Understanding pointers, arrays and functions in c programming

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1 Arrays

An array is a collection of variables that are of the same data type. Each item in an array is called an element. An arry is declared using the following syntax data_type Array_name[array_size];

2 Pointer

A pointer is a special variable that is used to store the address of some other variable. It is necessary for the variable contained in a pointer to be an address. Pointers are used because, sometimes they are the only way to express a computation and they increase the speed and efficiency of the code. It can be used to store the address of a single variable, array, structure, union, or even a pointer. Every variable have a unique address.

The size of a pointer would be respect to the sizeof the data-type. Pointers have a bad reputation cause they are supposed to be difficult to use or difficult to understand. Pointers are declared using the "*". Once one declares a variable without giving it a value, a space in the memory is reserved for it. the unary operator "&" gives the address of an object. To declare a pointer, data−type ∗pointer_name; while to dereference a pointer, the syntax is data−type &name_of _variable;

2.1 Pointers and Arrays

A strong relationship exsit between the two pointers and arrays. Using an array can be easily accessed using a pointer and it would be generally faster. An example of a pointer and char array is shown below:

```
#include<stdio.h>
2
int main()
4 {
        char c, *ptr_c;
6
        c = 'A';
8       printf("c: address=%p, content=%c\n", &c, c);
        ptr_c = &c;
10      printf("ptr_c: address=%p, content=%p\n", &ptr_c, ptr_c);
        printf("*ptr_c +> %c\n", *ptr_c);
12      *ptr_c = 'B';
        printf("ptr_c: address=%p, content=%p\n", &ptr_c, ptr_c);
14      printf("*ptr_c => %c\n", *ptr_c);
        printf("c: address=%p, content=%c\n", &c, c);
16      return (0);
}
```

3 Placeholders in c programming language

int that is integer values uses %d
float that is floating point values uses %f
char that is for single character values uses %c
character string that is for arrays of characters uses %s