

## Answer of Assignment 7– 18.01.2021

**SUBJECT-PROGRAMMING AND DATA STRUCTURE USING C (PDSC)**

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- 1. read n number of values in an array and display it in reverse order.**

```
#include <stdio.h>
int main(){
    int n,i;
    printf("enter size of array :: ");
    scanf("%d",&n);
    int arr[n];
    for(i=0;i<n;i++){
        printf("Input number :: ");
        scanf("%d",&arr[i]);
    }
    printf("array in actual order :: ");
    for(i=0;i<n;i++){
        printf("%d ",arr[i]);
    }
    printf("\n");
    printf("array in reverse order :: ");
    for(i=n-1;i>=0;i--){
        printf("%d ",arr[i]);
    }

    return 0;
}
```

Output:

enter size of array :: 5

Input number :: 3

Input number :: 6

Input number :: 4

Input number :: 8

Input number :: 9

array in actual order :: 3 6 4 8 9

array in reverse order :: 9 8 4 6 3

## 2. find the sum of all elements of the array.

```
#include <stdio.h>
int main(){
int n,i,sum=0;
printf("enter size of array :: ");
scanf("%d",&n);
int arr[n];
for(i=0;i<n;i++){
    printf("Input number :: ");
    scanf("%d",&arr[i]);
}

for(i=0;i<n;i++){
    sum += arr[i];
}
printf("Sum of all elements of the array is %d",sum);

return 0;
}
```

### Output:

```
enter size of array :: 4
Input number :: 5
Input number :: 5
Input number :: 5
Input number :: 5
Sum of all elements of the array is 20
```

### 3. copy the elements of one array into another array.

```
#include <stdio.h>
int main(){
int n,i,sum=0;
printf("enter size of array :: ");
scanf("%d",&n);
int arr[n],arrcopy[n];
for(i=0;i<n;i++){
    printf("Input number in first array :: ");
    scanf("%d",&arr[i]);
}

for(i=0;i<n;i++){
    arrcopy[i] = arr[i];
}
printf("Elements copy in second array :: ");
for(i=0;i<n;i++){
    printf("%d ",arrcopy[i]);
}

return 0;
}
```

#### Output:

```
enter size of array :: 4
Input number in first array :: 2
Input number in first array :: 5
Input number in first array :: 3
Input number in first array :: 6
Elements copy in second array :: 2 5 3 6
```

#### 4. count a total number of duplicate elements in an array.

```
#include <stdio.h>
int main(){
    int n,i,j,c=0;
    printf("enter size of array :: ");
    scanf("%d",&n);
    int arr[n];
    for(i=0;i<n;i++){
        printf("Input number in array :: ");
        scanf("%d",&arr[i]);
    }

    for(i=0;i<n;i++){
        j=i;
        for(j+=1;j<n;j++){
            if(arr[i]==arr[j]){
                c++;
                break;
            }
        }
    }

    printf("Here total %d duplicate elements",c);

    return 0;
}
```

Output:

```
enter size of array :: 6
Input number in array :: 4
Input number in array :: 4
```

Input number in array :: 2

Input number in array :: 2

Input number in array :: 3

Input number in array :: 3

Here total 3 duplicate elements

#### 4. find the maximum and minimum element in an array.

```
#include <stdio.h>
int main(){
    int n,i,j,temp=0;
    printf("enter size of array :: ");
    scanf("%d",&n);
    int arr[n];
    for(i=0;i<n;i++){
        printf("Input number in array :: ");
        scanf("%d",&arr[i]);
    }

    for(i=0;i<n;i++){
        for(j=0;j<n;j++){
            if(arr[i] < arr[j]){
                temp = arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }
    }

    printf("minimum element = %d \nmaximum element = %d",arr[0],arr[n-1]);
    return 0;
}
```

##### Output:

```
enter size of array :: 5
Input number in array :: 3
Input number in array :: 2
Input number in array :: 5
Input number in array :: 6
Input number in array :: 4
```

minimum element = 2

maximum element = 6



## 5. separate odd and even integers in separate arrays.

```
#include <stdio.h>
int main(){
int n,i,j=0,k=0,c=0;
printf("enter size of array :: ");
scanf("%d",&n);
int arr[n],odd[n],even[n];
for(i=0;i<n;i++){
    printf("Input number in array :: ");
    scanf("%d",&arr[i]);
}

for(i=0;i<n;i++){
    if(arr[i] % 2 == 0){
        even[j] = arr[i];
        j +=1;
        c += 1;
    }
    else{
        odd[k] = arr[i];
        k += 1;
    }
}
printf("Even numbers :: ");
for(i=0;i<c;i++){
    printf("%d ",even[i]);
}

printf("\nodd numbers :: ");
for(i=0;i<n-c;i++){
    printf("%d ",odd[i]);
}
```

```
return 0;  
}
```

Output:

```
enter size of array :: 5  
Input number in array :: 1  
Input number in array :: 2  
Input number in array :: 3  
Input number in array :: 4  
Input number in array :: 5  
Even numbers :: 2 4  
odd numbers :: 1 3 5
```

## 6. insert New value in the array.

```
#include <stdio.h>
int main(){
    int n,m,i;
    printf("enter size of array :: ");
    scanf("%d",&n);
    int arr[n],new[n];
    for(i=0;i<n;i++){
        printf("Input number in array :: ");
        scanf("%d",&arr[i]);
    }
    printf("Inserted elements :: ");
    for(i=0;i<n;i++){
        printf("%d ",arr[i]);
    }

    printf("\nhow many new elements you want to insert :: ");
    scanf("%d",&m);
    arr[n+m];

    for(i=n;i<n+m;i++){
        printf("\ninput new number :: ");
        scanf("%d",&arr[i]);
    }

    printf("\nArray with New inserted elements :: ");

    for(i=0;i<n+m;i++){
        printf("%d ",arr[i]);
    }

    return 0;
}
```

