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|  | **2012/2013** |
|  | **BFCI**Benha Faculty of Computer & Informatics |



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| **[Lab 2 (Font, Text & Cryptography]** |
| [ This Lab allow the student to Know different types of Font & create His own + Know the cryptography techniques & know how to use it & make it more and more difficult regarding to its usage and needs ] |

**Learning Activity 1: Computer font**

**There are three basic kinds of computer font file data formats:**

* **Bitmap** fonts consist of a series of dots or pixels representing the image of each glyph in each face and size.
* **Outline** fonts (also called vector fonts) use Bézier curves, drawing instructions and mathematical formulas to describe each glyph, which make the character outlines scalable to any size.
* **Stroke** fonts use a series of specified lines and additional information to define the profile, or size and shape of the line in a specific face, which together describe the appearance of the glyph.
* *Workshop student Assignment :*

*Create Class '12 OWN font (team members=3) using both pixel & vector technique. (Please find the attached documents)*

*Ref:*

[*http://www.fontcapture.com/*](http://www.fontcapture.com/)

[*http://www.yourfonts.com/print.html*](http://www.yourfonts.com/print.html)

[*http://fontstruct.fontshop.com/*](http://fontstruct.fontshop.com/)

[*http://www.high-logic.com/fontcreator.html*](http://www.high-logic.com/fontcreator.html)

**Learning Activity 2: *Cryptography***

***Cryptography*** (or cryptology; from Greek κρυπτός, kryptos, "hidden, secret"; and γράφω, gráphō, "I write") is the practice and study of hiding information. Modern ***cryptography*** intersects the disciplines of *mathematics*, *computer science*, and *engineering*. Applications of cryptography include *ATM cards*, computer passwords, and *electronic commerce*.

**Substitution** *(one of the Cryptography methods)* **method can be divided into 3 forms:**

* Fixed displacement substitution
* Keyword based substitution
* Matrix based substitution.

***Fixed Displacement Substitution:***

* Ciphertext represent a fixed displacement in the alphabet.
* The relationship between the mapping of plaintext and ciphertext characters are as below:

Plaintext: ABCDEFGHIJKLMNOPQRSTUVWXYZ

Key: BCDEFGHIJKLMNOPQRSTUVWXYZA

This encrypts “***multimedia***”(plaintext) into “***nvmujnfejb***” (ciphertext)

***Keyword Based Substitution:***

* Simplest type of keyword based substitution is implemented in three steps :
1. A word or phrase is selected as keyword and use for forming the letters of the ciphertext alphabet
2. Repeated letters are omitted after their first occurrence
3. At the end of the word or phrase, remaining letters of the alphabet are used in the normal sequence
* For example, suppose we use the phrase “MULTIMEDIA UNIVERSITY”. We then form one word and remove the duplicated letters to get a newly formed word “MULTIEDANVRSY”.
* The remaining alphabet letters are then added at the end of the keyword to give you the keyword-based mixed alphabet “MULTIEDANVRSYBCFGHJKOPQWXZ” (key)
* ***Example:***

Plaintext: ABCDEFGHIJKLMNOPQRSTUVWXYZ

Key: MULTIEDANVRSYBCFGHJKOPQWXZ

This encrypts “***Hello***”(plaintext) to “***Aissc***”(ciphertext)

***Matrix Based Substitution:***

* By placing an alphabet into an n x n matrix or array, one can obtain the ability to design the ciphertext alphabet in many different ways
* For example, consider the matrix below:
* By extracting the matrix element in a predefined sequence, you can develop a transpose alphabet.
* If you extract the matrix elements in each column, commencing with column 7 working backward, extracting the elements in column 6, 5 and so on, the alphabet GNUFMTELSZDKRYCJQXBIPWAHOV (key) is created.
* If matrix elements are extracted in a progressive column order, alphabet AHOVBIPWCJQXDKRYELSZFMTGNU (key) is created.
* *Workshop student Assignment :*

*Create Class '12 OWN (team members=3) Quote using the difference cryptography techniques.*

**Lab Assignment:**

* Multimedia is Combination of different media techniques (Text, Video, Audio…etc.) to trigger a piece of information and to present an Idea. You now know how to create a font for constructing a piece of information. Please make a Poster (Unrestricted Dimension) to use only text to deliver your idea, note, quote…etc. [Typography Art]
* At the bottom of the “Poster” write your (team) own quote you want to deliver to “Mother Earth”, but it must be “Encrypted”. And upload the “key” on the “Multimedia Class’12” group.
* Through your creation journey you will configure that the “Typography Artistes” need better software to work on, So, Present an initial GUI interface that handle these needs.

Your “Creative Work” will be published in an Open Gallery [The Date will be arranged with your T.A.], to check id the “Text” Media Delivered what you need?? This is what the Gallery audience will answer.

Good Luck,

Multimedia Class T.A’s