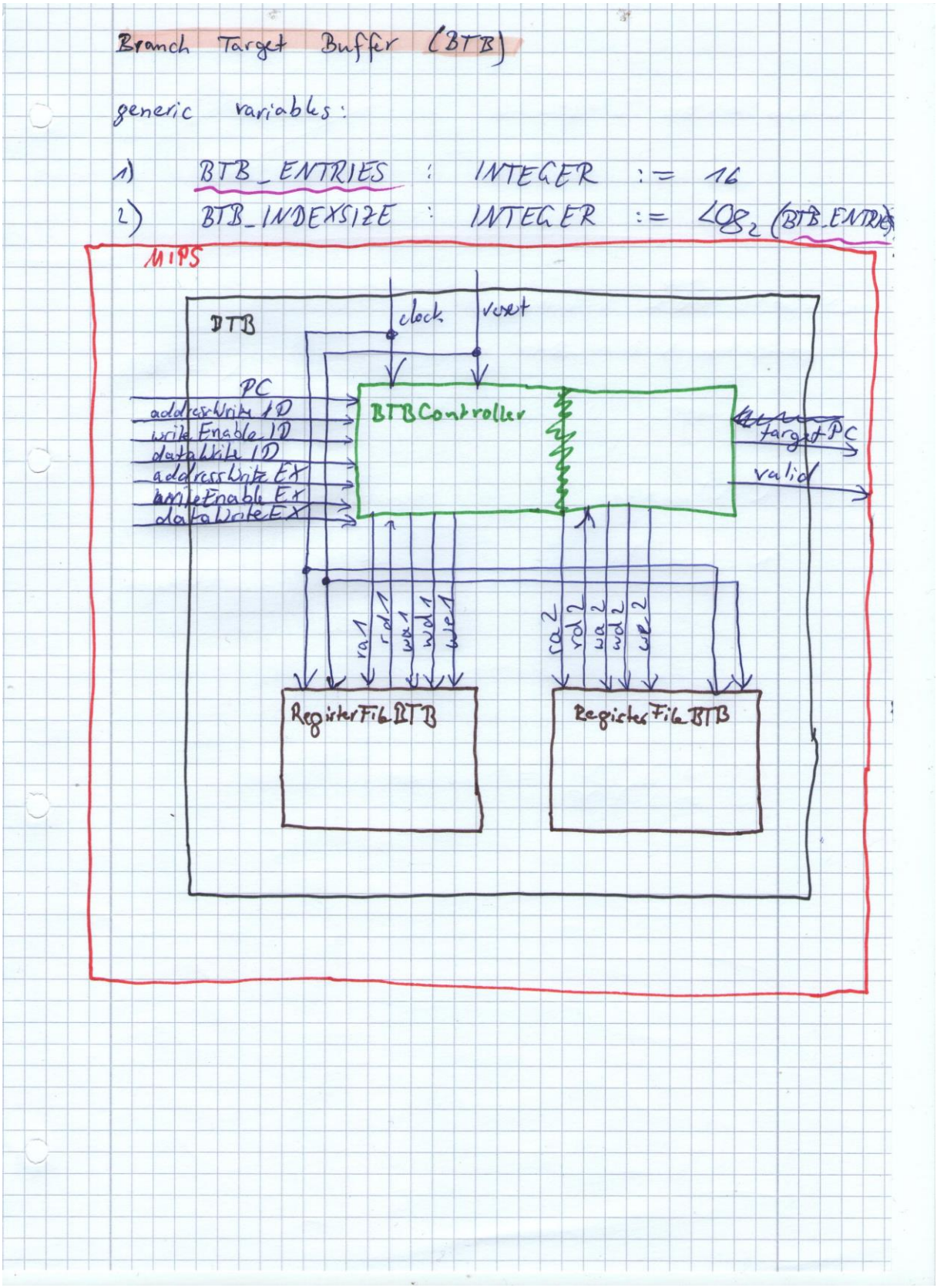
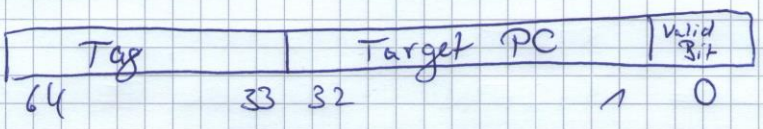
Branch Target Buffer (BTB)



Zeile im Register File BTB



Logik BTB Controller

$$valid = \begin{cases} '1' & \text{, if } \big((rd1.valid = '1' \text{ and } rd1.tag = PC.tag) \text{ or } (rd2.valid = '1' \text{ and } rd2.tag = PC.tag)\big) \\ '0' & \text{, otherwise} \end{cases}$$

