$$u(t) \longrightarrow \boxed{\begin{array}{l} \dot{x}(t) = f(x(t), u(t)) \\ x(k+1) = f(x(k), u(k)) \end{array}} \longrightarrow x(t)$$

$u(t)$
$u(k)$

$x(t)$
$x(k)$