scientists recommend such concepts not to emit harmful radiation in order to protect our health.

Список использованных источников:
1. http://www.digitaltrends.com/mobile/10-awesome-future-phone-concepts/

# “SHIFRATOR” PROGRAMME – AN INFORMATION CODER BASED ON A “CHAR-CIPHER”

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Nowadays information is penetrating all spheres of our life. Part of information is available to the public; and there is another part of information not intended for everyone. That is why there exist various cryptographic codes for its protection. Bellow we discuss a code “a char-cipher” – a new word in the world of cryptography.

For our char-cipher (later on just “cipher”) we used characteristics of type “char” variables in a programming language Java. These variables are both symbols and numbers (i.e. each figure is a serial number of a symbol). Thus, we can work with information or encipher it without its converting.

When encoding information we replace each symbol by two. For these purpose a cipher algorithm can be divided into two parts. First we divide the number of a current symbol into two without a residue (any residue left - 1 or 0 - will be taken into account later). The resulting value is the first symbol. To get the second symbol there are some conditions:

1. If a residue is a unit, the second symbol is selected randomly;
2. if a residue is a zero, the second symbol is selected randomly from a given array of values.

Thus, every new letter (symbol) will have its own encoding, making the char-cipher very difficult to break. For example, if you encode a string of identical symbols, e.g. *ttttttttttt*, then the result is

:H:9:0:A:z:*:,:z:/:,:H:,:)

We see that encrypting only one letter we can have different combinations of symbols.

As for the program itself, “Shifrator”, which uses the char-cipher we can say that it has a very simple interface, shown in Figure 1:

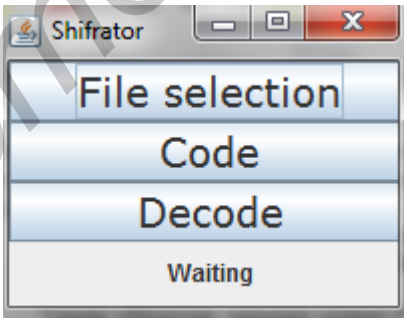


Figure 1 – Shifrator’s interface

First it is necessary to select a file which has to be coded or decoded. To do this, click on "File selection" button. Window for file selection is shown in Figure 2:

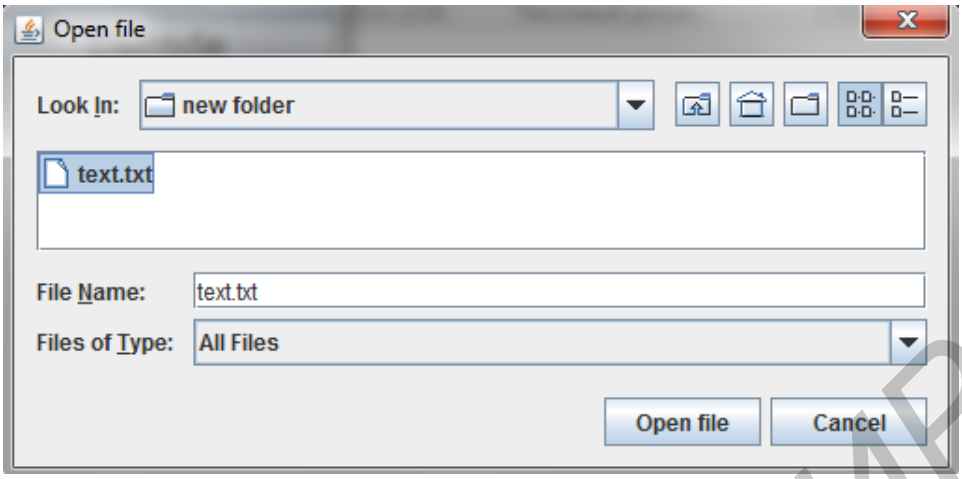


Figure 2 - Window for selecting a file.

Then the word "Waiting" will be replaced by the phrase "File selected". Now we have only to choose the operation "Code" or "Decode". Upon completion of the operation there appears "Coding completed" or "Decoding completed" respectively.

So we can say that our char-code is quite modest among his titled “colleagues”, but thanks to the speed and quality of encryption with its help it can take its rightful place.

References:

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2. Адаменко, М. В. Основы классической криптологии: секреты шифров и кодов / М. В. Адаменко // Уч. пособие. – Москва, 2012. – 256 с.

# FLEXIBLE DISPLAYS

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The manufacturing of flat panel displays is a dynamic and continuously evolving industry. Improvements of flat panel displays are made rapidly as technology improves and new discoveries are made by display scientists and engineers. The development of flexible display technology promises to reshape the global flat panel display landscape and open up compelling new applications for displays which do not exist today.

The cathode ray tube and active matrix liquid crystal display (LCD) recently celebrated their 100th and 25th anniversary, respectively. The arrival of portable electronic devices has put an increasing premium on durable, lightweight and inexpensive display components. In recent years, there has been significant research investment in the development of a flexible display technology. Flexible displays may only be flexed once during their life time; for example, during manufacturing to create a permanently conformed display.

To enable a flexible flat panel display, a flexible substrate must be used to replace conventional glass substrates, which can be either plastic or thin glass. Flexible flat panel display technologies offer many potential advantages, such as very thin profiles, light weight and robust display systems, the ability to flex, curve, conform, roll, and fold a display for extreme portability, high-throughput manufacturing, wearable displays integrated in garments and textiles, and ultimate engineering design freedom.

Flexible displays, in principle, are amendable to a roll-to-roll manufacturing process which would be a revolutionary change from current batch process manufacturing. Figure1 shows a simple conceptual illustration of a roll-to-roll manufacturing process where display materials are deposited on indium-tin-oxide (ITO) coated plastic substrates, processed, and rolled backup. As compared to a batch process, which handles only one component at a time, roll-to-roll processing represents a dramatic deviation from current manufacturing practices. If and when roll-to-roll manufacturing technology matures for display processing, it promises to reduce capital equipment costs, reduce display part costs, significantly increase throughput, and it may potentially eliminate component supply chain issues if all processes are performed with roll-to-roll techniques. Although batch processing can still be employed to manufacture flexible flat panel displays, many researchers and technologists believe that roll-to-roll manufacturing will ultimately be implemented.

The technology attributes of flexible displays and schematic diagram of a roll-to roll manufacturing process are