**Array**

For well inderstanding an Array : Imagine with me , that you are working on a school program , and in this program you have to create 550 variables to save in it students names , as you know for create 550 variable its hard , but with array you can do this in one line code . Syntax :

 #include <stdio.h>

 #include <cs50.h>

  int main (void){

     int scores [3] = {73,72,33};

  }

So Array is a place that you can save in it data countinuosly , which mean sequential values (قيم متسلسلة) , and these values has a reletion between them so you can do all programming operation on them , and you can search in them easier , and you can modify any one of them and all …

For well inderstand , Here we have an example : (Average)

 #include <stdio.h>

 #include <cs50.h>

  int main (void){

 int scores [3] = {73,72,33};

 printf("TheAverage %f\n",(scores[0]+scores[1]+scores[2])/3.0);

  }

As you see , in the example , all the variables has the same name just the index which change (index 🡺 exprees rank of the variable )

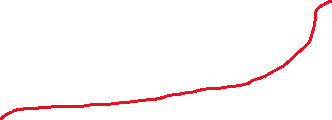
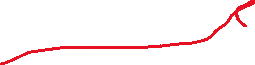
  int scores [3] ;

        scores [0]=72;

        scores [1]=73;

        scores [2]=33;

3 .0 🡺for we can get a float result



**First you have to declare the type of the array wich the types of data that you will save in it ,**

**then specify the name of the array ,**

**then in the square braces you have to specify how much variables that you want create**

Here We declare 3 variables and we reserve three place on memory for three variables

And here we can give them a values or we can modify their values if we already gave tham values

**String**

 #include <stdio.h>

 #include <cs50.h>

  int main (void){

     char c1 = 'H';

     char c2 = 'I';

     char c3 = '!';

     printf("%c%c%c \n",c1,c2,c3);

  }

Une image contenant table

Description générée automatiquement

if we search in any ascii table for the the decimal value of ‘H’ , ‘I ‘ and ‘ !’ we will get 72 73 33 respective ;

 #include <stdio.h>

 #include <cs50.h>

**RESULT :**

**72 73 33**

  int main (void){

     char c1 = 'H';

     char c2 = 'I';

     char c3 = '!';

     printf("%i %i %i \n",c1,c2,c3);

  }

And the opposite true ,

 #include <stdio.h>

 #include <cs50.h>

**RESULT :**

**HI!**

  int main (void){

     int c1 = 72;

     int c2 = 73;

     int c3 = 33;

     printf("%i%i%i \n",c1,c2,c3);

  }

And sure we get the result like text like string , so to be honest there no data type named string , string is an array of char

 #include <stdio.h>

 #include <cs50.h>

**So string is an array of chart variables**

  int main (void){

    string s ="HI!";

    printf("%c%c%c \n",s[0],s[1],s[2]);

  }

But if ‘s’ is an array , so where is [] and the number of variables , this problem is the problem which face cs50 team , the team won’t know how char the user will enter and this is the problem and the solution was very easy , the solution is when you enter a string the computer by default will add ‘\0’ null 🡺 when computer see it will stop the array automatically and sure \0 will not be appear :

 #include <stdio.h>

 #include <cs50.h>

**The Result :**

**HI !**

  int main (void){

    string s = "HI! \0 Bilal ";

    printf("%s \n ",s);

}

As you see in the result , « HI ! » and bilal doesn’t appear because it’s writed after null ‘\0’

**NOTE : in Practicing average « see it in cs50 practice files »**

**== 🡺 equal and != 🡺 not equal**

**UPPERCASE**

Libaries link 🡺 <https://manual.cs50.io/>

**NOTE : || 🡺 OR && 🡺 AND**

**For convert lowercase to uppercase -32**

**For convert uppercase to lowercase +32**

**All content of this day you will find it in css prictice files**

**Argument**

 int main (void){

**Main is the principal function in the program so the situation in it , is difrence a bit**

          // code

        }

The main function is like all function we can pass in it data , and for passing this data we have to recieve by an argument , and also the main function for start it you have to call it , and for call the main function you have start the file , and also here you can give it data :

**$ ./ file data data data  (open file then do space then give data)**

And sure you have to receive this data using an argument

Int main has a particular mode 🡺 int main take two arguments :

1 . its is int , and it count the number of the inputs

2 . its type is string , this array save all the inputs that you enter them

NOTE : argc and argv[] 🡺 Only common names You can use any other name

#include <stdio.h>

#include <cs50.h>

   int main (int argc , string argv[]){

   printf( " You Enter %i inputs and The Third One Was %s  \n", argc,argv[4]);

        }

Example : $ ./file Bilal Ahmad Bilal

**The Result 🡺 You Enter 4 inputs and the third one was Bilal**

Even ./file is considered as an input

And know we pass to the value returned by main function

Main function by default return 0 or 1 , 0 mean that you program work good and 1 mean that you progam doesn’t work good

But If you write retrun in any function that mean that is the last line in this function , by examle :

 #include <stdio.h>

 #include <cs50.h>

**The Result :**

**Hello world**

       int main (void){

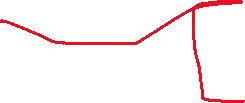
        printf("hello world \n");

        return 0;

**Anything writed after that will not be seed , when the program sees retrun it go out quickly**



           printf("hello world \n");



           printf("hello world \n");

           printf("hello world \n");

          }

And also :

 #include <stdio.h>

 #include <cs50.h>

   int main (int argc , string argv[]){

   if (argc != 2){

  printf(" enter you name after calling the main function , not less and not more ! \n ");

              return 1;

   }

            printf("Hello , %s \n",argv[1]);

            return 0; }

so in the previous example if the condition is true so will enter to the loop and the program will go out automatically because we have return

NOTE : in return 0 or 1 are just agreed value you can write any other integer