## TECHNICKÁ UNIVERZITA V KOŠICIACH Fakulta elektrotechniky a informatiky

KATEDRA ELEKTRONIKY A MULTIMEDIÁLNYCH TELEKOMUNIKÁCIÍ



# **CodeWarrior for ColdFire**

(návod na vytvorenie projektu, jeho simuláciu a ladenie v RAM a FLASH)

Košice, November 2007

### 1. Vytvorenie projektu:

a. Spustiť CodeWarrior:

Start > Programs > Freescale CodeWarrior >CodeWarrior for ColdFire V6.4 > CodeWarrior IDE

b. Z hlavného menu vybrať File > New, objaví sa dialógové okno "New":

New Project File Object	
ColdFire Stationery Empty Project External Build Wizard	Project name: Hello World
	Location: D:\= PHD =-\= VYUKA =\M
	Add to Project
1	DK Storno

- c. Vybrať ColdFire Stationery
- d. Zadať názov projektu do "Project name"
- e. Potvrdiť tlačidlom "OK", následne sa objaví dialógové okno "New project":

New Project 🛛 🛛 🗙	<u>ן</u>
Select project stationery:	
Project Stationery	
. E- CF_M52221DEM0 ▲	
E- CF_M52233DEM0	
- C	
E CF_M5253EVBE	
OK Cancel	

f. Expandovať ponuku pre CF\_M52233DEMO a vybrať C

g. Potvrdiť tlačidlom "OK", čím bude vytvorený nový projekt

#### 2. Nevyhnutné nastavenia prostredia:

- a. Z hlavného menu vybrať: Edit > CONSOLE\_RAM Settings – Target Settings, Otvorí sa dialógové okno "Target Settings Window"
- b. Z ponuky na l'avej strane vybrať "Target > Target Settings"

CONSOLE_RAM Setting	: [Hello World.mcp]
Target Settings Target Settings ← Target Settings ← Access Paths ← Build Extras ← Runtime Settings ← File Mappings ← Source Trees ← Colditie Target ← Language Settings	Target Setting:         Target Setting:         Target Name:         CONSOLE_RAM         Linker Embedded ColdFire Linker         Pre-linker None         Post-linker None         Output Directory:         Output Directory:         Choose
C/C++ Language     C/C++ Preprocessor     C/C++ Varnings     ColdFire Assembler     ColdFire Processor     Global Optimizations     Linker     ELF Disassembler     ✓	(Project/bin Clear Clear
	Factory Settings         Revert         Import Panel         Export Panel           OK         Cancel         Apply

- c. Ubezpečiť sa, že rolovacia ponuka pre "Linker" je nastavená na Embedded ColdFire Linker
- d. Vybrať Debugger > Remote Debugging

CONSOLE_RAM Settings [Hello World.mcp]		
Target Settings Panels	Remote Debugging	
Target Settings     Access Paths     Access Paths     Build Extras     File Mappings     Source Trees     ColdFire Processor     Global Optimizations     Linker     ELF Disassembler     ColdFire Inster	Connection Settings Connection ECSSIM  Edit Connection  Remote download path  Launch remote host application	
Editor     Custom Keywords     Debugger     Debugger Settings     Remote Debugging	Connection ABATRON_SERIAL _ Edit Connection OS Image Patr:Choose	
	Factory Settings         Revert         Import Panel         Export Panel           OK         Cancel         Apply	

- e. V rolovacej ponuke "Connection" vybrať CCS-SIM
- f. Stlačiť tlačidlo "Apply"
- g. Vybrať Debugger > CF debugger settings

CONSOLE_RAM Settings	[Hello World.mcp]	?×
Target Settings Panels     C/C++ Warnings     ColdFire Assembler     ColdFire Processor     Global Optimizations     Linker     ELF Disassembler	CF Debugger Settings     Target Processor [5223x Target 05: BareBoard     Vuse Target Initialization File     (Project)cfg/M52233DEM0.cfg     Browse     Vuse Memory Configuration File	
ColdFire Linker  Custom Keywords  Debugger Settings  Remote Debugger Setting  OF Debugger Settin  OF Exception  OF Exception  CF Reset	[Project]cfg\M52233DEM0.mem     Browse       Program Download Options     Initial Launch       Executable     Verify Memory Writes       Constant Data     Constant Data IV       Initialized Data     Initialized Data       Uninitialized Data     Uninitialized Data	
Debugger PIC Setti •	Factory Settings         Revert         Import Panel         Export P           OK         Cancel         Ap	anel

- h. Ubezpečiť sa, že rolovacie menu "Target Processor" je nastavené na 5223x
- i. Ubezpečiť sa, že rolovacie menu "Target OS" je nastavené na "Bare Board"
- j. Nastavenia potvrdiť tlačidlom "OK"

- k. Vybrať V projektovom rolovacom menu vybrať "INTERNAL\_FLASH"
- l. Z hlavného menu vybrať:
  - Edit > INTERNAL\_FLASH Settings Target Settings,
- m. V l'avo vybrať Debugger > Debugger Settings
- n. Nastaviť "Stop on application launch" podľa obrázku:
- 0.

