



New Application Project

Note: A platform project will be generated automatically in workspace for the selected XSA. It can be customized later.

Platform

Select a platform from repository Create a new platform from hardware (XSA)

Hardware Specification

XSA File:

C:\Ioulia\Aulas\2020-2021\CR\projects\CountDownTimerHW_Interrupts\CountDownTimerHW_Interrupts\design.
vck190
vmk180
zc702
zc706
zcu102
zcu106
zed
C:\Ioulia\Aulas\2020-2021\CR\projects\CountDownTimerHW_Interrupts\CountDownTimerHW_Interrupts\design.
< >

Browse...

Platform name: design_1_wrapper

< Back Next > Finish Cancel

Import Project



New Application Project

Application Project Details

Specify the application project name and its system project properties

Application project name: TimerSoftwareApp

System Project

Create a new system project for the application or select an existing one from the workspace

Select a system project

+ Create new...

System project details

System project name: TimerSoftwareApp_system

Target processor

Select target processor for the Application project.

Processor	Associated applications
microblaze_0	TimerSoftwareApp

Show all processors in the hardware specification ☒

< Back Next > Finish Cancel

Import Project



New Application Project

Select a domain for your project or create a new domain

Select the domain that the application would link to or create a new domain

Note: New domain created by this wizard will have all the requirements of the application template selected in the next step

Select a domain

+ Create new...

Domain details

Name: standalone_microblaze_0

Display Name: standalone_microblaze_0

Operating System: standalone

Processor: microblaze_0

Architecture: 32-bit

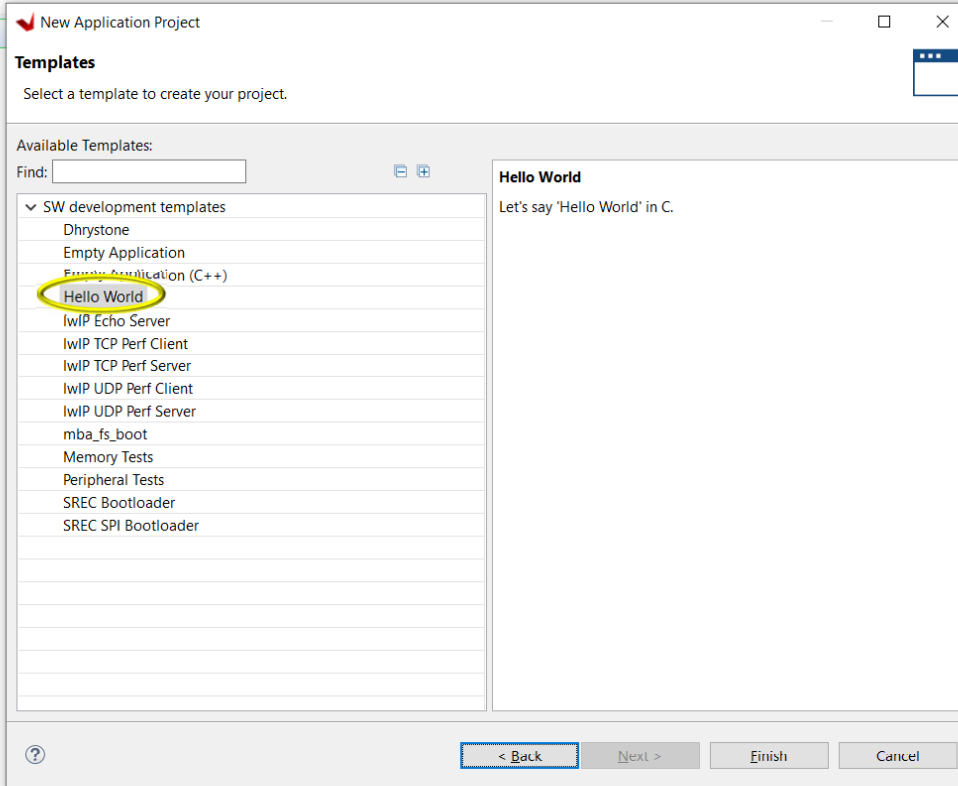
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Next >

