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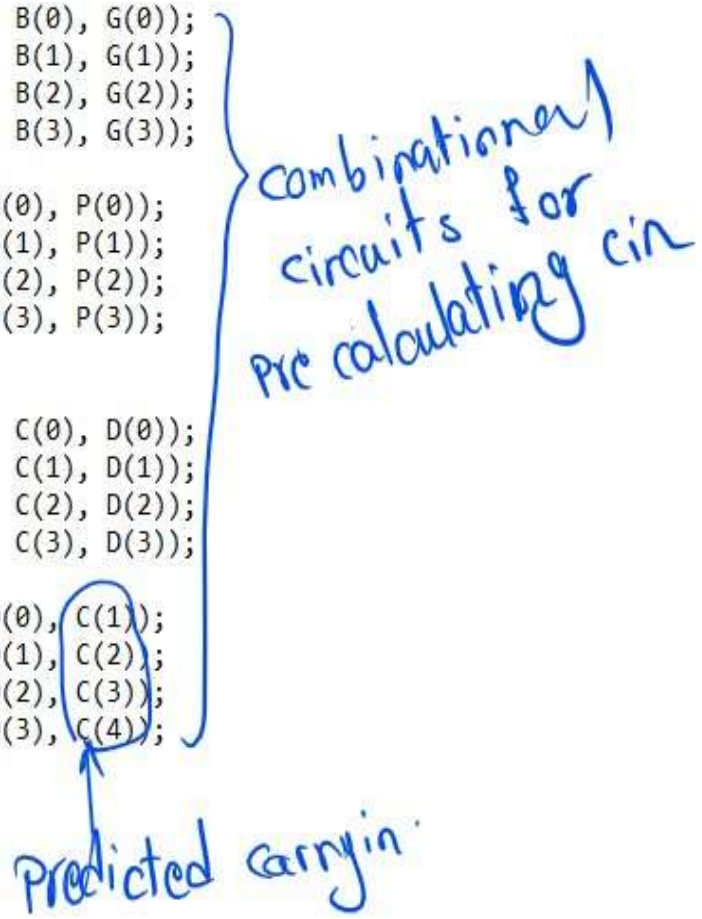
Carry lookahead adder:

```
AND_gate_1: AND_gate port map(A(0), B(0), G(0));
AND_gate_2: AND_gate port map(A(1), B(1), G(1));
AND_gate_3: AND_gate port map(A(2), B(2), G(2));
AND_gate_4: AND_gate port map(A(3), B(3), G(3));

OR_gate_1: OR_gate port map(A(0), B(0), P(0));
OR_gate_2: OR_gate port map(A(1), B(1), P(1));
OR_gate_3: OR_gate port map(A(2), B(2), P(2));
OR_gate_4: OR_gate port map(A(3), B(3), P(3));

C(0) <= Cin;
AND_gate_5: AND_gate port map(P(0), C(0), D(0));
AND_gate_6: AND_gate port map(P(1), C(1), D(1));
AND_gate_7: AND_gate port map(P(2), C(2), D(2));
AND_gate_8: AND_gate port map(P(3), C(3), D(3));

OR_gate_5: OR_gate port map(G(0), D(0), C(1));
OR_gate_6: OR_gate port map(G(1), D(1), C(2));
OR_gate_7: OR_gate port map(G(2), D(2), C(3));
OR_gate_8: OR_gate port map(G(3), D(3), C(4));
```



```
full_adder_0 : full_adder
  port map (
    a     => A(0),
    b     => B(0),
    Cin   => C(0),
    sum   => temp_sum(0),
    Cout => open
    );

full_adder_1 : full_adder
  port map (
    a  => A(1),
    b  => B(1),
    Cin => C(1),
    sum   => temp_sum(1),
    Cout => open
    );

full_adder_2 : full_adder
  port map (
    a  => A(2),
    b  => B(2),
    Cin => C(2),
    sum   => temp_sum(2),
    Cout => open
    );

full_adder_3 : full_adder
  port map (
    a  => A(3),
    b  => B(3),
    Cin => C(3),
    sum   => temp_sum(3),
    Cout => open
    );
Sum <= C(4) & temp_sum;
```

predicted (calculated)

final cout

concatenation