RIPPLE CARRY ADDER

STRUCTURAL

```
module full_adder(
   input a,b,cin,
   output sum,carry);

assign sum = a ^ b ^ cin;
assign carry = (a & b)|(b & cin)|(cin & a);

endmodule



module rca(
   input [3:0]a,b,
   input cin,
   output [3:0]sum,
   output c4);

wire c1,c2,c3;

full_adder fa0(a[0],b[0],cin,sum[0],c1);
full_adder fa1(a[1],b[1],c1,sum[1],c2);
full_adder fa2(a[2],b[2],c2,sum[2],c3);
full_adder fa3(a[3],b[3],c3,sum[3],c4);

endmodule
```