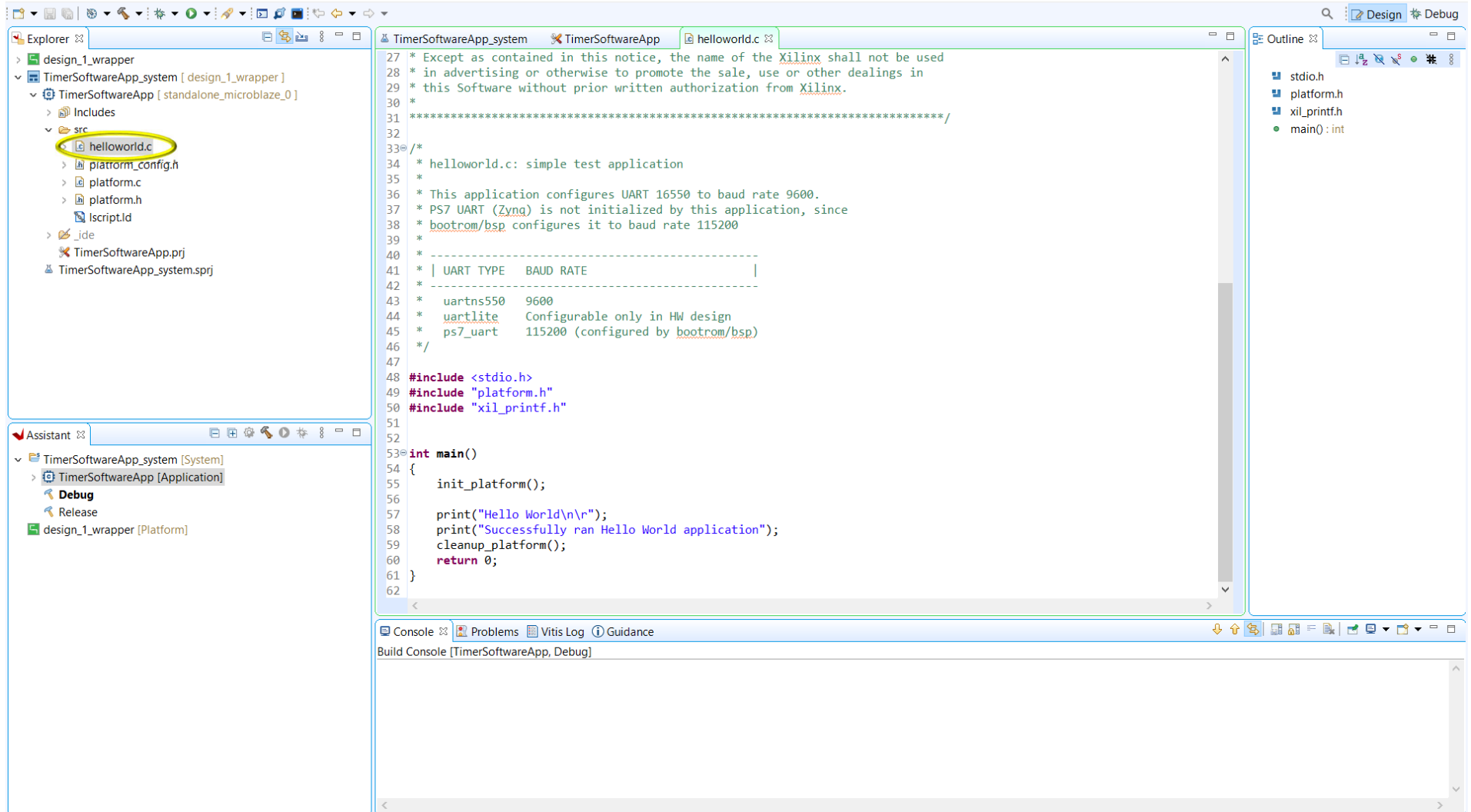
Finish

Cancel

Import Project



Import Project



TimerSoftwareApp_system TimerSoftwareApp helloworld.c

```
27 * Except as contained in this notice, the name of the Xilinx shall not be used
28 * in advertising or otherwise to promote the sale, use or other dealings in
29 * this Software without prior written authorization from Xilinx.
30 *
31 *****/
32
33 /*
34  * helloworld.c: simple test application
35  *
36  * This application configures UART 16550 to baud rate 9600.
37  * PS7 UART (Zynq) is not initialized by this application, since
38  * bootrom/bsp configures it to baud rate 115200
39  *
40  * -----
41  * | UART TYPE   BAUD RATE |
42  * -----
43  * uarts550     9600
44  * uartlite     Configurable only in HW design
45  * ps7_uart     115200 (configured by bootrom/bsp)
46  */
47
48 #include <stdio.h>
49 #include "platform.h"
50 #include "xil_printf.h"
51
52
53 int main()
54 {
55     init_platform();
56
57     print("Hello World\n\r");
58     print("Successfully ran Hello World application");
59     cleanup_platform();
60     return 0;
61 }
62
```

