Array Questions

1.WAP to input the elements in 1-d Array from user then print it?

```
#include<stdio.h>
int main(){
	int size;
	printf("Enter the size of array : \n");
	scanf("%d",&size);
	//declaring array
	int arr[size];
	printf("enter the values in the array: \n");
	//taking input in the array arr
	for(int i=0;i<size;i++){
	scanf("%d",&arr[i]);
	}
	//printing the array arr
	printf("the input array is : \n");
	for(int i=0;i<size;i++){
	printf("%d ",arr[i]);
	}
return 0;
}
```

Output

```
C:\himanshu\c>.\a.exe
Enter the size of array :
5
enter the values in the array:
1 2 3 4 5
the input array is :
1 2 3 4 5
```

2.WAP to make a print function to print elements of 1d array?

```
#include<stdio.h>
void print(int* array);
int main(){
	int size;
	printf("Enter the size of array : \n");
	scanf("%d",&size);
	//declaring array
	int arr[size];
	printf("enter the values in the array: \n");
	//taking input in the array arr
	for(int i=0;i<size;i++){
	scanf("%d",&arr[i]);
	}
	print(arr);
return 0;
}

void print(int* array){
	//printing the array arr
	int size=sizeof(array);
	printf("the input array is : \n");
	for(int i=0;i<=size;i++){
	printf("%d ",array[i]);
	}
}
```

Output

```
C:\himanshu\c>.\a.exe
Enter the size of array :
5
enter the values in the array:
1 2 3 4 5
the input array is :
1 2 3 4 5
```

3. Wap to search the element in the array?

```
#include<stdio.h>
int main(){
        int size;

        printf("Enter the size of array : \n");
        scanf("%d",&size);
        int target;
        printf("Enter target value :  ");
        scanf("%d",&target);

        //declaring array
        int arr[size];
        printf("enter the values in the array: \n");
        //taking input in the array arr
        for(int i=0;i<size;i++){
        scanf("%d",&arr[i]);
        }
        //searching in array
        for(int i=0;i<size;i++){
         if(arr[i]==target)
          printf("\nthe element %d is found at index: %d ",arr[i],i);
        }

}
```

Output:

```
C:\himanshu\c>.\a.exe
Enter the size of array :
5
Enter target value :  24
enter the values in the array:
1 23 50 24 46

the element 24 is found at index: 3
C:\himanshu\c>
```

4. Wap to make a search function to search element in the array ?

```
#include<stdio.h>
void search(int ,int *array);
int main(){
        int size;
        printf("Enter the size of array : \n");
        scanf("%d",&size);
        int target;
        printf("Enter target value :  ");
        scanf("%d",&target);

        //declaring array
        int arr[size];
        printf("enter the values in the array: \n");
        //taking input in the array arr
        for(int i=0;i<size;i++){
        scanf("%d",&arr[i]);
        }
        search(target,arr);
        return 0;
}
void search(int target,int *array){
//searching in array
        int size=sizeof(array);
        for(int i=0;i<=size;i++){
         if(array[i]==target)
          printf("\nthe element %d is found at index: %d ",array[i],i);
        }
}
```

Output:

```
C:\himanshu\c>.\a.exe
Enter the size of array :
5
Enter target value :  45
enter the values in the array:
12 34 45 56 67

the element 45 is found at index: 2
```

5. Wap to input elements in an array then find the minimum element present in the array?

```
#include<stdio.h>
int main(){
        int size;

        printf("Enter the size of array : \n");
        scanf("%d",&size);
        //declaring array
        int arr[size];
        printf("enter the values in the array: \n");
        //taking input in the array arr
        for(int i=0;i<size;i++){
        scanf("%d",&arr[i]);
        }

        //searching minimum element in array
        //let min =arr[0]
        int min=arr[0];
        for(int i=1;i<size;i++){
         if(arr[i]<min){
                min=arr[i];
         }
}

    //printing minimum no of the array
    printf("The minimum element in the array is : %d",min);
return 0;
}
```

