Project Report

CSE BUBBLE PROCESSOR

Assignment-7

CS220

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1] PDS-1:

Registers to be used and their usage protocol:

Register Number	Register Name	Description
0	R0	Values from Expression and Function results
1	R1	Reserved For Assembler
2-3	R2-R3	Values from Expression and Function results
4-7	R4-R7	Parameters for Functions
11	R11	Stores value Zero
8-10 && 11-20	R8-R20	To store Temporary Values during Operations
21-30	R21-R30	Saved Values Representing final result
31	R31	Return Address when Function Call is made

2] PDS-2:

Instruction memory is given a size of 512 words (25 registers in Veda memory) and Data memory is given a size of 512 words. First 512 registers in Veda memory is allotted as Instruction memory whereas the rest for Data memory.

3]PDS-3:

A) R-Type Instruction:

Opcode	RS	RT	RD	SHAMT	Function
6 bits	5 bits	5 bits	5 bits	5 bits	6 bits

The Following Operations are encoded in R-type Instruction format-

- add r0, r1, r2 – Opcode - 1
- sub r0, r1, r2 – Opcode - 2
- addu r0, r1, r2 – Opcode - 3
- subu r0,r1,r2 – Opcode - 4
- and r0,r1,r2 – Opcode - 7
- or r0,r1,r2 – Opcode - 8
- slt r0,r1,r2 – Opcode - 24
- slti 1,2,100 – Opcode - 25

B) I-Type Instruction:

Opcode	RS	RT	Constant or Address
6 bits	5 bits	6 bits	16 bits

The Following Operations are encoded in I-type Instruction format-

- addi r0,r1,1000 - Opcode - 5
- addiu r0,r1, 1000 - Opcode -6
- andi r0,r1, 1000 - Opcode - 9
- ori r0,r1, 1000 - Opcode - 10
- sll r0, r1, 10 - Opcode - 11
- srl r0, r1, 10 - Opcode - 12
- lw r0,10(r1) - Opcode - 13
- sw r0,10(r1) - Opcode - 14
- beq r0,r1,10 - Opcode - 15
- bne r0,r1,10 -Opcode - 16
- bgt r0,r1,10 - Opcode - 17
- bgte r0,r1, 10 - Opcode - 18
- ble r0,r1, 10 - Opcode -19
- bleq r0,r1, 10 -Opcode - 20
- jr r0 - Opcode -21

C) J- Type Instruction:

Opcode	Constant or Address
6 bits	26 bits

The Following Operations are encoded in J-type Instruction format-

- j 10 - Opcode - 22
- jal 10 - Opcode - 23