Outline

- stdio.h
- platform.h
- xil_printf.h
- main() : int

Assistant

- TimerSoftwareApp_system [System]
 - TimerSoftwareApp [Application]
 - Debug
 - Release
- design_1_wrapper [Platform]

Console Problems Vitis Log Guidance

Build Console [TimerSoftwareApp, Debug]

Writable

Smart Insert

1 : 1 : 0

The screenshot displays the Vitis IDE interface with three main panels:

- Explorer:** Shows the project structure. The file `helloworld.c` is selected under `src`.
- Code Editor:** Displays the source code of `helloworld.c`. The code includes a license notice, a comment describing the application, and the `main` function which initializes the platform and prints "Hello World".
- Assistant:** Shows the build configuration for the `TimerSoftwareApp` system, with the `Debug` profile selected.
- Build Console:** Shows the output of the build process. A yellow circle highlights the message: `'Finished building: TimerSoftwareApp.elf.size'`.

```
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60     return 0;
61 }
62
```

Build Console (TimerSoftwareApp, Debug)

```
mb-size TimerSoftwareApp.elf | tee "TimerSoftwareApp.elf.size"
text    data    bss    dec    hex filename
2812    324     3112   6248   1868 TimerSoftwareApp.elf
'Finished building: TimerSoftwareApp.elf.size'
'
11:49:05 Build Finished (took 1s.189ms)
```

The screenshot shows the Vitis IDE interface with the following components:

- Menu Bar:** File, Edit, Search, Xilinx, Project, Window, Help.
- Explorer:** Shows the project structure with folders like 'design_1_wrapper', 'TimerSoftwareApp', and 'src'. The 'Program Device' option is highlighted in the 'Xilinx' menu.
- Source Editor:** Displays the 'helloworld.c' file with the following code:

```
27 * Except as contained in this notice, the name of the Xilinx shall not be used
28 * in advertising or otherwise to promote the sale, use or other dealings in
29 * this Software without prior written authorization from Xilinx.
30 *
31 *****/
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53 int main()
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57     print("Hello World\n\r");
58     print("Successfully ran Hello World application");
59     cleanup_platform();
60     return 0;
61 }
62
```
- Outline:** Lists the files in the project: 'stdio.h', 'platform.h', 'xil_printf.h', and 'main() : int'.
- Assistant:** Shows the project structure with 'TimerSoftwareApp_system' [System], 'TimerSoftwareApp' [Application], 'Debug', 'Release', and 'design_1_wrapper' [Platform].
- Console:** Displays the build output for 'TimerSoftwareApp.elf' with the following text:

```
Build Console [TimerSoftwareApp, Debug]
mb-size TimerSoftwareApp.elf |tee "TimerSoftwareApp.elf.size"
text  data  bss   dec   hex filename
2812   324   3112  6248  1868 TimerSoftwareApp.elf
'Finished building: TimerSoftwareApp.elf.size'
'
15:49:05 Build Finished (took 1s.189ms)
```

The screenshot displays the Vitis IDE interface with the following components:

- Window Menu:** Opened, showing options like Explorer, Assistant, Vitis Log, Console, Guidance, **Show view...** (highlighted with a yellow circle), Design Perspective, Debug Perspective, Performance Analysis Perspective, Git Perspective, Open perspective..., Reset Perspective..., and Preferences.
- Explorer:** Shows the project structure for 'TimerSoftwareApp_system'. The 'src' directory is expanded, listing files like 'helloworld.c', 'platform_config.h', 'platform.c', 'platform.h', 'Iscript.ld', and '_ide'.
- Assistant:** Shows the 'TimerSoftwareApp_system [System]' view, with 'TimerSoftwareApp [Application]' selected. It includes 'Debug' and 'Release' buttons.
- Code Editor:** Displays the 'helloworld.c' file. The code includes headers for 'stdio.h', 'platform.h', and 'xil_printf.h'. It defines a 'main' function that initializes the platform, prints 'Hello World' and 'Successfully ran Hello World application', and then cleans up and returns 0. Comments at the top mention Xilinx licensing and UART configuration details.
- Console:** Shows the output of the program, including 'Loading data files...', 'Updating memory content...', 'Creating bitstream...', and 'Writing bitstream...'. It also displays timing information: 'update_mem: Time (s): cpu = 00:00:13 ; elapsed = 00:00:12 . Memory (MB): peak = 1123.426 ; gain = 1024.664'.
- Taskbar:** Shows the Windows taskbar at the bottom with various application icons and the system clock indicating 16:10 on 16/02/2021.