Output:

```
C:\himanshu\c>.\a.exe
Enter the size of array :
5
enter the values in the array:
34
67
78
90
2
The minimum element in the array is : 2
```

6. Wap to make a min function to find the minimum element present in the array?

```
#include<stdio.h>
int min(int *newarray);
int main(){
        int size;

        printf("Enter the size of array : \n");
        scanf("%d",&size);
        //declaring array
        int arr[size];
        printf("enter the values in the array: \n");
        //taking input in the array arr
        for(int i=0;i<size;i++){
        scanf("%d",&arr[i]);
        }
    //printing minimum no of the array
    printf("The minimum element is : %d",min(arr));
return 0;
}
//searching minimum element in array
int min(int *newarray){
        int size=sizeof(newarray);
        //let minimum=nwarray[0]
        int minimum=newarray[0];
        for(int i=1;i<=size;i++){
         if(newarray[i]<minimum){
                minimum=newarray[i];
         }
}
return minimum;
}
```

Output:

```
C:\himanshu\c>.\a.exe
Enter the size of array :
5
enter the values in the array:
34
67
78
90
2
The minimum element in the array is : 2
```

7. Wap to input elements in an array then find the maximum element present in the array?

```
#include<stdio.h>
int main(){
        int size;

        printf("Enter the size of array : \n");
        scanf("%d",&size);
        //declaring array
        int arr[size];
        printf("enter the values in the array: \n");
        //taking input in the array arr
        for(int i=0;i<size;i++){
        scanf("%d",&arr[i]);
        }

        //searching maximum element in array
        //let max =arr[0]
        int max=arr[0];
        for(int i=1;i<size;i++){
         if(arr[i]>=max){
                max=arr[i];
         }
}

    //printing maximum no of the array
    printf("The maximum element in the array is : %d",max);
return 0;
}
```

Output:

```
C:\himanshu\c>.\a.exe
Enter the size of array :
5
enter the values in the array:
12 23 34 45 100 56
The maximum element in the array is : 100
C:\himanshu\c>
```

8. Wap to make a max function to find the maximum element present in the array?

```
#include<stdio.h>
int max(int *newarray);
int main(){
        int size;

        printf("Enter the size of array : \n");
        scanf("%d",&size);
        //declaring array
        int arr[size];
        printf("enter the values in the array: \n");
        //taking input in the array arr
        for(int i=0;i<size;i++){
        scanf("%d",&arr[i]);
        }
    //printing maximum no of the array
    printf("The maximum element is : %d",max(arr));
return 0;
}
//searching maximum element in array
int max(int *newarray){
        int size=sizeof(newarray);
        //let maximum=nwarray[0]
        int maximum=newarray[0];
        for(int i=1;i<=size;i++){
         if(newarray[i]>maximum){
                maximum=newarray[i];
         }
}
return maximum;
}
```

Output:

```
C:\himanshu\c>.\a.exe
Enter the size of array :
5
enter the values in the array:
12 23 34 45 100 56
The maximum element in the array is : 100
C:\himanshu\c>
```

9. Wap to input elements in an array then find the reverse of the array?

```
#include<stdio.h>
int main(){
	int size;
	printf("Enter the size of array : \n");
	scanf("%d",&size);
	//declaring array
	int arr[size];
	int last=size-1;
	printf("enter the values in the array: \n");
	//taking input in the array arr
	for(int i=0;i<size;i++){
	scanf("%d",&arr[ i]);
	}
	//the input array is :
	printf("The array before reverse:\n");
	for(int i=0;i<size;i++){
	printf("%d ",arr[i]);
	}
	//reversing the array
	for(int i=0;i<size/2;i++){
	int temp=arr[i];
	arr[i]=arr[last];
	arr[last]=temp;
	last--;
	}
	//printing the reversed array
	printf("\nthe array after reverse: \n");
	for(int i=0;i<size;i++){
	printf("%d ",arr[i]);
	}
return 0;
}
```

