Simple CPU 1

Timing in Cycles

Function Codes (Commands)
0: Acc := Acc  \text{ NOP}
1: Acc := NOT(Acc)
2: Acc := Acc AND Data
3: Acc := Acc OR Data
4: Acc := Acc + Data  \text{ ADD}
5: Acc := Data  \text{ LOAD}

Program counter is incremented by 1 in each cycle (i.e. for each command):
PC := PC +1

Simple CPU 1

- Example Program to compute 1+2
- Program in memory:

<table>
<thead>
<tr>
<th>address</th>
<th>code</th>
<th>data</th>
<th>comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>01</td>
<td>01</td>
<td>Load 1</td>
</tr>
<tr>
<td>01</td>
<td>02</td>
<td>02</td>
<td>Add 2</td>
</tr>
<tr>
<td>02</td>
<td>00</td>
<td>00</td>
<td>NOP</td>
</tr>
<tr>
<td>...</td>
<td>00</td>
<td>00</td>
<td>NOP</td>
</tr>
</tbody>
</table>

Problems
- Program never stops
- Can calculate with constant values only
- Cannot load data from memory
- Cannot store data to memory
- Cannot branch/loop