$$A = \begin{bmatrix} 5 & 1 & 2 \\ 1 & 3 & 7 \\ 2 & 7 & 8 \end{bmatrix}_{(3\times3)} \quad B = \begin{bmatrix} 3 & 4 \\ 7 & 3 \\ 8 & 1 \end{bmatrix}_{(3\times2)}$$

$$\underset{3\times3}{A} \times \underset{3\times2}{B} = C_{3\times2}$$

$$C_{3\times2} = \begin{bmatrix} C_{11} & C_{12} \\ C_{21} & C_{22} \\ C_{31} & C_{32} \end{bmatrix}$$

$$C_{11} = a_{11}b_{11} + a_{12}b_{21} + a_{13}b_{31}$$
$$C_{12} = a_{11}b_{12} + a_{12}b_{22} + a_{13}b_{32}$$
$$C_{21} = a_{21}b_{11} + a_{22}b_{21} + a_{23}b_{31}$$
$$C_{22} = a_{21}b_{12} + a_{22}b_{22} + a_{23}b_{32}$$
$$C_{31} = a_{31}b_{11} + a_{32}b_{21} + a_{33}b_{31}$$
$$C_{32} = a_{31}b_{12} + a_{32}b_{22} + a_{33}b_{32}$$

$$C_{11} = (5\cdot3) + (1\cdot7) + (2\cdot8)$$
$$C_{12} = (5\cdot4) + (1\cdot3) + (2\cdot1)$$
$$C_{21} = (1\cdot3) + (3\cdot7) + (7\cdot8)$$
$$C_{22} = (1\cdot4) + (3\cdot3) + (7\cdot1)$$
$$C_{31} = (2\cdot3) + (7\cdot7) + (8\cdot8)$$
$$C_{32} = (2\cdot4) + (7\cdot3) + (8\cdot1)$$

$$C_{11} = 15 + 7 + 16 = 38$$
$$C_{12} = 20 + 3 + 2 = 25$$
$$C_{21} = 3 + 21 + 56 = 80$$
$$C_{22} = 4 + 9 + 7 = 20$$
$$C_{31} = 6 + 49 + 64 = 119$$
$$C_{32} = 8 + 21 + 8 = 37$$

$$C = \begin{bmatrix} 38 & 25 \\ 80 & 20 \\ 119 & 37 \end{bmatrix}$$