The screenshot displays the Vitis IDE interface with the following components:

- Explorer:** Shows the project structure for `MB_countDownTimerSW_Polling_system` [mb_design_wrapper]. The `src` directory contains `helloworld.c`, `platform_config.h`, `platform.c`, `platform.h`, `IscripTId`, `_ide`, `MB_countDownTimerSW_Polling.prj`, `_ide`, `MB_countDownTimerSW_Polling_system.sprj`, and `mb_design_wrapper`.
- Editor:** Displays the `helloworld.c` file. The code includes a copyright notice for Xilinx, Inc. (2009-2014) and a license agreement. It also contains a comment: `/* helloworld.c: simple test application */` and a note: `/* This application configures UART 16550 to baud rate 9600. */`
- Assistant:** Shows the build configuration for the `MB_countDownTimerSW_Polling` [Application] target, with options for `Debug` and `Release`.
- Console:** Displays the output of the build process, including messages like "Loading data files...", "Updating memory content...", "Creating bitstream...", and "Writing bitstream C:/Iouliia/Aulas/2020-2021/CR/projects/Vitis_workspace/MB_0 Infos, 0 Warnings, 0 Critical Warnings and 0 Errors encountered."
- Vitis Serial Terminal:** A dialog box is open, showing a tree view of available terminals. The `Vitis Serial Terminal` option is highlighted. The dialog has `Open` and `Cancel` buttons.

MB_countDownTimerSW_Polling_system MB_countDownTimerSW_Polling helloworld.c

```
1 /*  
2 *  
3 * Copyright (C) 2009 - 2014 Xilinx, Inc. All rights reserved.  
4 *  
5 * Permission is hereby granted, free of charge, to any person obtaining a copy  
6 * of this software and associated documentation files (the "Software"), to deal  
7 * in the Software without restriction, including without limitation the rights  
8 * to use, copy, modify, merge, publish, distribute, sublicense, and/or sell  
9 * copies of the Software, and to permit persons to whom the Software is  
10 * furnished to do so, subject to the following conditions:  
11 *  
12 * The above copyright notice and this permission notice shall be included in  
13 * all copies or substantial portions of the Software.  
14 *  
15 * Use of the Software is limited to the following:  
16 * (a) running on a Xilinx device  
17 * (b) that interact with a Xilinx device through the JTAG interface.  
18 *  
19 * THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR  
20 * IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY,  
21 * FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL  
22 * XILINX BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,  
23 * OR IN CONNECTION WITH THE SOFTWARE OR ARISING FROM THE SOFTWARE.  
24 *  
25 * SOFTWARE.  
26 *  
27 * Except as contained in this notice, Xilinx does not warrant, represent or  
28 * in advertising or otherwise, that the Software will meet your requirements  
29 * this Software without prior written permission from Xilinx.  
30 *  
31 *  
32 */  
33 /*  
34 * helloworld.c: simple test application  
35 *  
36 * This application configures UART 16550 to baud rate 9600.  
37 */
```

Connect to serial port

Basic Settings

Port: COM4

Baud Rate: 9600

Advance Settings

Data Bits: 8

Stop Bits: 1

Parity: None

Flow Control: None

Timeout (sec):

OK Cancel

Assistant

MB_countDownTimerSW_Polling_system [System]
MB_countDownTimerSW_Polling [Application]
Debug
Release
mb_design_wrapper [Platform]

Console

Program Device
Loading data files...
Updating memory content...
Creating bitstream...
Writing bitstream C:/Iouliia/Aulas/2020-2021/CR/projects/Vitis_workspace/MB...
0 Infos, 0 Warnings, 0 Critical Warnings and 0 Errors encountered.
update_mem completed successfully
update_mem: Time (s): cpu = 00:00:13 ; elapsed = 00:00:13 . Memory (MB): peak = 17.206
INFO: [Common 17-206] Exiting update_mem at Wed Feb 17 11:42:43 2021...

