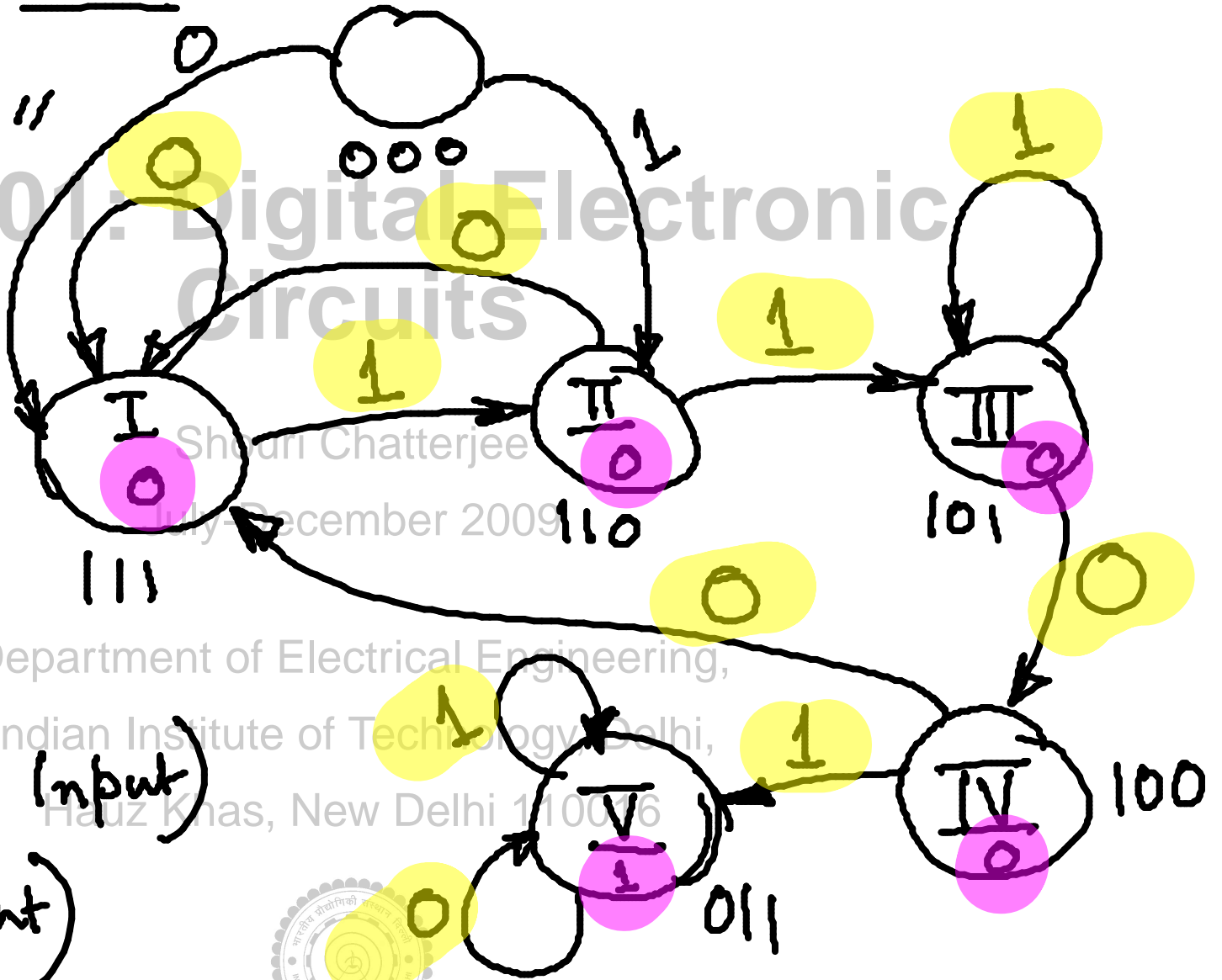


# State diagram

"1101"

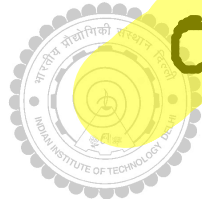
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"Mealy" machine