💼 INTERNAL_FLASH Settings [Hello World.mcp]		
Target Settings Panels	Debugger Settings	
ColdFire Assembler ColdFire Processor Clobbal Optimizations Clobbal Optimizations Clob		
← CF Interrupt ← CF Reset ← Debugger PIC Setti ← Source Folder Map ▼	Factory Settings Revert Import Panel Export Panel	
	OK Cancel Apply	

3. Simulácia a Ladenie v RAM a FLASH

🕼 Freescale CodeWarrior - [main.c]			
Eile Edit View Search Project	t <u>D</u> ebug Tools	Window Help	_ @ ×
11 16 11 日 日 スト	• • 2 1	1 📶 💹 🏈	
Hello Morid mcp		X	• • • • • • • • • • • • • • • • • • •
CONSOLE_RAM      Files Link Order   Targets	10 🖋 🏈 1	•••	/* * File: main.c * Furpose: sample program * */ #include "support_common.h" /* includ
🛛 🖌 File	Code Data	🙆 🕊 👔	#include <stdio.h></stdio.h>
<ul> <li>Preadme.txt</li> <li>Sources</li> <li>maince</li> <li>Support Files</li> <li>Runtime, MSL, Libraries</li> <li>Linker Command Files</li> <li>Debugger Files</li> </ul>	n/a n/ 36 1 36 1 0 45K 7 0 0	· · · · · · · · · · · · · · · · · · ·	<pre>int main(void) {     printf("Hello World in C\n\r");     fflush(stdout);     while(1) {     } </pre>
23 files	45K 7	к ————————————————————————————————————	}
Line 1 Col 1			

- a. V projektovom rolovacom menu vybrať
  - i. "CONSOLE\_RAM" pre simuláciu
  - ii. "RAM" pre beh programu a ladenie v RAM
  - iii. "INTERNAL\_FLASH" pre beh programu a ladenie vo FLASH (najprv je nutné projekt skompilovať a nahrať program do FLASH cez externú aplikáciu, ktorá bude popísaná neskôr)
- b. Projekt skompilovať tlačidlom: 🥙
- c. Ladenie spustiť tlačidlom: 💺
- d. Spustenie programu (z RAM) bez ladenia tlačidlom: 🕨

Ereescale CodeWarrior - [M52233DEMO_CONSOLE_RAM.elf (Thread 0x0)]
💼 Eile Edit View Search Project Debug Data Tools Window Help 🛛 🗕 🗖 🗙
Files Link Order Targets
File Code Data 🚯 📽 🚊
B readme.txt         n/a         n/a         n/a           → Sources         36         19         •         □           → B readme         36         19         •         □
🗄 🔄 Runhime, MSL, Libraries 45K 7K + 🧧 📔 Source: D:\-= PHD =-\-= VYUKA =-\MT\cvicenia\coldfire_projekty\cvicenia_test_01\hello World\main.c 🗉
Cinker Command Files     0 0 •      ■
<pre>## # include "support_common.h" /* include peripheral declarations and # include (stdio.h)</pre>
int main(void)
- printf("Hello World in C\n\r");
23 files 45K 7K - fflush(stdout);
Colling Coll Source

- e. Pri ladení používať tlačidlá zvýraznené červenou farbou, ktorých význam je:
  - i. Rozbehnutie programu
  - ii. Zastavenie programu
  - iii. Zrušenie simulácie
  - iv. Krok cez funkciu, cyklus, ...
  - v. Krok do funkcie, cyklu, ...
  - vi. Výstup z funkcie, cyklu ...

#### 4. Download programu do pamäte FLASH

a. Z hlavného menu vybrať: Tools > Flash Programmer

📲 Flash Programmer	
Flash Programmer     iragel Configuration     Flash Configuration     Program / Venify     Erase / Blank Check     Checksum	Image:       Target Configuration         Default Project:       Hello World mop         Default Target:       INTERNAL_FLASH         Image:       INTERNAL_FLASH         Image:       State         Connection:       PEMICR0_USB         Image:       Use Target Initialization         Image:       Connection:         Image:       PEMICR0_USB         Image:       Image:         Image:       Image:<
	Show Log Load Settings Save Settings
	OK Cancel

- b. Nastavenie:
  - i. Target Processor: 5223x
  - ii. Connection PEMICRO\_USB
  - iii. Browse Target Initialization: \CodeWarrior for ColdFire V6.4\ E68K\_Support\Initialization\_Files\M52235EVB\_PnE.cfg
  - iv. Load Settings: CFM\_MCF52233.xml
- c. V ľavo zvoliť Erase / Blank Check
- d. Stlačiť tlačidlo "Erase" a počkať na Status (Obsah FLASH sa vymaže)
- e. Pre overenie vymazania FLASH kliknúť na "Blank Check"

Flash Programmer	Erase / Blank Check Flash
- Taget Configuration - Flash Configuration - Program / Verity - <mark>Erase / Blank Check</mark> - Checksum	✓ All Sectors           00000000 000007FF           00000000 000007FF           00001000 000007FF           00001000 000007FF           00001000 000007FF           00002000 000027FF           00002000 000027FF           00002000 000027FF           0000000 000027FF           0000000 000027FF           0000000 000027FF           0000000 000027FF           0000000 000027FF           000000 000027FF           000000 000027FF           000000 000007FF           000000 00007FF           000000 000007FF           000000 000007FF           000000 000007FF           000000 000007FF           000000 00007FF           0000000 000007FF           0000000 000007FF           000000000000000000000000000000000000
	Status: Erase Command Succeeded Details
	Erase Blank Check
	Show Log Load Settings Save Settings

- f. V ľavo zvoliť Program / Verify
  g. Stlačiť tlačidlo "Program" a počkať na Status (FLASH bude naprogramovaná)
  h. Obsah FLASH overiť tlačidlom "Verify"

🔋 Flash Programmer	
S Flash Programmer Target Configuration - Flash Configuration - Program / Verify - Erase / Blank Check - Checksum	Second Verify Flash         Use Selected File         Incile         Browse         File Type:         Auto Detect         Stat:         Overset         End:         Offset:         Overset:         Overset:
	Program Verify
	Show Log Load Settings Save Settings
	OK. Cancel

i. Stlačiť RESET tlačidlo na doske M52233DEMO