2-bit multiplier is made using 4 AND gates and two half adders.

It multiplies B1BO with A1A0 to produce output C3C2C1C0.

C0 is A0B0.

C1 is the Sum bit of the first half adder which adds A0B1 and A1BO.

C2 is the Sum bit of the second half adder which adds the Carry bit of the first half adder and A1B1.

C3 is the Carry bit of the second half adder.