Multilingual SMS

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INTRODUCTION

In 1985, Ernie made the first telephone call on the mobile phone in Britain. In less than two decades, however, the mobile phone has turned into a necessary device for people, and now one out of every six individuals throughout the world has a mobile phone.

With the expanding use of mobile phones and the development of mobile telecommunications, telecommunication companies as well as companies manufacturing mobile phones decided to add additional features to their telephone sets in order to attract more customers. One of the services that were provided on the mobile phone was the SMS.

The SMS (short message service) is the transfer and exchange of short text messages between mobile phones. The SMS is defined based on GSM digital mobile phones. According to the GSM03.40 standard (GSM, 2000), the length of the exchanged message is 160 characters at most which are saved in 140 bytes depending on how information is saved according to the standards. These messages may be a combination of digits and letters or saved in non-text binary form. Using the same binary messages, one can also send pictures as well. The pictures, however, are two color and have a low quality (Shirali, 2006).

SMS messages are exchanged indirectly and through a component known as the SMSC. SMS messages have the following advantages:

- Communication is possible when the network is busy.
- We can exchange SMS messages while making telephone calls.
- We can send offline SMS messages.
- Various services are provided such as e-commerce.

One can also receive reports on the status of the SMS message or define a validity period for the SMS message (Nokia, 2001).

SMS PICTURE MESSAGE

The size of the SMS picture message is 72×28 pixels and it is two color. The saving format of the SMS picture is OTA. The structure of this format is as follows (Nokia, 2001).

The header of this format containing four fixed bytes is as follows:

Byte 1) 0000 0000 (→ 0)

Byte 2) 0100 1000 (→ 72)

Byte 3) 0001 1100 (→ 28)

Byte 4) 0000 0001 (→ 1)

As you can see in the above header, the second and third bytes indicate the height and width of the picture.

The structure of the body of the picture contains the pixels in 0 and 1. The amount of each pixel is saved in one bit. In each bit, 0 indicates the black and 1 the white color. Thus, every 8 pixels are saved in one byte. The order of saving of the pixels is from the left to the right and from the top to the bottom of the picture. Considering the size of the picture, the entire size of an SMS picture message is 256 bytes (see Figure 1).

SENDING SMS IN LOCAL LANGUAGE

Using SMS is not limited to the subscribers inside a country, and all mobile phone owners in other countries can also receive SMS.

In the early days, mobile phones supported limited languages such as English, but gradually other languages were also added to the potentialities of mobile phones. Today, mobile phone producers offer support of local language of the country where the phone set is to be supplied. For example, the mobile phones supplied to the Iranian market support Persian and Arabic languages as well. Thus, it is possible to send SMS in local languages. Anybody can send SMS in his own language and not need to use English (Stuiver, 2006).

Figure 1. Size of an SMS picture message

Image Size: ((72×28 bit) ÷ 8) byte + 4 byte = 256 byte

However, as already states, the mobile phones only support the English language plus the language of the concerned country (and sometimes a limited number of other languages). Thus, a person who lives outside his native country where the language spoken is different from his native language is not able to send or receive SMS in his mother tongue. In the same manner, those who live in a given country cannot send SMS in their local language to their friends in other countries, because the mobile phones of their friends may not support their local language, and therefore they have to send SMS in English. In some cases, people send their messages in their local language typed in English letters. For example, "place" is the English word for Arabic «مكان» "Makan." An Arab may type "Makan" (a transcription of the Arabic word in English characters) and send as SMS. This forces undesirable changes to the local languages and may, in the long run, destroy the language.

MY PROPOSED IDEA

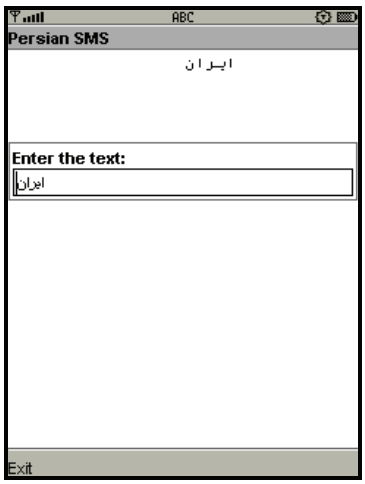
In this article, I am presenting a solution to this problem. As indicated earlier, two-color pictures can be sent by SMS. Therefore, SMS picture messages can be sent to convey SMS in local languages. Thus, there will be no problem in view of support of the local language by the mobile phone of the person who receives the message. The details and procedure of this method are as follows.

First, the input text is received from the user. As the size of SMS is limited to 72 × 28 pixels, a limited amount of text can be incorporated into the picture. This amount differs for different languages. As the size of letters in Persian and Arabic is not identical, a precise size cannot be defined, but on average, two lines and in each line 9 Persian or Arabic letters can be accommodated. That is, a total of 18 Persian or Arabic characters can be placed in each picture. In case the mobile phone of the sender did not have the capability of entering text in the local language, a program can be developed to receive the texts in a local language. The possibility of supporting local language can be also added by installing some programs available in the market. For example, the Arabic/Farsi/Urdu Localization program produced by Psiloc Mobile Solution Company (Psiloc, 2006) can be used for Persian and Arabic languages. Of course, the text can be received from the user in the form of English characters and then converted into the local language, as done by the ArabTex program (Lagally, 2006). In this case, there is no need for a mobile phone capable of supporting the local language. However, this method is not recommended due to the defects previously indicated.

After receiving the text from the user, a certain number of letters depending on the language in use (due to limited size of the picture) are separated and saved in the picture of an SMS. This action is repeated until the entire text is saved in SMS picture messages. Then, these pictures are sent.

This idea has been implemented by J2ME (Java 2 Platform, Micro Edition). This language is a version of the Java programming language specially developed for small devices such as pocket PC computers, PDAs, mobile phones, and so on. As mobile phones extensively support the Java language, this method can be executed on a large range of mobile phones. It can also be executed on PDAs. A sample of this program for Persian and Arabic languages is shown in Figure 2.

Figure 2. The program for converting text to picture SMS on the mobile phone



ADVANTAGES

All mobile phones, even the black-and-white models and the old models, are capable of displaying picture SMS. Therefore, this method can be used without any hesitation. The cost of sending SMS is very low and sending a message in the form of a few SMS picture messages is not costly. This method is not only useful for sending SMS to another country. Even inside a given country, some old mobile phones do not support local language, and this method can solve their problem.

My proposed method has high security. For identification and tracing messages, an optical character recognition (OCR) program is needed to extract the text of the message and then to study the text. This process needs too many calculations and, considering the large volume of SMS exchanged daily, it is a difficult and time-consuming work.

In this method, special fonts of each language which may not be installed on the phone set of the receiver can be used to add to the beauty of the text.