 2003 Primary Interop Assemblies ", Microsoft Corporation, January 2005.
- [2] "OLE Automation" Website:http://en.wikipedia.org/wiki/OLE_Automation
- [3]"Hack(technology)" Website:[http://en.wikipedia.org/wiki/Hack \(technology\)](http://en.wikipedia.org/wiki/Hack_(technology))
- [4] "When Ethics have failed: Falsifying Documents in the Workplace"
http://www.anonymousemployee.com/csssite/sidelinks/falsifying_documents.php
- [5] "Forgery" Website:<http://en.wikipedia.org/wiki/forgery>
- [6] "ABBYY FineReader" <http://www.sharewareconnection.com/abbyy-finereader.htm>
- [7] "Word Object Model Overview"
[http://msdn.microsoft.com/en-us/library/kw65a0we\(v=vs.80\).aspx](http://msdn.microsoft.com/en-us/library/kw65a0we(v=vs.80).aspx)
- [8] "Optical Character Recognition (OCR)" Website:[http://en.wikipedia.org/wiki/Optical Character Recognition \(OCR\)](http://en.wikipedia.org/wiki/Optical_Character_Recognition_(OCR))