To solve the circuit, use the node method:

Note that there are no unknown nodes, which simplifies things!

The states are

\[ x_1 = i_1 \]
\[ x_2 = v_2 \]

To find \( \dot{x}_1 = \frac{di_1}{dt} \), need \( v_1 \):

\[ \dot{x}_1 = \frac{di_1}{dt} = \frac{1}{L} v_1(t) \]
\[ = \frac{1}{L} \left[ (u + v_2) - u \right] \]
\[ = \frac{1}{L} v_2 \]

To find \( \dot{x}_2 = \frac{dv_2}{dt} \), need \( i_2 \). To find \( i_2 \), apply KCL at \( u + v_2 \) node:

\[ \frac{u + v_2}{R} + i_1 + i_2 = 0 \]
Therefore,
\[ i_2 = -i_1 - \frac{1}{R} v_2 - \frac{1}{R} u \]

and
\[ x_2 = \frac{dv_2}{dt} = \frac{1}{c} i_2 \]

\[ = -\frac{1}{c} i_1 - \frac{1}{RC} v_2 - \frac{1}{RC} u \]

Therefore, the state equation is given by
\[
\begin{align*}
\dot{x} &= \begin{bmatrix} 0 & \frac{1}{L} \\ -\frac{1}{C} & -\frac{1}{RC} \end{bmatrix} x + \begin{bmatrix} 0 \\ -\frac{1}{RC} \end{bmatrix} u \\
A & \quad B
\end{align*}
\]

To find the measurement equation, note that
\[ y(t) = v_2 + u = x_2 + u \]

Therefore,
\[ y = [0 \ 1] x + [1] u \]

\[ C \quad D \]
N.B.:

There are other possible labellings for \( V_2 \) and \( i_1 \). If you used a different labelling, some of the signs may be different.

In particular,

1) If \( V_2 \) labelled opposite mine,
   \[
   C = \begin{bmatrix} 0 & -1 \end{bmatrix}
   \]
   \[
   B = \begin{bmatrix} 0 \\ +1/RC \end{bmatrix}
   \]

2) If \( V_2 \) or \( i_1 \) labelled opposite mine (but not both),
   \[
   A = \begin{bmatrix} 0 & -1/L \\ 1/C & -1/RC \end{bmatrix}
   \]

3) If both \( V_2 \) and \( i_1 \) labelled opposite mine, \( A \) remains the same.