PREP Arithmetic Circuit

```
/* PREP5 contains a multiplier and accumulator

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*/

module prep5 (Q, CLK, MAC, RST, A, B);
output [7:0] Q;
input CLK, MAC, RST;
input [3:0] A, B;
reg [7:0] Q;

// multiplier
wire [7:0]  multiply_output = A * B;
// adder:
wire [7:0] adder_output = MAC ? multiply_output + Q :
multiply_output;

// register with asynchronous reset
always @(posedge CLK  or posedge RST)
begin
   if (RST)
      Q = 0;
   else
      Q = adder_output;
end
endmodule
```

PREP 16-Bit Accumulator

```
/* PREP6 contains a sixteen bit accumulator

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*/

module prep6 (Q, CLK, RST, D);
output [15:0] Q;
input CLK, RST;
input [15:0] D;
reg [15:0] Q;
```