

Inf2C Computer Systems

Tutorial 2, Week 5

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1. **Memory copy function.** Write a function in MIPS assembly that will perform a copy of a block of given words from one memory location to another. The function input parameters are the initial (lowest) source address, the initial target address and the number of words to copy.
2. **Memory copy function refinement.** Suppose we want to change the granularity of the memory copy function from words to bytes. How can the above program be converted to do this efficiently? Note that a load or store word (4 bytes) takes one cycle, as does loading or storing a byte.
3. **C and fun with pointers.**
 - (a) What will the following piece of C code do and why?
`int *a = 10; *a = 100;`
 - (b) If there is something wrong with the previous C code, can you fix it?
 - (c) Given the following declaration:
`int **array;`
allocate a triangular array of `n` rows. That is, row 0 should have 1 column, row 1 should have 2 columns and so on. Each cell of a column should have an initial value equal to the current row, *i.e.*, `array[0][0] == 0`, `array[1][0] == array[1][1] == 1` and so on.
 - (d) How would you de-allocate the array you allocated in the previous question?