



Computer Science 2

Practical Work 2 : (One dimensional array)

Exercise 1 : (basic exercise)

Write a program in C to store elements in an array (with two different ways) and print them.

Solution

By using for loop	Initialization during declaration
<pre>#include <stdio.h> int main() { int i, j; int Ar[5]; printf("input 5 elements of the array:\n"); for(i=0; i<5; i++) { printf("element - %d : ",i); scanf("%d", &Ar[i]); } printf("Display the 5 elements of the array:\n"); for(j=0; j<5; j++) { printf("Ar[%d]=%d\t", j, Ar[j]); } return 0; }</pre>	<pre>#include <stdio.h> int main() { int i, j; int Ar[6]={4,2,6,3,2,4}; printf("Display the 5 elements of the array:\n"); for(j=0; j<6; j++) { printf("Ar[%d]=%d\n", j, Ar[j]); } return 0; }</pre>

Exercise 2 : (C program to divide two arrays)

Programation steps :

- 1- Declaration and initialization of the first array.
- 2- Declaration and initialization of the second array.
- 3- Dividing element by element using for loop.
- 4- Put the result in the third array element.
- 5- Print the results.

Solution

```
#include <stdio.h>

int main() {
    int i,j;
    float A1[]={21,15,9,33.5};
    float A2[]={7,3,4.5,15.03};
    float A3[4];
    for(i=0;i<4;i++)
    {
        A3[i]=A1[i]/A2[i];
        printf("A3[%d]=%f\t",i,A3[i]);
    }
    return 0;
}
```

Exercise 3 :

Write a C program to find sum and average of elements in array using functions. To put it simply, there are three approaches to solving this task: either the function is recursive or non-recursive but with the use of a loop. The third way is by using the array as a function's argument.

Solution

1- With a recursive function	2- Without recursion
<pre>#include <stdio.h> int b, Ar[]={5,2,6,4,7,2}; b=sizeof(Ar)/sizeof(Ar[1]); int ar_sum(int size) {int i=size; if (i==0) { return Ar[0]; } else { return Ar[i]+ar_sum(i-1); } } int main() { int a; float average; a=ar_sum(b); average=a/b; printf("sum=%d \naverage=%f",a, average); return 0; }</pre>	<pre>#include <stdio.h> int b, Ar[]={5,2,6,4,7,2}; b=sizeof(Ar)/sizeof(Ar[1]); int ar_sum(int size) { int i, sum=0; for(i=0;i<size; i++) { sum=sum+Ar[i]; } return sum; } int main() { int a; float average; a=ar_sum(b); average=a/b; printf("sum=%d \n average=%f",a, average); return 0; }</pre>
3- Array in function argument	
<pre>#include <stdio.h> int f(int a[], int size) { int i, sum=0; for(i=0;i<size;i++) { sum=sum+a[i]; } return sum; } int main() { int size=5,b; int a[5]={1,2,3,4,5}; float average; b=f(a,size); average=b/size; printf("sum=%d \naverage=%f", b, average); return 0; }</pre>	

Exercise 4 :

Write in C a program to find the common elements between two arrays

Solution

```
#include <stdio.h>
int main()
{
    int i,j;
    int a1[6]={21,15,9,33,7, 3};
    int a2[5]={7,3,4,9,15};

    for(i=0;i<6;i++)
    {for(j=0;j<5;j++)

        { if(a1[i]==a2[j])

            {
                printf("%d\t",a1[i]);

            }

        }

    }

    return 0;
}
```

Exercise 5 :

Write a program in C to merge two arrays

Solution

```
#include <stdio.h>

int main()
{
    int i,j=0,k,l,c[10];
    int a[5] = { 1, 2, 3, 4, 5 };
    int b[5] = { 6, 7, 8, 9, 10 };
    for(i=0;i<5;i++)
    {
        c[i]=a[i];

    }

}
```

```
for(l=5;l<10;l++)
{
    c[l]=b[j];
    j++;
}
for(k=0;k<10;k++)
{
    printf("c[%d]=%d\n",k,c[k]);
}

return 0;
}
```