Next =  $f(\text{Current}, \text{Input})$   
Output =  $g(\text{Current})$

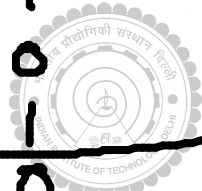
2. Count the states



3. Assign codes for each state

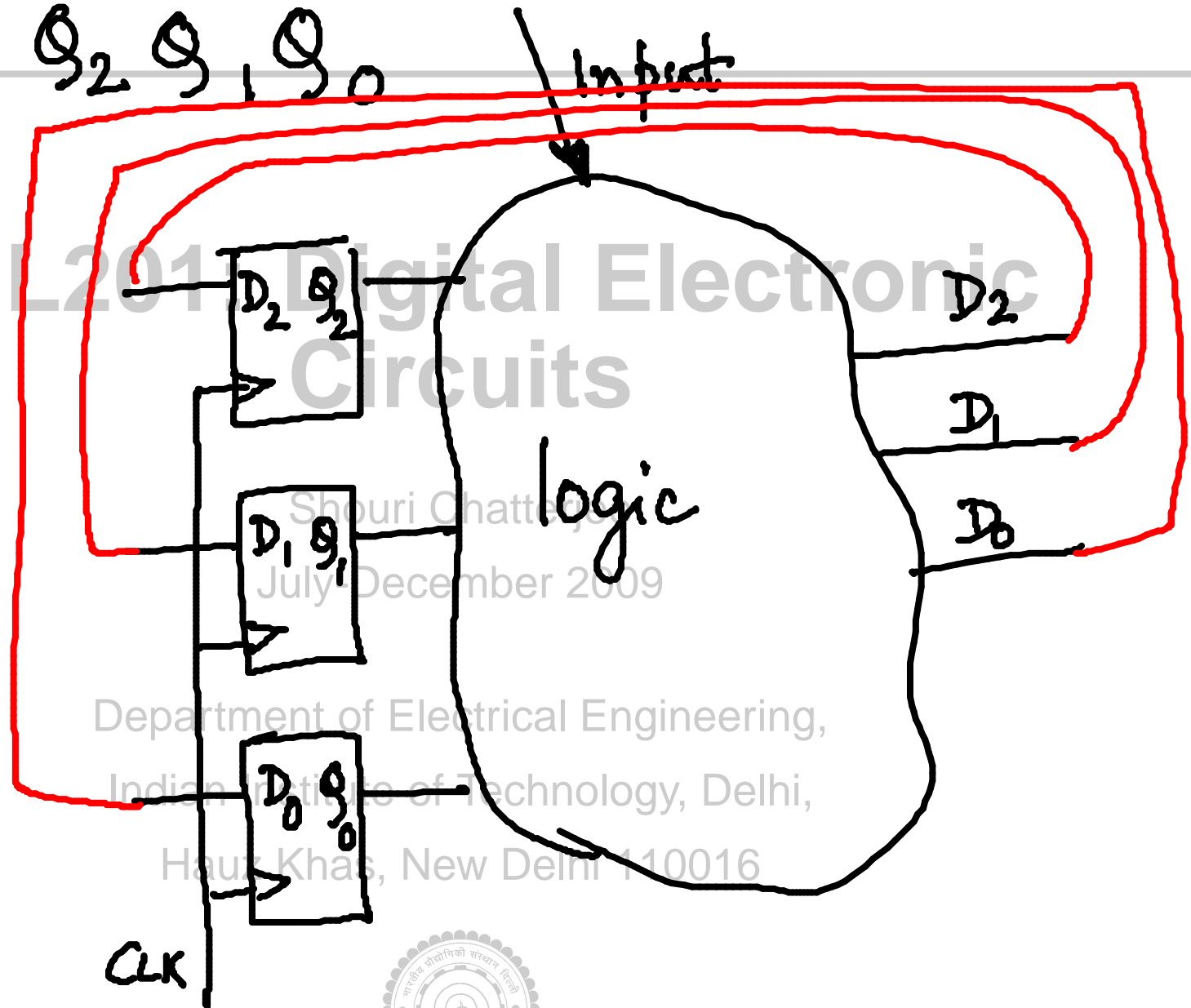
4. State table

| Current state<br>$Q_2, Q_1, Q_0$ | Input | Next State |       |       | Output |
|----------------------------------|-------|------------|-------|-------|--------|
|                                  |       | $D_2$      | $D_1$ | $D_0$ |        |
| 000                              | 0     | 1          | 1     | 1     | }      |
| 000                              | 1     | 1          | 1     | 0     |        |
| 001                              | 0     | 1          | 1     | 1     |        |
| 001                              | 1     | 1          | 1     | 0     | }      |
| 010                              | 0     | 1          | 1     | 0     |        |
| 010                              | 1     | 0          | 1     | 0     |        |
| 011                              | 0     | 1          | 1     | 1     | }      |
| 011                              | 1     | 0          | 1     | 1     |        |
| 100                              | 0     | 1          | 0     | 1     |        |
| 100                              | 1     | 1          | 0     | 1     | }      |
| 101                              | 0     | 1          | 0     | 0     |        |
| 101                              | 1     | 1          | 0     | 0     |        |
| 110                              | 0     | 1          | 0     | 1     | }      |
| 110                              | 1     | 1          | 0     | 0     |        |
| 111                              | 0     | 1          | 0     | 0     |        |
| 111                              | 1     | 1          | 0     | 0     | }      |
| 111                              | 0     | 1          | 0     | 0     |        |
| 111                              | 1     | 1          | 0     | 0     |        |



