uIP port to the HCS12E architecture

Introduction

This document describes the uIP port to the Motorola MC9S12E family of microcontrollers, more specifically to the MC9S12E128 using the AdaptS12E128 evaluation board and the 100-BaseT Ethernet LAN card manufactured by Technological Arts. (http://www.technologicalarts.ca) The LAN card is built around the SMSC LAN91C111 controller and is operated in expanded wide mode.

The port written in C language has been compiled an assembled with the GNU development chain for the 68HC11 & 68HC12 (http://www.gnu-m68hc11.org) using the Windows based EmbeddedGNU IDE (http://www.geocities.com/englere_geo). Adapting this project to use another C compiler should be straightforward, with all the assembler code being localized in one header file, and interrupt service routines clearly identified in source code.

Description of the uIP HCS12E port

The port is made of these files and folders:

Name	Content
critical.h	Definitions of macroinstructions used to control CPU interrupt recognition.
datatypes.h	Definitions of data types used in this project.
lan91c111.h lan91c111.c	Ethernet driver module made of five function calls and one interrupt service routine. Can be compiled separately as it does not use any uIP definition.
main.c	uIP main event control loop with support routines to handle uIP logging and timing.
mc9s12e_regs.h	Definitions of most registers of the MC9S12E MCU family.
mc9s12e_vectors.s	The project interrupt vectors table to be assembled.
netlog.h netlog.c	A simple application demonstration which routes uIP logging output to TCP port 23 (telnet) on demand.
timers.h timers.c	Module to offer countdown timers (up to 254) with a resolution of 0.1s. Uses the real time interrupt (RTI) as the tick clock.
uip.h uip.c	The uIP TCP/IP stack code.

uip_arch.h uip_arch.c	Functions to implement the IP check sum and 32-bit additions for the HCS12 architecture.
uip_arp.h uip_arp.c	Implementation of the ARP Address Resolution Protocol.
uipopt.h	Configuration options for uIP to be compiled.
uip_mak	uIP project make file created by EmbeddedGNU.
uip_prj	uIP project file.
9s12e128.mem	Hardware profile file used by EmbeddedGNU to define project options and MCU memory map.
memory.x	Memory layout file created by EmbeddedGNU to be used by GNU linker.
\ uip-0.9	Folder contains all the other files part of the uIP release 0.9
\ doc	Folder contains miscellaneous documents related to this port.

Content of the \doc folder

status.pdf	Description of the status code returned by the ethernet_open() function of the lan91c111.c module.
91C111.pdf	SMSC LAN91C111 datasheet.
AN96.pdf	SMSC Application Note 9.6

License issues.

Pierre Morency <pmorency@globetrotter.net>
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