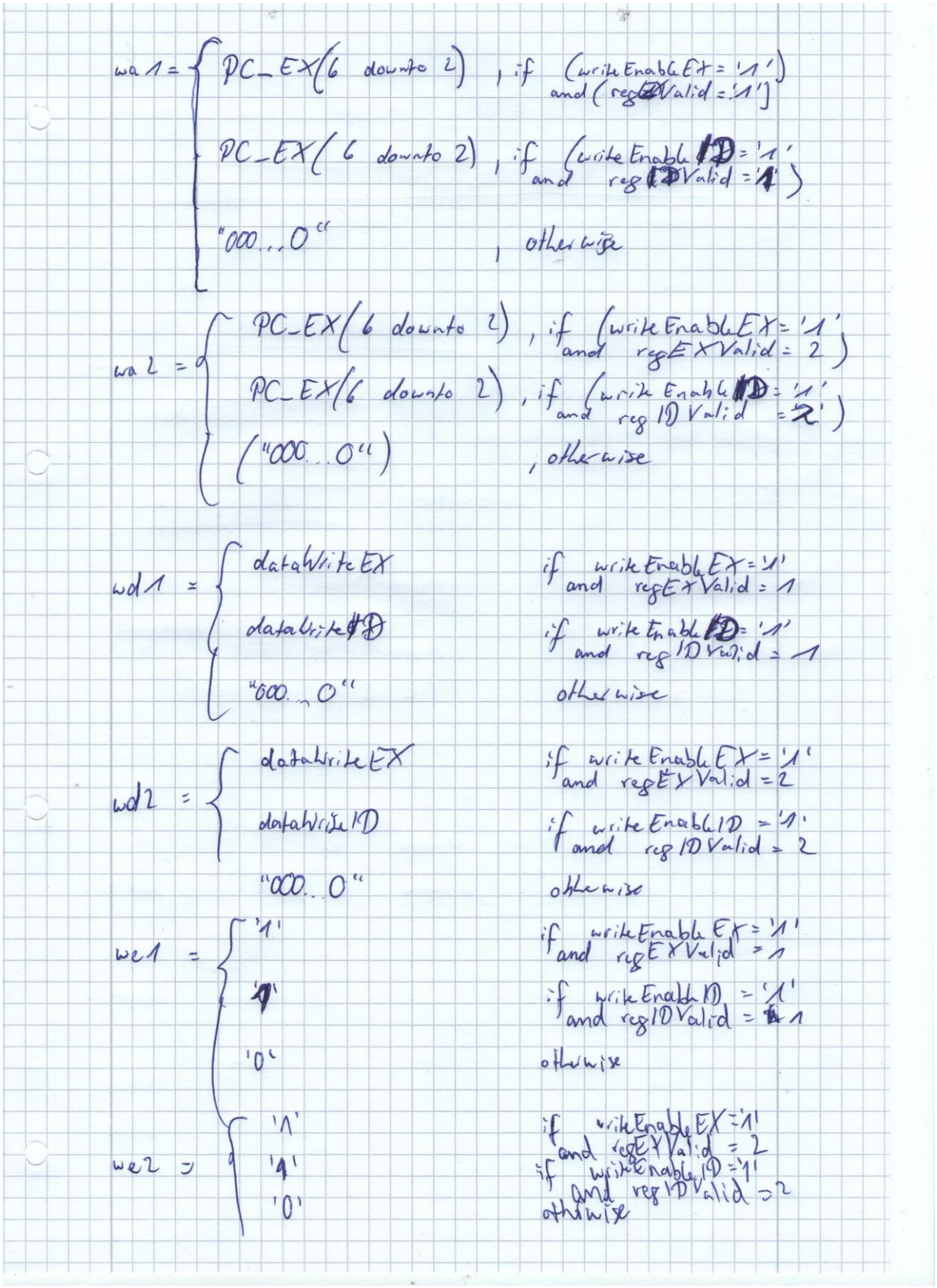
$$\text{target PC} = \begin{cases} rd1.target & \text{, if } rd1.valid = '1' \\ rd2.target & \text{, if } rd2.valid = '1' \\ "0000..0" & \text{, otherwise} \end{cases}$$

ra1 = PC(6 downto 2)
ra2 = PC(6 downto 2)

wa1 =
wa2 =

wd1 =
wd2 =

we1 =
we2 =


wa1 = PC_EX(6 downto 2) , if (writeEnableEX = '1' and regEXValid = '1')
PC_EX(6 downto 2) , if (writeEnableID = '1' and regIDValid = '1')
"000...0" , otherwise
wa2 = PC_EX(6 downto 2) , if (writeEnableEX = '1' and regEXValid = 2)
PC_EX(6 downto 2) , if (writeEnableID = '1' and regIDValid = 2)
("000...0") , otherwise
wd1 = dataWriteEX if writeEnableEX = '1' and regEXValid = 1
dataWriteID if writeEnableID = '1' and regIDValid = 1
"000...0" otherwise
wd2 = dataWriteEX if writeEnableEX = '1' and regEXValid = 2
dataWriteID if writeEnableID = '1' and regIDValid = 2
"000...0" otherwise
we1 = '1' if writeEnableEX = '1' and regEXValid = 1
'1' if writeEnableID = '1' and regIDValid = 1
'0' otherwise
we2 = '1' if writeEnableEX = '1' and regEXValid = 2
'1' if writeEnableID = '1' and regIDValid = 2
'0' otherwise