

Question 7

7.1) a) Given (x_1, x_2) ,

$$I = x_1 + L_1 x_2$$

Given I ,

$$x_1 = I \% L_1$$

$$x_2 = \left\lfloor \frac{I}{L_1} \right\rfloor$$

7.2) a) Given $(x_1, x_2, x_3, \dots, x_d)$,

$$I = x_1 + L_1 x_2 + L_1 L_2 x_3 + \dots + L_1 L_2 \dots L_{d-1} x_d$$

Given I ,

$$x_1 = I \% L_1$$

$$x_2 = \left\lfloor \frac{I \% (L_1 L_2)}{L_1} \right\rfloor$$

$$x_3 = \left\lfloor \frac{I \% (L_1 L_2 L_3)}{L_1 L_2} \right\rfloor$$

$$\vdots$$

$$x_d = \left\lfloor \frac{I \% (L_1 L_2 L_3 \dots L_d)}{L_1 L_2 \dots L_{d-1}} \right\rfloor$$