Given the coupled system

$$
\begin{aligned}
y_1' &= f_1(x,\ y_1,\ y_2,\ y_3) &\text{subject to} \quad& y_1(x_0) = y_{1,0} \\
y_2' &= f_2(\qquad\qquad\ ) &\text{subject to} \quad& y_2(x_0) = y_{2,0} \\
y_3' &= f_3(\qquad\qquad\ ) &\text{subject to} \quad& y_3(x_0) = y_{3,0}
\end{aligned}
$$

we first calculate

$$
\begin{aligned}
k_{1,1} &= h \cdot f_1\left(x_j,\ y_{1,j},\ y_{2,j},\ y_{3,j}\right) &\text{where} \quad& y_{1,j} = y_1(x_j) \\
k_{1,2} &= h \cdot f_2\left(\qquad\qquad\ \right) &\text{where} \quad& y_{2,j} = y_2(x_j) \\
k_{1,3} &= h \cdot f_3\left(\qquad\qquad\ \right) &\text{where} \quad& y_{3,j} = y_3(x_j)
\end{aligned}
$$

then calculate

$$
k_{2,1} = h \cdot f_1\left(x_j + \frac{h}{2},\ y_{1,j} + \frac{k_{1,1}}{2},\ y_{2,j} + \frac{k_{1,2}}{2},\ y_{3,j} + \frac{k_{1,3}}{2}\right)
$$

$$
k_{2,2} = h \cdot f_2\left(\qquad\qquad\qquad\qquad\qquad\qquad\qquad \right)
$$

$$
k_{2,3} = h \cdot f_3\left(\qquad\qquad\qquad\qquad\qquad\qquad\qquad \right)
$$

then

$$
k_{3,1} = h \cdot f_1\left(x_j + \frac{h}{2},\ y_{1,j} + \frac{k_{2,1}}{2},\ y_{2,j} + \frac{k_{2,2}}{2},\ y_{3,j} + \frac{k_{2,3}}{2}\right)
$$

$$
k_{3,2} = h \cdot f_2\left(\qquad\qquad\qquad\qquad\qquad\qquad\qquad \right)
$$

$$
k_{3,3} = h \cdot f_3\left(\qquad\qquad\qquad\qquad\qquad\qquad\qquad \right)
$$

then

$$
\begin{aligned}
k_{4,1} &= h \cdot f_1\left(x_j + h,\ y_{1,j} + k_{3,1},\ y_{2,j} + k_{3,2},\ y_{3,j} + k_{3,3}\right) \\
k_{4,2} &= h \cdot f_2\left(\qquad\qquad\qquad\qquad\qquad\qquad\qquad\ \right) \\
k_{4,3} &= h \cdot f_3\left(\qquad\qquad\qquad\qquad\qquad\qquad\qquad\ \right)
\end{aligned}
$$

and finally, we calculate

$$
y_{1,j+1} = y_{1,j} + \frac{1}{6} \cdot (k_{1,1} + 2k_{2,1} + 2k_{3,1} + k_{4,1})
$$

$$
y_{2,j+1} = y_{2,j} + \frac{1}{6} \cdot (k_{1,2} + 2k_{2,2} + 2k_{3,2} + k_{4,2})
$$

$$
y_{3,j+1} = y_{3,j} + \frac{1}{6} \cdot (k_{1,3} + 2k_{2,3} + 2k_{3,3} + k_{4,3})
$$

to give us the new values for y_1, y_2 and y_3 corresponding to x_{i+1}.