1. Problem 3.10 (page 293 of the text). Figure 3.13 which is referred to in this problem is the same as the table on the lower right part of slide #126 of handouts (Lecture 4).

```c
if (d == 0)
    d = 1;
if (d == 1)
    {
        ...
    }
BNEZ R1, L1 ; branch b1
DADDUI R1, R0, #1
L1:
    DADDUI R3, R1, #-1
    BNEZ R3, L2 ; branch b2
    ...
L2:

1-bit predictor that uses 1 bit of correlation
   - X/Y: X if last branch was NT, Y if last branch was T

<table>
<thead>
<tr>
<th></th>
<th>b1_p</th>
<th>b1</th>
<th>b1_n</th>
<th>b2_p</th>
<th>b2</th>
<th>b2_n</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>NT/NT</td>
<td>T</td>
<td>T/NT</td>
<td>NT/NT</td>
<td>T</td>
<td>NT/T</td>
</tr>
<tr>
<td>0</td>
<td>T/NT</td>
<td>NT</td>
<td>T/NT</td>
<td>NT/T</td>
<td>NT</td>
<td>NT/T</td>
</tr>
<tr>
<td>2</td>
<td>T/NT</td>
<td>T</td>
<td>T/NT</td>
<td>NT/T</td>
<td>T</td>
<td>NT/T</td>
</tr>
<tr>
<td>0</td>
<td>T/NT</td>
<td>NT</td>
<td>T/NT</td>
<td>NT/T</td>
<td>NT</td>
<td>NT/T</td>
</tr>
</tbody>
</table>
```

- b1p and b2p refer to branch 1 prediction and branch 2 prediction, respectively.
- b1 and b2 refer to action of the branch 1 and branch 2. (T: taken, NT: not taken)
- b1new and b2new refer to the new branch 1 prediction and the new branch 2 prediction respectively.