

CS311-Lab4

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1 Data

TEST CASE	Hash of state	Number of instructions	Number of cycles
descending.out	255541867	277	277
evenorodd.out	-224294686	6	6
fibonacci.out	-1518357572	78	78
palindrome.out	155317940	49	49
prime.out	-1414219998	29	29

Table 1: Before Pipeline

TEST CASE	Hash of state	OF stalls	Wrong branch instructions in pipeline	Number of cycles
descending.out	255541867	126	220	658
evenorodd.out	-224294686	10	4	19
fibonacci.out	-1518357572	44	36	157
palindrome.out	155317940	51	18	124
prime.out	-1414219998	19	28	79

Table 2: After Pipeline

TEST CASE	Hash of state	Control Hazards	Data Hazards	Number of cycles	IPC
descending.out	255541867	88	143	11432	0.01469559132260322
evenorodd.out	-224294686	0	3	248	0.020161290322580645
fibonacci.out	-1518357572	16	0	3156	0.019328263624841573
palindrome.out	155317940	7	3	1982	0.020686175580221997
prime.out	-1414219998	5	0	1174	0.013628620102214651

Table 3: Discrete event simulator

2 Observations from data

1. The hash of the state remains constant which means functionality does not change.
2. The number of cycles required to execute the program increased due to stalls and control hazards.
3. We have simulated realistic Memory Access time and realistic Alu result times.