Output =  $\overline{Q_2} Q_1 Q_0$

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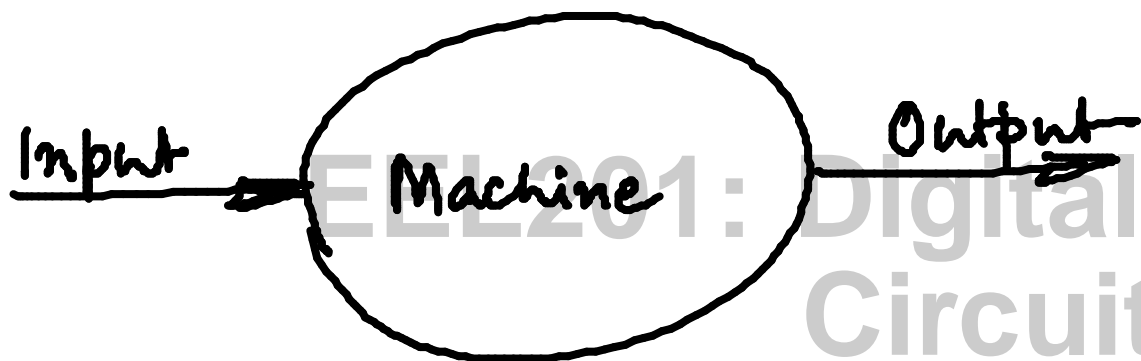


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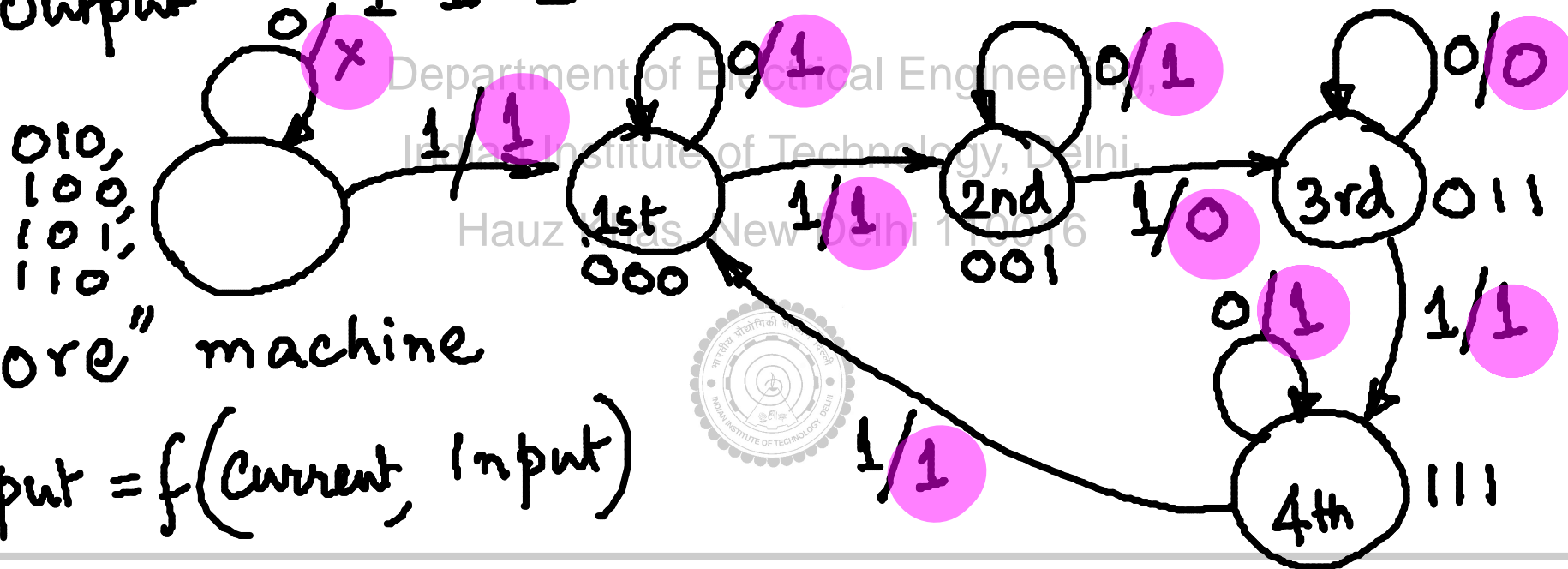
# Sequence generator



"1101"

Input 1 1 0 0 1 1 1 1 0 1 0 1 1 0 ...

Output 0 1 1 1 1 0 1 1 1 1 0 0 1 1 1 ...



"Moore" machine

$$\text{Output} = f(\text{Current, Input})$$



| Current | Input | Next | Output |
|---------|-------|------|--------|
| 000     | 0     | 000  | 1      |
| 000     | 1     | 001  | 1      |
| 001     | 0     | 001  | 1      |
| 001     | 1     | 011  | 0      |
| 010     | 0     | 010  | X      |
| 010     | 1     | 000  | 1      |
| 011     | 0     | 011  | 0      |
| 011     | 1     | 111  | 1      |
| 100     | 0     | 100  | X      |
| 100     | 1     | 000  | 1      |
| 101     | 0     | 101  | X      |
| 101     | 1     | 000  | 1      |
| 110     | 0     | 110  | X      |
| 110     | 1     | 000  | 1      |
| 111     | 0     | 111  | 1      |
| 111     | 1     | 000  | 1      |

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