ECE 540 Project 1 List of Files
(Last updated 12-Jan-2014)

Documentation files	
Name	**Description**
docs\BotSim Functional Spec.pdf	Functional specification of the BotSim external interfaces
docs\BotSim Theory of Ops.pdf	Internal theory of operation for the BotSim Simulator. You don not need to understand this material for Project 2 but you may find it interesting.
ocs\project1.pdf	The Project 1 write-up
docs\Proj1Demo Example Design Description.pdf	Theory of operation for the Project 1 demo example. Includes description of the user interface
docs\RojoBot World Video Controller.pdf	Theory of operation and task list for adding the video controller to your Rojobot system. Your demo will be based on this system coupled with the Project 1 track that includes left and right turns.
docs\Proj1 Bot Tracker.rtf	Text file showing the simple right-turn-only track for the Rojobot. You may use this file to check that your Rojobot system is running correctly before you have the video controller.
docs\ECE 540 Project 1 List of Files.pdf	This document
Verilog and constraints files for the Rojobot (no video)	
Name	**Description**

hdl_rojobot\proj1demo.v	Program file for the application Picroblaze CPU. Produced by the kcpsm6.exe assembler from proj1demo.psm
hdl_rojobot\debounce.v	Debounces pushbuttons and switches (unchanged from the Getting Started project)
hdl_rojobot \sevensegment.v	Seven segment display interface (unchanged from the Getting Started project)
kcpsm6.v	Xilinx PicoBlaze for Spartan 6. This file is NOT included with the release. You should download the latest Picoblaze from the Xilinx web site
nexys3fpga.v	Top level Verilog file for the demo. This file is NOT included with the release. You may find the nexys3fpga.v file from the Getting Started project to be a good starting point for creating it.
nexys3_bot_if.v	I/O interface between the application CPU and the Nexys 3 board periperhals and the Botsim. This file is NOT included with the release. You may find the file *kcpsm6_design_template.v* which is part of the Picoblaze release helpful in creating this.
Verilog files for the Botsim	
Name	**Description**
hdl_rojobot\bot.v	BotSim top level module. Instantiates a PicoBlaze and the Rojobot simulator program, world_if.v, and map.v
hdl_rojobot\bot_pgm.v	Program file for the BotSim simulator. Produced by the kcpsm3.exe assembler.
hdl_rojobot\map.v	
hdl_rojobot\ world_if.v	The register-based interface to the BotSim Simulator
hdl_rojobot \world_map.v	Instantiates a 16Kx2 bit dual-port ROM, produced by Xilinx *Core Generator*, which holds a map of the RojoBot's virtual world
constraints\nexys3fpga_novideo.ucf	Constraints file for project 1. There are no VGA signals included. Use nexys3fpga_video.ucf once you have implemented the Rojobot video controller.
Verilog and constraints files for the Rojobot video controller	
Name	**Description**
hdl_video\dtg.**v**	Generates the video raster timing signals vert_sync, horiz_sync, video_on, and pixel_row and pixel_column, which indicate the current vertical and horizontal pixel position on the screen.

hdl_video\DCM_SP_template.v	A Digital Clock Manager instantiation template configured generate a 25MHz VGA pixel clock. Paste this into your top-level module and connect your 100MHz input and 25MHz output appropriately.
hdl_video\bot_pgm.v	Program file for the BotSim simulator. Produced by the kcpsm3.exe assembler. The Rojobot moves more quickly through the output track if you include this file in your project instead of the bot_pgm_v file in the hdl_rojobot directory.
nexys3fpga.v	Top level Verilog file for the demo. This file is NOT included with the release. You may have to modify your nexys3fpga.v from thr first part (no video) of the project to include the VGA signals
nexys3_bot_if.v	I/O interface between the application CPU and the Nexys 3 board periperhals and the Botsim. This file is NOT included with the release. You may have to modify you nexys3_bot_if.v from the first part (no video) of the project to include any additional registers that you add to the interface
constraints\nexys3fpga_withvideo.ucf	Constraints file for project 1. This file includes the VGA signals. Use nexys3fpga_novideo.ucf if you have not included the video controller in your top leel
World Maps	

Name	Description
world_maps/world_map_basic/world_map.ngc	This is a simple world map that includes only right turns. You can use this file to check and/or debug your Rojobot implementation. Copy world_map.ngc to your synthesis directory for the project. The world_map_basic/map directory contains a file called worldmap_basic.doc which shows the layout of the track
world_maps/world_map_lr/world_map.ngc	This is a the world map you should use for your demo. It contains both left and right turns. Copy and overwrite world_map.ngc in your synthesis directory for the project. The world_map_lr/map directory contains a file called worldmap_lr.doc which shows the layout of the track
world_maps/world_map_loop/world_map.ngc	This is a fun map that contains loops but only right turns. You can use it to debug your video logic before you add the video controller to the project. . Copy and overwrite world_map.ngc in your synthesis directory for the project. The world_map_loop/map directory contains a file called worldmap_loop.doc which shows the layout of the track
Firmware for the BotSim	
Name	**Description**
firmware\proj1demo\proj1demo.psm	PicoBlaze Assembly language source code for the Proj2Demo program
firmware\proj1demo\proj1demo.v	Copy of the file hdl_rojobot\proj1demo.v
firmware\proj1demo\ROM_form.v	Template used by the Picoblaze assembler. This file includes support for JTAG program updates. See kcpsm6 User Guide for details