

CSU22022 Computer Architecture I

Prof. Michael Manzke

Processor Assignment: Full Project

Checklist

20th November 2022

Version 1.0

All files must be submitted to Blackboard as individual files, no zip-files. Submit only entities that are working and are fully tested. You must follow the entity order on the checklist. You cannot skip entities.

The entities must be programmed and tested in the following order. Please confirm by ticking all the boxes, next to the items, that all required files are available on Blackboard and that the entity is fully working. You must print this checklist, tick the boxes, sign it, and submit it with your assignment to Blackboard.

All files must be submitted in the checklist order:

- RF_Mux16_32Bit_XXXXXXX.vhd
- RF_Mux16_32Bit_XXXXXXX_TB.vhd
- RF_Mux16_32Bit_XXXXXXX_SchematicXX.jpg
- RF_Mux16_32Bit_XXXXXXX_TDXX.jpg
- RF_Mux16_32Bit_XXXXXXX_Doc.jpg
- RF_Mux32_32Bit_XXXXXXX.vhd
- RF_Mux32_32Bit_XXXXXXX_TB.vhd
- RF_Mux32_32Bit_XXXXXXX_SchematicXX.jpg
- RF_Mux32_32Bit_XXXXXXX_TDXX.jpg
- RF_Mux32_32Bit_XXXXXXX_Doc.jpg
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00	My submission complies with the “Instructions for the Blackboard Submission of the Assignment” (CSU22022 Processor Project 2022- 2023 Instruction V1.0.pdf)	Yes
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01	RF_Mux16_32Bit_XXXXXXX.vhd	Yes
	RF_Mux16_32Bit_XXXXXXX_TB.vhd	Yes
	RF_Mux16_32Bit_XXXXXXX_SchematicXX.jpg	Yes
	RF_Mux16_32Bit_XXXXXXX_TDXX.jpg	Yes
	RF_Mux16_32Bit_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

02	RF_Mux32_32Bit_XXXXXXX.vhd	Yes
	RF_Mux32_32Bit_XXXXXXX_TB.vhd	Yes
	RF_Mux32_32Bit_XXXXXXX_SchematicXX.jpg	Yes
	RF_Mux32_32Bit_XXXXXXX_TDXX.jpg	Yes
	RF_Mux32_32Bit_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

03	RF_Register32Bit_XXXXXXX.vhd	Yes
	RF_Register32Bit_XXXXXXX_TB.vhd	Yes
	RF_Register32Bit_XXXXXXX_SchematicXX.jpg	Yes
	RF_Register32Bit_XXXXXXX_TDXX.jpg	Yes
	RF_Register32Bit_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

04	RF_DestReg_Decoder_XXXXXXX.vhd	Yes
	RF_DestReg_Decoder_XXXXXXX_TB.vhd	Yes
	RF_DestReg_Decoder_XXXXXXX_SchematicXX.jpg	Yes
	RF_DestReg_Decoder_XXXXXXX_TDXX.jpg	Yes
	RF_DestReg_Decoder_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

05	RF_TempDestReg_Decoder_XXXXXXX.vhd	Yes
	RF_TempDestReg_Decoder_XXXXXXX_TB.vhd	Yes
	RF_TempDestReg_Decoder_XXXXXXX_SchematicXX.jpg	Yes
	RF_TempDestReg_Decoder_XXXXXXX_TDXX.jpg	Yes
	RF_TempDestReg_Decoder_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

06	RF_RegisterFile_32_15_XXXXXXX.vhd	Yes
	RF_RegisterFile_32_15_XXXXXXX_TB.vhd	Yes
	RF_RegisterFile_32_15_XXXXXXX_SchematicXX.jpg	Yes
	RF_RegisterFile_32_15_XXXXXXX_TDXX.jpg	Yes
	RF_RegisterFile_32_15_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

07	DP_FullAdder_XXXXXXX.vhd	Yes
	DP_FullAdder_XXXXXXX_TB.vhd	Yes
	DP_FullAdder_XXXXXXX_SchematicXX.jpg	Yes
	DP_FullAdder_XXXXXXX_TDXX.jpg	Yes
	DP_FullAdder_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

08	DP_RippleCarryAdder32Bit_XXXXXXX.vhd	Yes
	DP_RippleCarryAdder32Bit_XXXXXXX_TB.vhd	Yes
	DP_RippleCarryAdder32Bit_XXXXXXX_SchematicXX.jpg	Yes
	DP_RippleCarryAdder32Bit_XXXXXXX_TDXX.jpg	Yes
	DP_RippleCarryAdder32Bit_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

09	DP_SingleBit_B_Logic_XXXXXXX.vhd	Yes
	DP_SingleBit_B_Logic_XXXXXXX_TB.vhd	Yes
	DP_SingleBit_B_Logic_XXXXXXX_SchematicXX.jpg	Yes
	DP_SingleBit_B_Logic_XXXXXXX_TDXX.jpg	Yes
	DP_SingleBit_B_Logic_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