Output:

```
D:\programming\c>.\a.exe
Enter the size of array :
5
enter the values in the array:
5 4 3 2 1
The array before reverse:
5 4 3 2 1
the array after reverse:
1 2 3 4 5
D:\programming\c>
```

10. Wap to make a reverse function to find the reverse of the array?

```
#include<stdio.h>
void reverse(int *array);
int main(){
        int size;
        printf("Enter the size of array : \n");
        scanf("%d",&size);
        //declaring array
        int arr[size];
        printf("enter the values in the array: \n");
        //taking input in the array arr
        for(int i=0;i<size;i++){
        scanf("%d",&arr[ i]);
        }
        //the input array is :
        printf("The array before reverse:\n");
        for(int i=0;i<size;i++){
        printf("%d ",arr[i]);
        }
        reverse(arr);
        //printing the reversed array
        printf("\nthe array after reverse: \n");
        for(int i=0;i<size;i++){
        printf("%d ",arr[i]);
        }
return 0;
}
void reverse(int *array){
        int size=sizeof(array);
        int last=size;
//reversing the array
        for(int i=0;i<size/2;i++){
        int temp=array[i];
    array[i]=array[last];
        array[last]=temp;
        last--;
        }
}
```

Output:

```
D:\programming\c>.\a.exe
Enter the size of array :
5
enter the values in the array:
5 4 3 2 1
The array before reverse:
5 4 3 2 1
the array after reverse:
1 2 3 4 5
D:\programming\c>
```

11. Wap to input elements in 2d array then print it?

```
#include<stdio.h>
int main(){
	int rows,cols;
	printf("Enter the length of row : ");
	scanf("%d",&rows);
	printf("Enter the length of cols: ");
	scanf("%d",&cols);
	int arr[rows][cols];
	printf("enter the elements in an 2d array: \n ");

	for(int i=0;i<rows;i++){
		for(int j=0;j<cols;j++){
			scanf("%d",&arr[i][j]);
		}
	}
	//printing the array
	printf("the input elements in an 2d array are: \n");
	for(int i=0;i<rows;i++){
		for(int j=0;j<cols;j++){
			printf("%d ",arr[i][j]);
		}printf("\n");
	}
return 0;
}
```

Output:

```
D:\programming\c>gcc b.c

D:\programming\c>.\a.exe
Enter the length of row : 3
Enter the length of cols: 3
enter the elements in an 2d array:
 1 2 3
4 5 6
7 8 9
the input elements in an 2d array are:
1 2 3
4 5 6
7 8 9
```

12. Wap to input elements in an 2d array then find its transpose?

Method 1

```
#include<stdio.h>
int main(){
        int rows,cols;

        printf("Enter the row length of array : \n");
        scanf("%d",&rows);

        printf("Enter the cols length of array : \n");
        scanf("%d",&cols);
        //declaring array
        int arr[rows][cols];
        printf("enter the values in the array: \n");
        //taking input in the array arr
        for(int i=0;i<rows;i++){
        for(int j=0;j<cols;j++){
        scanf("%d",&arr[i][j]);
        }
}

        printf("Array before tanspose: \n");
        for(int i=0;i<rows;i++){
        for(int j=0;j<cols;j++){
        printf("%d ",arr[i][j]);
        }printf("\n");
}

        printf("Array after tanspose: \n");
        for(int i=0;i<rows;i++){
        for(int j=0;j<cols;j++){
        printf("%d ",arr[j][i]);
        }printf("\n");
}

        return 0;
}
```

Output:

```
C:\himanshu\c>.\a.exe
Enter the row length of array :
3
Enter the cols length of array :
3
enter the values in the array:
1 2 3
4 5 6
7 8 9
Array before tanspose:
1 2 3
4 5 6
7 8 9
Array after tanspose:
1 4 7
2 5 8
3 6 9
```