Vitis Serial Terminal

Click on + button to add a port to the terminal.

Send Clear

CountDownTimerHW_Interrupts - TimerSoftwareApp/src/helloworld.c - Vitis IDE
File CountDownTimerHW_Interrupts - TimerSoftwareApp/src/helloworld.c - Vitis IDE

File Edit Search Xilinx Project Window Help

Explorer

- design_1_wrapper
 - TimerSoftwareApp_system [design_1_wrapper]
 - TimerSoftwareApp [standalone_microblaze_0]
 - Binaries
 - Includes
 - Debug
 - src
 - helloworld.c
 - platform_config.h
 - platform.c
 - platform.h
 - lscript.ld
 - _ide
 - TimerSoftwareApp.prj
 - _ide
 - TimerSoftwareApp_system.sprj

TimerSoftwareApp_system TimerSoftwareApp helloworld.c

```
28 * in advertising or otherwise to promote the sale, use or other dealings in
29 * this Software without prior written authorization from Xilinx.
30 *
31 *****/
32
33 /*
34 * helloworld.c: simple test application
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36 * This application configures UART 16550 to baud rate 9600.
37 * PS7 UART (Zynq) is not initialized by this application, since
38 * bootrom/bsp configures it to baud rate 115200
39 *
40 * -----
41 * | UART TYPE   BAUD RATE |
42 * -----
43 * uarts550     9600
44 * uartlite     Configurable only in HW design
45 * ps7_uart     115200 (configured by bootrom/bsp)
46 */
47
48 #include <stdio.h>
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Outline

- stdio.h
- platform.h
- xil_printf.h
- main() : int

Assistant

- TimerSoftwareApp_system [System]
 - TimerSoftwareApp [Application]
 - Debug
 - Release
 - design_1_wrapper [Platform]

Console Problems Vitis Log Guidance

Build Console [TimerSoftwareApp_system, Debug]

Terminal

Serial COM4 (16/02/21, 16:13)

Hello World
Successfully ran Hello World application

Botão direito do rato sobre
TimerSoftwareApp_system -> Run As ->
1 Launch Hardware

Explorer

- MB_countDownTimerSW_Polling_system [mb_design_wrapper]
 - MB_countDownTimerSW_Polling [standalone_microblaze_0]
 - Binaries
 - Includes
 - Debug
 - src
 - CountDownTimerPolling.c
 - helloworld.c
 - platform_config.h
 - platform.c
 - platform.h
 - IsScriptId
 - _ide
 - MB_countDownTimerSW_Polling.prj
 - _ide
 - MB_countDownTimerSW_Polling_system.sprj
 - mb_design_wrapper

CountDownTimerPolling.c

```

36 * This application configures UART 16550 to baud rate 9600.
37 * PS7 UART (Zynq) is not initialized by this application, since
38 * bootrom/bsp configures it to baud rate 115200
39 *
40 * -----
41 * | UART TYPE   BAUD RATE |
42 * -----
43 * uartns550    9600
44 * uartrlite     Configurable only in HW design
45 * ps7_uart      115200 (configured by bootrom/bsp)
46 */
47
48 #include <stdio.h>
49 #include "xil_printf.h"
50 #include "platform.h"
51 #include "xparameters.h"
52 #include "xgpio_l.h"
53 #include "xtmrctr_l.h"
54
55
56 #include "stdbool.h" ///
57
58 /***** Data types *****/
59
60 // Boolean data type (not defined in standard C)
61 #ifndef bool
62 #define bool
63 #endif
64
65 // State machine data type
66 typedef enum {Stopped, Started, SetLSec, SetMSec, SetLSMin, SetMSMin} TFSMState;
67
68 // Buttons GPIO masks
69 #define BUTTON_UP_MASK 0x01
70 #define BUTTON_DOWN_MASK 0x04
71 #define BUTTON_RIGHT_MASK 0x08
72 #define BUTTON_CENTER_MASK 0x10
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