10	DP_32Bit_B_Logic_XXXXXXX.vhd	Yes
	DP_32Bit_B_Logic_XXXXXXX_TB.vhd	Yes
	DP_32Bit_B_Logic_XXXXXXX_SchematicXX.jpg	Yes
	DP_32Bit_B_Logic_XXXXXXX_TDXX.jpg	Yes
	DP_32Bit_B_Logic_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

11	DP_SingleBit_LogicCircuit_XXXXXXX.vhd	Yes
	DP_SingleBit_LogicCircuit_XXXXXXX_TB.vhd	Yes
	DP_SingleBit_LogicCircuit_XXXXXXX_SchematicXX.jpg	Yes
	DP_SingleBit_LogicCircuit_XXXXXXX_TDXX.jpg	Yes
	DP_SingleBit_LogicCircuit_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

12	DP_32Bit_LogicCircuit_XXXXXXX.vhd	Yes
	DP_32Bit_LogicCircuit_XXXXXXX_TB.vhd	Yes
	DP_32Bit_LogicCircuit_XXXXXXX_SchematicXX.jpg	Yes
	DP_32Bit_LogicCircuit_XXXXXXX_TDXX.jpg	Yes
	DP_32Bit_LogicCircuit_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

13	CPU_Mux2_32Bit_XXXXXXX.vhd	Yes
	CPU_Mux2_32Bit_XXXXXXX_TB.vhd	Yes
	CPU_Mux2_32Bit_XXXXXXX_SchematicXX.jpg	Yes
	CPU_Mux2_32Bit_XXXXXXX_TDXX.jpg	Yes
	CPU_Mux2_32Bit_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

14	DP_ArithmeticLogicUnit_XXXXXXX.vhd	Yes
	DP_ArithmeticLogicUnit_XXXXXXX_TB.vhd	Yes
	DP_ArithmeticLogicUnit_XXXXXXX_SchematicXX.jpg	Yes
	DP_ArithmeticLogicUnit_XXXXXXX_TDXX.jpg	Yes
	DP_ArithmeticLogicUnit_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

15	DP_Mux3_1Bit_XXXXXXX.vhd	Yes
	DP_Mux3_1Bit_XXXXXXX_TB.vhd	Yes
	DP_Mux3_1Bit_XXXXXXX_SchematicXX.jpg	Yes
	DP_Mux3_1Bit_XXXXXXX_TDXX.jpg	Yes
	DP_Mux3_1Bit_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

16	DP_ShifterCFlagMux2_1Bit_XXXXXXX.vhd	Yes
	DP_ShifterCFlagMux2_1Bit_XXXXXXX_TB.vhd	Yes
	DP_ShifterCFlagMux2_1Bit_XXXXXXX_SchematicXX.jpg	Yes
	DP_ShifterCFlagMux2_1Bit_XXXXXXX_TDXX.jpg	Yes
	DP_ShifterCFlagMux2_1Bit_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

17	DP_Shifter_XXXXXXX.vhd	Yes
	DP_Shifter_XXXXXXX_TB.vhd	Yes
	DP_Shifter_XXXXXXX_SchematicXX.jpg	Yes
	DP_Shifter_XXXXXXX_TDXX.jpg	Yes
	DP_Shifter_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

18	DP_CFlagMux2_1Bit_XXXXXXX.vhd	Yes
	DP_CFlagMux2_1Bit_XXXXXXX_TB.vhd	Yes
	DP_CFlagMux2_1Bit_XXXXXXX_SchematicXX.jpg	Yes
	DP_CFlagMux2_1Bit_XXXXXXX_TDXX.jpg	Yes
	DP_CFlagMux2_1Bit_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

19	DP_ZeroDetection_XXXXXXX.vhd	Yes
	DP_ZeroDetection_XXXXXXX_TB.vhd	Yes
	DP_ZeroDetection_XXXXXXX_SchematicXX.jpg	Yes
	DP_ZeroDetection_XXXXXXX_TDXX.jpg	Yes
	DP_ZeroDetection_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

20	DP_FunctionalUnit_XXXXXXXX.vhd	Yes
	DP_FunctionalUnit_XXXXXXXX_TB.vhd	Yes
	DP_FunctionalUnit_XXXXXXXX_SchematicXX.jpg	Yes
	DP_FunctionalUnit_XXXXXXXX_TDXX.jpg	Yes
	DP_FunctionalUnit_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

21	DP_Datapath_XXXXXXXX.vhd	Yes
	DP_Datapath_XXXXXXXX_TB.vhd	Yes
	DP_Datapath_XXXXXXXX_SchematicXX.jpg	Yes
	DP_Datapath_XXXXXXXX_TDXX.jpg	Yes
	DP_Datapath_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

22	CPU_RAM_XXXXXXXX.vhd	Yes
	CPU_RAM_XXXXXXXX_TB.vhd	Yes
	CPU_RAM_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_RAM_XXXXXXXX_TDXX.jpg	Yes
	CPU_RAM_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

