Op-Code Table

Command	Opcode	Description
No Operation	0000	No action on this clock tick
Add	0001	Add A and B, store in output register
Subtract	0010	Subtract A and B, store in output register
Multiply	0011	Multiply A and B, store in output register
Divide	0100	Dive A and B, store in output register. High bits -> Quotient. Low bits -> Remainder
Modulus	0101	Modulo A and B, store in output register
AND	0110	Add A and B, store in output register
OR	0111	Add A and B, store in output register
NOT	1000	NOT A, store in output register
XOR	1001	Add A and B, store in output register
NAND	1010	Add A and B, store in output register
NOR	1011	Add A and B, store in output register
XNOR	1100	Add A and B, store in output register
Use output as A	1101	Set A register to previous output value to perform operations with the output
Reset	1110	Reset all registers to 0

Modes of Operation

MODE	Code	Description
Ready	0000	System is idle
ADD	0001	Performing addition
SUB	0010	Performing subtraction
MULT	0011	Performing multiplication
DIV	0100	Performing division
MOD	0101	Performing modulus
AND	0110	Performing an AND operation
OR	0111	Performing an OR operation
NOT	1000	Performing a NOT operation
XOR	1001	Performing a XOR operation
NAND	1010	Performing a NAND operation
NOR	1011	Performing a NOR operation
XNOR	1100	Performing a XNOR operation
STORE	1101	Storing value of output register into register A
RST	1110	Resetting all register values to 0
ERR	1111	Error has occurred, must be reset to continue

State Table

Current State	Command	Next State
ADD	No-op, Reset	Ready
ADD	Error	ERR
SUB	No-op, Reset	Ready
SUB	Error	ERR
MULT	No-op, Reset	Ready
DIV	No-op, Reset	Ready
MOD	No-op, Reset	Ready
AND	No-op, Reset	Ready
OR	No-op, Reset	Ready
NOT	No-op, Reset	Ready
XOR	No-op, Reset	Ready
NAND	No-op, Reset	Ready
NOR	No-op, Reset	Ready
XNOR	No-op, Reset	Ready
STORE	No-op, Reset	Ready
RST	No-op	Ready
ERR	Reset	Ready
Ready	Add	ADD
Ready	Subtract	SUB
Ready	Multiply	MULT
Ready	Divide	DIV
Ready	Modulus	MOD
Ready	AND	AND
Ready	OR	OR
Ready	NOT	NOT
Ready	XOR	XOR
Ready	NAND	NAND
Ready	NOR	NOR
Ready	XNOR	XNOR
Ready	Use output as A	STORE
Ready	Reset, No-op	Ready