13. Wap to input elements in an 2d array then find its transpose?

Method 2

```
#include<stdio.h>
int main(){
	int rows,cols;

	printf("Enter the row length of array : ");
	scanf("%d",&rows);

	printf("\nEnter the cols length of array : ");
	scanf("%d",&cols);
	//declaring array
	int arr[rows][cols],newarray[rows][cols];
	printf("\nenter the values in the array: \n");
	//taking input in the array arr
	for(int i=0;i<rows;i++){
	for(int j=0;j<cols;j++){
	scanf("%d",&arr[i][j]);
	}
}

	//transposing an array
	for(int i=0;i<rows;i++){
	for(int j=0;j<cols;j++){
	newarray[i][j]=arr[j][i];
	}
}

	printf("Array after tanspose: \n");
	for(int i=0;i<rows;i++){
	for(int j=0;j<cols;j++){
	printf("%d ",newarray[i][j]);
	}printf("\n");
}

	return 0;
}
```

Output:

```
C:\himanshu\c>.\a.exe
Enter the row length of array : 3

Enter the cols length of array : 3

enter the values in the array:
1 2 3
4 5 6
7 8 9
Array after tanspose:
1 4 7
2 5 8
3 6 9
```

14. Wap to print multiplication of 2 matrix ?

```
#include<stdio.h>
int main(){
	int m,n,z;

	printf("Enter no of  rows in array1 :  ");
	scanf("%d",&m);
	printf("Enter no of  cols in array1 :  ");
	scanf("%d",&n);
	printf("No of  rows in array2 :  %d\n",n);
	printf("Enter no of  cols in array2 :  ");
	scanf("%d",&z);
	int first[m][n];
	int second[n][z];
	int third[m][z];
	//taking input to the first array
	printf("Enter the elements in array1 : \n");
	for(int i=0;i<m;i++){
		for(int j=0;j<n;j++){
			scanf("%d",&first[i][j]);
		}
	}

//taking input to the second array
	printf("Enter the elements in array2 : \n");
	for(int i=0;i<n;i++){
		for(int j=0;j<z;j++){
			scanf("%d",&second[i][j]);
		}
	}
```

```
//storing values in third array
      int sum=0;
      for(int i=0;i<m;i++){
            for(int j=0;j<z;j++){

                  for(int k=0;k<n;k++){
                        sum+=first[i][k]* second[k][j];
                  }
                  third[i][j]=sum;
                  sum=0;
            }
      }
printf("The multiplication of first and second array is  : \n");
      for(int i=0;i<m;i++){
            for(int j=0;j<n;j++){
                  printf("%d ",third[i][j]);
            }printf("\n");
      }

return 0;
}
```

OUTPUT

```
C:\himanshu\c>.\a.exe
Enter no of  rows in array1 :  3
Enter no of  cols in array1 :  4
No of  rows in array2 :  4
Enter no of  cols in array2 :  3
Enter the elements in array1 :
1 1 1 1
2 2 2 2
3 3 3 3
Enter the elements in array2 :
1 1 1
2 2 2
3 3 3
4 4 4
The multiplication of first and second array is  :
10 10 10
20 20 20
30 30 30
```

15. Wap to print diagonal of array?

```
#include<stdio.h>
int main(){
        int rows,cols;

        printf("Enter the row length of array : ");
        scanf("%d",&rows);

        printf("\nEnter the cols length of array : ");
        scanf("%d",&cols);
        //declaring array
        int arr[rows][cols];
        printf("\nenter the values in the array: \n");

        //taking input in the array arr
        for(int i=0;i<rows;i++){
        for(int j=0;j<cols;j++){
        scanf("%d",&arr[i][j]);
        }
}
   //printing daigonal elements
   printf("The diagonal elements of the array are: \n");
        for(int i=0;i<rows;i++){
        for(int j=0;j<cols;j++){
                if(i==j)
                        printf("%d ",arr[i][j]);
                else
                        printf("  ");
        }printf("\n");
}
        return 0;
}
```

