

# Indirect Addressing Mode Questions

- Here is a former student trying to understand the indirect addressing mode. Note the very last post.

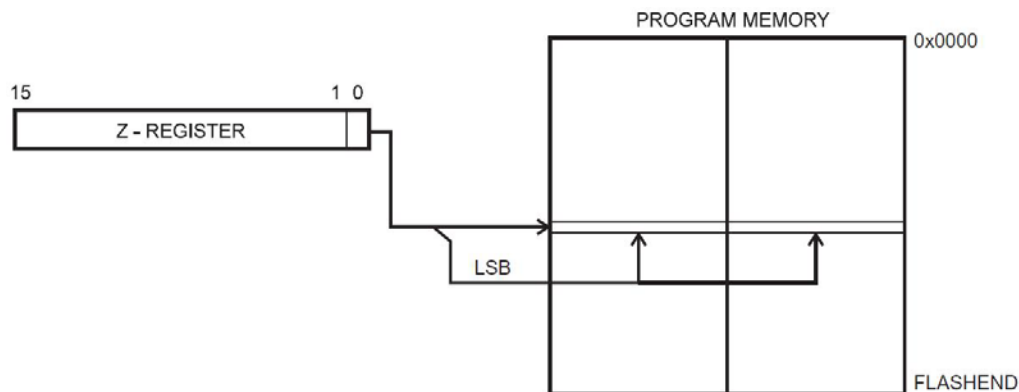
<http://www.avrfreaks.net/index.php?name=PNphpBB2&file=viewtopic&p=643089>

- Here are some questions and answers from past semesters.

1) What does defining a table actually do? Does it give addresses for constants that already exist in program memory or does it do something else?

```
0003a2 0905      theMaze:      ; 00  01  02  03  04  05  06  07  08  09  0A  0B
0003a3 0909
0003a4 0909
0003a5 0301
0003a6 0905
0003a7 0909
0003a8 0909
0003a9 0909
0003aa 0909
0003ab 0209      .DB      0x05,0x09,0x09,0x09,0x09,0x09,0x01,0x03,0x05,0x09,0x09,0x09,C
0003ac 090c
0003ad 0309
0003ae 0905
0003af 060a
0003b0 0506
0003b1 0909
0003b2 0909
0003b3 0909
0003b4 0503      .DB      0x0C,0x09,0x09,0x03,0x05,0x09,0x0A,0x06,0x06,0x05,0x09,0x09,C
0003b5 0603
0003b6 0905
0003b7 060b
0003b8 0506
0003b9 0a09
0003ba 0c06
```

2) What is an index and why is it used?



*The indirect addressing mode in all its forms is used when you will not know the location of the data you want until the program is running. For example, in lab 10 we do not know ahead of time which room the bear is going to be in and so we do not know what room to draw.*

3) If the least significant bit selects whether ZL or ZH is used, is one of them (ZL or ZH) a 7 bit register? (I think you went over this but I don't remember the answer)

*The least significant bit in Z tells the **AVR processor** which 8-bit byte of a 16-bit word you want.*

*The most significant bit of the ZH:ZL is lost, in order to make space for the byte address in the least significant bit.*

4) Do the mnemonics "low" and "high" automatically correspond to the low and high bytes of the Z-register? *Assembly directive low and high tell the **Assembler** which 8-bit byte of a 16-bit word you want.*

```
ldi ZH, high(Table<<1)    // Initialize Z-pointer
ldi ZL, low(Table<<1)
```

5) What is the difference, if any, between an "index" and an "index pointer"?

*Not sure I understand the context of the question.*

6) Specifically for lab 5, why is the index equal to 20\*row+col?