23	CPU_ControlMemory_XXXXXXXX.vhd	Yes
	CPU_ControlMemory_XXXXXXXX_TB.vhd	Yes
	CPU_ControlMemory_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_ControlMemory_XXXXXXXX_TDXX.jpg	Yes
	CPU_ControlMemory_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

24	CPU_IR_XXXXXXXX.vhd	Yes
	CPU_IR_XXXXXXXX_TB.vhd	Yes
	CPU_IR_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_IR_XXXXXXXX_TDXX.jpg	Yes
	CPU_IR_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

25	CPU_ZeroFill_XXXXXXXX.vhd	Yes
	CPU_ZeroFill_XXXXXXXX_TB.vhd	Yes
	CPU_ZeroFill_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_ZeroFill_XXXXXXXX_TDXX.jpg	Yes
	CPU_ZeroFill_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

26	CPU_PC_XXXXXXXX.vhd	Yes
	CPU_PC_XXXXXXXX_TB.vhd	Yes
	CPU_PC_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_PC_XXXXXXXX_TDXX.jpg	Yes
	CPU_PC_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

27	CPU_SignExtend_XXXXXXXX.vhd	Yes
	CPU_SignExtend_XXXXXXXX_TB.vhd	Yes
	CPU_SignExtend_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_SignExtend_XXXXXXXX_TDXX.jpg	Yes
	CPU_SignExtend_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

28	CPU_SMux_XXXXXXXX.vhd	Yes
	CPU_SMux_XXXXXXXX_TB.vhd	Yes
	CPU_SMux_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_SMux_XXXXXXXX_TDXX.jpg	Yes
	CPU_SMux_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

29	CPU_Mux2_17Bit_XXXXXXXX.vhd	Yes
	CPU_Mux2_17Bit_XXXXXXXX_TB.vhd	Yes
	CPU_Mux2_17Bit_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_Mux2_17Bit_XXXXXXXX_TDXX.jpg	Yes
	CPU_Mux2_17Bit_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

30	CPU_CAR_XXXXXXXX.vhd	Yes
	CPU_CAR_XXXXXXXX_TB.vhd	Yes
	CPU_CAR_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_CAR_XXXXXXXX_TDXX.jpg	Yes
	CPU_CAR_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

31	CPU_DFlipFlop_XXXXXXXX.vhd	Yes
	CPU_DFlipFlop_XXXXXXXX_TB.vhd	Yes
	CPU_DFlipFlop_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_DFlipFlop_XXXXXXXX_TDXX.jpg	Yes
	CPU_DFlipFlop_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

32	CPU_StatusRegister_XXXXXXXX.vhd	Yes
	CPU_StatusRegister_XXXXXXXX_TB.vhd	Yes
	CPU_StatusRegister_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_StatusRegister_XXXXXXXX_TDXX.jpg	Yes
	CPU_StatusRegister_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

33	CPU_Processor_Test01_XXXXXXXX.vhd	Yes
	CPU_Processor_Test01_XXXXXXXX_TB.vhd	Yes
	CPU_Processor_Test01_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_Processor_Test01_XXXXXXXX_TDXX.jpg	Yes
	CPU_Processor_Test01_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

34	CPU_Processor_Test02_XXXXXXXX.vhd	Yes
	CPU_Processor_Test02_XXXXXXXX_TB.vhd	Yes
	CPU_Processor_Test02_XXXXXXXX_SchematicXX.jpg	Yes
	CPU_Processor_Test02_XXXXXXXX_TDXX.jpg	Yes
	CPU_Processor_Test02_XXXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

35	CPU_Processor_Test03_XXXXXXX.vhd	Yes
	CPU_Processor_Test03_XXXXXXX_TB.vhd	Yes
	CPU_Processor_Test03_XXXXXXX_SchematicXX.jpg	Yes
	CPU_Processor_Test03_XXXXXXX_TDXX.jpg	Yes
	CPU_Processor_Test03_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

36	CPU_Processor_Test04_XXXXXXX.vhd	Yes
	CPU_Processor_Test04_XXXXXXX_TB.vhd	Yes
	CPU_Processor_Test04_XXXXXXX_SchematicXX.jpg	Yes
	CPU_Processor_Test04_XXXXXXX_TDXX.jpg	Yes
	CPU_Processor_Test04_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

37	CPU_Processor_XXXXXXX.vhd	Yes
	CPU_Processor_XXXXXXX_TB.vhd	Yes
	CPU_Processor_XXXXXXX_SchematicXX.jpg	Yes
	CPU_Processor_XXXXXXX_TDXX.jpg	Yes
	CPU_Processor_XXXXXXX_Doc.pdf (only if needed)	Yes
	Is working	Yes

Student Name: Fionn Murphy

Student ID: 21363904

01/01/2023

Date

Fionn Murphy

Signature