OUTPUT:

```
C:\himanshu\c>.\a.exe
Enter the row length of array : 3

Enter the cols length of array : 3

enter the values in the array:
1 2 3
4 5 6
7 8 9
The diagonal elements of the array are:
1
  5
    9
```

16 Wap to print lower triangular elements of array?

```
#include<stdio.h>
int main(){
	int rows,cols;

	printf("Enter the row length of array : ");
	scanf("%d",&rows);

	printf("\nEnter the cols length of array : ");
	scanf("%d",&cols);
	//declaring array
	int arr[rows][cols];
	printf("\nenter the values in the array: \n");

	//taking input in the array arr
	for(int i=0;i<rows;i++){
	for(int j=0;j<cols;j++){
	scanf("%d",&arr[i][j]);
	}
}
   //printing daigonal elements
   printf("The lower triangular elements of the array are: \n");
	for(int i=0;i<rows;i++){
	for(int j=0;j<cols;j++){
		if(i>=j)
			printf("%d ",arr[i][j]);
		else
			printf("0 ");
	}printf("\n");
}

	return 0;
}
```

OUTPUT:

```
C:\himanshu\c>.\a.exe
Enter the row length of array : 3

Enter the cols length of array : 3

enter the values in the array:
1 2 3
4 5 6
7 8 9
The lower triangular elements of the array are:
1 0 0
4 5 0
7 8 9
```

17 Wap to print lower triangular elements of array?

```
#include<stdio.h>
int main(){
	int rows,cols;

	printf("Enter the row length of array : ");
	scanf("%d",&rows);

	printf("\nEnter the cols length of array : ");
	scanf("%d",&cols);
	//declaring array
	int arr[rows][cols];
	printf("\nenter the values in the array: \n");

	//taking input in the array arr
	for(int i=0;i<rows;i++){
	for(int j=0;j<cols;j++){
	scanf("%d",&arr[i][j]);
	}
}
   //printing daigonal elements
   printf("The lower triangular elements of the array are: \n");
	for(int i=0;i<rows;i++){
	for(int j=0;j<cols;j++){
		if(i>=j)
			printf("%d ",arr[i][j]);
		else
			printf("0 ");
	}printf("\n");
}

	return 0;
}
```

OUTPUT:

```
C:\himanshu\c>.\a.exe
Enter the row length of array : 3

Enter the cols length of array : 3

enter the values in the array:
1 2 3
4 5 6
7 8 9
The lower triangular elements of the array are:
1 0 0
4 5 0
7 8 9
```

18 Wap to print upper triangular elements of array?

```
#include<stdio.h>
int main(){
	int rows,cols;

	printf("Enter the row length of array : ");
	scanf("%d",&rows);

	printf("\nEnter the cols length of array : ");
	scanf("%d",&cols);
	//declaring array
	int arr[rows][cols];
	printf("\nenter the values in the array: \n");

	//taking input in the array arr
	for(int i=0;i<rows;i++){
	for(int j=0;j<cols;j++){
	scanf("%d",&arr[i][j]);
	}
}
   //printing daigonal elements
   printf("The upper triangular elements of the array are: \n");
	for(int i=0;i<rows;i++){
	for(int j=0;j<cols;j++){
		if(i<=j)
			printf("%d ",arr[i][j]);
		else
			printf("0 ");
	}printf("\n");
}

	return 0;
}
```

OUTPUT:

```
C:\himanshu\c>.\a.exe
Enter the row length of array : 3

Enter the cols length of array : 3

enter the values in the array:
1 2 3
4 5 6
7 8 9
The upper triangular elements of the array are:
1 2 3
0 5 6
0 0 9
```