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## INTRODUCTION

Embedded system application displays vary from complex devices, such as PDAs, cell phones and compact computers, to simple devices, such as home air-conditioner and security controllers, coffee makers and door entry keypads. Most of the simpler devices already have been adapted to use graphical displays previously found only in high-end devices, and with the price of displays continuing to fall, more and more simple devices will be using displays.

A common concern with simple devices is keeping down costs to improve market competitiveness. This requires reducing components, including memory and display sizes. As more functionalities are included in device designs, keeping down costs has become more challenging.

With today's global economy, products increase their sales by being sold in more geographies, but that requires the products to be adapted to other languages. For products with displays, that increases the functional requirements and compounds the problem of keeping costs down.

The character sets that produce the display's font images are central to the cost problem. While English and most other European languages can be handled with a 256-character set, Chinese, Japanese, Korean and other languages require many more characters. In some cases, the character set can be in the thousands which significantly increases a systems' memory requirements.

For simple, low-cost devices, market economics make it impossible to provide individual functionality for every character in languages with such large character sets.

The Microchip Graphics Library solves this problem by creating font images that contain only the characters that an application will be using. That significantly reduces the amount of system memory required for fonts.

This application note describes the format of the Microchip Graphics Library's font image. It also tells how to reduce the number of characters in a font and automate the creation of the character arrays referring to an application's strings.

This document's examples are applicable to 16-bit and 32-bit PIC® microcontrollers with peripherals capable of connecting to display devices, such as the Parallel Master Port (PMP), and which are supported by the Microchip Graphics Library.

For an overview of the library's architecture and uses, see AN1136, "How to Use Widgets in Microchip Graphics Library". For further details, see the library's Help documentation that comes with the library software. (The library can be downloaded from [www.microchip.com/graphics](http://www.microchip.com/graphics).)

[AN1182.pdf](#) (357 KB)