# Research the C-language: How are variables stored and changed in memory?

Tip:

This subject is also know as ‘pointers and references’ in the C-language.

Note:

Provide a list of used source(s) for each of the below questions.

WARNING:

You might damage (low chance) your hardware by writing to certain addresses in memory. So be careful with providing the correct memory address.

Questions:

1. How to retrieve the memory address of a byte variable?

**char value = a;**

**int value = a;**

1. What type of variable should you use to store the memory address of a byte variable? How do you call this kind of variables?

**Pointer \***

1. How to set a byte value at a given memory address?

**char value = \*a;**

**Int value = \*a;**

1. How to retrieve the byte value that is stored at a given memory address?

**char value = &a;**

**Int value = &a;**

1. Answer question 1-4, but now for an int variable type.
2. Explain what the advantage is of using different variable types for storing addresses of different data types (byte,int,float,double)?

**Op deze manier kan je makkelijk zien wat voor datatype het is.**

1. Demonstrate the answers to above questions by extending the Arduino code in ‘Assignments/memory-fun’ as a starting point for your program. You can control the menu via input of numbers over the serial line. Search for the ‘TODO’ comments in the code. You only need to change a small amount of code. Enjoy!