Computer Architecture
Spring 2023
Lab Project Evaluation Rubric

Criteria	CEP	Ratings					Pts
Task 1 (Assembly Code Initialized in Instruction Memory	WP4(EA5)	10 pts Included in report (Code is tested on simulator)	7.5 pts Correct code correctly initialized	5 pts correct code but incorrect initialization	2.5 pts Incorrect Code	0 pts No marks	10 pts
Task 1(Changes in Architecture) Changes in Verilog modules to include the instructions that were not executable		10 pts Required changes explained in report	7.5 pts All required changes are made	5 pts All required changes are not made but most of them are included	2.5 pts Very few changes are accommodated	0 pts No Marks	10 pts
Task 1(Results) Array Sort Testing		5 pts Results /working explained in report. Results are verified	3.75 pts The code works (try to swap element), results are not 100 % correct	2.5 pts Results of sort are tested but are incorrect	1.25 pts Sorting is not Tested but changes are verified by test cases	0 pts No Marks	5 pts
Task 2 (Pipelined Processor] Pipelined Registers are included		10 pts Included in report all connections and modules are correct	7.5 pts All pipeline reg modules are correct but complete connections are not made	5 pts Pipelined registers are Mostly correct (few errors)	2.5 pts Incorrect addition of pipelined reg modules	0 pts No Marks	10 pts
Task 2 (Forwarding Unit)		10 pts Explained in report Connections with Forwarding Unit and Forwarding Unit itself is correct	7.5 pts Forwarding Unit is correct (complete logic)	5 pts Forwarding Unit logic and conditions are correct but all conditions are not included	2.5 pts Incorrect Logic	0 pts No Marks	10 pts
Task 2 (Test Cases and Results)		10 pts Explained in report all test cases (valid) with correct results	7.5 pts A few test cases with correct results	5 pts Test case (instruction with forwarding, results are incorrect)	2.5 pts Test case (Few instructions without forwarding)	0 pts No Marks	10 pts

Task 3 (Hazard Detection Unit and Stall)	**WP7**	10 pts Included in report Correct Logic and correct connections for Hazard Detection Unit and Pipeline Rush	7.5 pts Hazard Detection Unit is included with correct connections but pipeline flush logic is not accommodated	5 pt Hazard Detection Unit is created with correct logic	2.5 Hazard Detection Unit / Flush with Incorrect Logic5 pts	0 pts No Marks	10 pts
Task 3 (Testing with Hazard Detection Unit and Stall)		10 pts Included in report Strong Test cases with correct results	7.5 pts Test Case is Strong but Results are not all correct	5 pts Test Case Checks a few conditions (Stall / Flush)	2.5 pts Test Case is Weak	0 pts No Marks	10 pts
Task 3 (Testing with Sorting Algorithm)		10 pts Sorting works, explained and included in report	7.5 pts Tried to swap a few elements	5 pts No swap at all	2.5 pts No idea how to check results	0 pts No Marks	10 pts
Task 4 Performance Comparison	**WP1**	5 pts Comprehensive analysis with complete justification of the difference in performances	3.75 pts The analysis is done with partially justified analysis	2.5 pts The analysis is done without any justification	1.25 pts The analysis is incomplete and there is not justification	0 pts No Marks	5 pts
Viva		10 pts Level 4	8 pts Level 3	6 pts Level 2	2 pts Level 1	0 pts No marks	10 pts
							Total Points:100

Complex Engineering Problem

This project is a CEP and includes the following Washington Accord (WA) attributes:

Depth of Knowledge Required	WP1	Cannot be resolved without in-depth engineering knowledge at the level of one or more of WK3, WK4, WK5, WK6 or WK8 which allows a fundamentals-based, first principles of analytical approach
Familiarity of issues	WP4	Involve infrequently encountered issues or novel problems
Interdependence	WP7	Address high level problems with many components or sub-problems that may require a systems approach

Rubric for assessment of Complex Engineering Problem

Domain	WPs		**Unsatisfactory, 0**	**Satisfactory, 1**	**Good, 2**	**Very Good, 3**	**Comprehensive, 4**
Preamble	WP1	1. Problem Definition	Demonstrates an inability in construction of a problem statement that requires complex engineering activities	Demonstrates a limited ability in identifying a problem statement that requires complex engineering activities	Demonstrate the ability to involve some complex engineering activities, but problem statement does not correctly capture the definition	Demonstrates the ability to construct a problem statement with evidence of complex engineering activities, and problem statement is adequately detailed	Demonstrates the ability to construct a clear and insightful problem statement with detailed outlining of complex engineering activities
WP7	WP7	5. Design / detailing of multiple sub-components	Design / Detailing not done	Design / detailing done with sketches, but does not involve multiple sub-components	Design / detailing involves multiple sub-components, and detailing adequately done using unclear sketches / drawings	Design / detailing involves multiple sub-components, and detailing is adequately explained with clear sketches / drawings	Design / detailing involves multiple sub-components, and detailing is perfectly explained with clear sketches / drawings
EA5	WP4	6. Familiarity with approaches	Demonstrates no extension of previous experiences in applying principles-based approaches	Demonstrates limited extension of previous experiences in applying principles-based approaches	Demonstrate adequate extension of previous experiences in applying principles-based approaches	Demonstrate reasonable extension of previous experiences in applying principles-based approaches	Demonstrate extension of previous experiences in applying principles-based approaches