Shwap CPU Design Documentation

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1 Registers

There are a total of 76 16-bit registers; 12 are fixed and 64 (spilt into 16 groups of 4) "shwapable" registers.

1.1 Register Names and Discriptions

Name	Number	Description	Saved Across Call?
$0	0	The Value 0	-
$pc	1	Program Counter	Yes
$sp	2	Stack Pointer	Yes
$ra	3	Return Address	Yes
$s0 - $s3	4 - 7	Saved	Yes
$t0 - $t3	8 - 11	Temporaries	No
$h0 - $h3	12 - 15	Shwap	-

1.2 Shwap Registers

The "shwap" registers are registers that appear to be swapped using a command. There is no data movement when shwapping, it only changes which registers the $h0 - $h3 refer to. There are 8 groups the user can switch between and 8 reserved groups.

1.2.1 Shwap Group Numbers, Descriptions, and Uses

Group Number	ID	Uses	Saved Across Call?
0 - 7	0 - 3	User Temporaries	No
8	0 - 3	I/O for devices 0 - 3	-
9	0 - 3	Arguments 0 - 3	No
10	0 - 3	Return Values 0 - 3	No
11	0 - 3	System Call Values 0 - 3	No
12	0 - 3	Kernel Reserved	No
13	0 - 3	Temporary Restore	No
14	0	Exception Cause	No
	1	Exception Status	No
	2	EPC	No
	3	Exception Temporary	No
15	0 - 3	Assembler Temporaries	No

2 Instructions

2.1 Instruction Types and Bit Layouts

[stuff]

2.2 Core Instructions

[stuff]

2.3 Sudo Instructions

[stuff]