Output:

enter size of array :: 5

Input number in array :: 1

Input number in array :: 5

Input number in array :: 4

Input number in array :: 6

Input number in array :: 3

Inserted elements :: 1 5 4 6 3

how many new elements you want to insert :: 3

input new number :: 9

input new number :: 10

input new number :: 13

Array with New inserted elements :: 1 5 4 6 3 9 10 13

## 8. delete an element at desired position from an array.

```
#include <stdio.h>
int main(){
int n,m,i,temp;
printf("enter size of array :: ");
scanf("%d",&n);
int arr[n];
for(i=0;i<n;i++){
    printf("Input number in array :: ");
    scanf("%d",&arr[i]);
}
printf("Inserted elements :: ");
for(i=0;i<n;i++){
    printf("%d ",arr[i]);
}

printf("\nEnter index for delete a number :: ");
scanf("%d",&m);

for(i=m;i<n;i++){
    arr[m] = arr[m+1];
    m = m + 1;
}

for(i=0;i<n-1;i++){
    printf("%d ",arr[i]);
}

return 0;
}
```

Output:

enter size of array :: 6

Input number in array :: 1

Input number in array :: 2

Input number in array :: 3

Input number in array :: 4

Input number in array :: 5

Input number in array :: 6

Inserted elements :: 1 2 3 4 5 6

Enter index for delete a number :: 5

1 2 3 4 5

## 9. find the second largest element in an array.

```
#include <stdio.h>
int main(){
int n,i,j,temp=0;
printf("enter size of array :: ");
scanf("%d",&n);
int arr[n];
for(i=0;i<n;i++){
    printf("Input number in array :: ");
    scanf("%d",&arr[i]);
}

for(i=0;i<n;i++){
    for(j=0;j<n;j++){
        if(arr[i] < arr[j]){
            temp = arr[i];
            arr[i] = arr[j];
            arr[j] = temp;
        }
    }
}

printf("Second largest value = %d",arr[n-2]);
return 0;
}
```

Output:

enter size of array :: 6

Input number in array :: 3

Input number in array :: 4

Input number in array :: 8

Input number in array :: 9

Input number in array :: 7

Input number in array :: 2

Second largest value = 8



## 11. multiplication of two square Matrices.

```
#include <stdio.h>
int main(){
int n,i=0,j=0,k;
printf("enter size of array :: ");
scanf("%d",&n);
int arr1[n][n],arr2[n][n],mul[n][n];

printf("Enter elements in first array -->\n");
for(i=0;i<n;i++){
    for(j=0;j<n;j++){
        printf("Enter a number :: ");
        scanf("%d",&arr1[i][j]);

    }
}

printf("Enter elements in second array -->\n");
for(i=0;i<n;i++){
    for(j=0;j<n;j++){
        printf("Enter a number :: ");
        scanf("%d",&arr2[i][j]);

    }
}

for(i=0;i<n;i++){
    for(j=0;j<n;j++){
        mul[i][j]=0;
        for(k=0;k<n;k++){
            mul[i][j] += arr1[i][k] * arr2[k][j] ;
        }
    }
}
```

```

    }

}

printf("Multiplication of the given matrix --> \n");
for(i=0;i<n;i++){
    for(j=0;j<n;j++){
        printf("%d ",mul[i][j]);
    }
    printf("\n");
}
return 0;
}

```

### Output:

```

enter size of array :: 2
Enter elements in first array -->
Enter a number :: 4
Enter a number :: 2
Enter a number :: 2
Enter a number :: 4
Enter elements in second array -->
Enter a number :: 2
Enter a number :: 2
Enter a number :: 2
Enter a number :: 2
Multiplication of the given matrix -->
12 12
12 12

```

## 12. find transpose of a given matrix.

```
#include <stdio.h>
int main(){
    int n,i=0,j=0,k;
    printf("enter size of array :: ");
    scanf("%d",&n);
    int arr1[n][n],arr2[n][n];

    for(i=0;i<n;i++){
        for(j=0;j<n;j++){
            printf("Enter a number :: ");
            scanf("%d",&arr1[i][j]);

        }
    }

    for(i=0;i<n;i++){
        for(j=0;j<n;j++){
            arr2[i][j] = arr1[j][i];
        }
    }

    printf("Inserted matrix -->\n");
    for(i=0;i<n;i++){
        for(j=0;j<n;j++){
            printf("%d ",arr1[i][j]);
        }
        printf("\n");
    }

    printf("Transpose of this given matrix is -->\n");
    for(i=0;i<n;i++){
        for(j=0;j<n;j++){
            printf("%d ",arr2[i][j]);
        }
        printf("\n");
    }
```

```
}  
return 0;  
}
```

Output:

enter size of array :: 3

Enter a number :: 1

Enter a number :: 2

Enter a number :: 3

Enter a number :: 4

Enter a number :: 5

Enter a number :: 6

Enter a number :: 7

Enter a number :: 8

Enter a number :: 9

Inserted matrix -->

1 2 3

4 5 6

7 8 9

Transpose of this given matrix is -->

1 4 7

2 5 8

3 6 9

### 13. find the sum of left diagonals of a matrix.

```
#include <stdio.h>
int main(){
int n,i,j,sum=0;
printf("enter size of array :: ");
scanf("%d",&n);
int arr[n][n];

for(i=0;i<n;i++){
    for(j=0;j<n;j++){
        printf("Enter a number :: ");
        scanf("%d",&arr[i][j]);

    }
}
printf("Inserted matrix -->\n");
for(i=0;i<n;i++){
    for(j=0;j<n;j++){
        printf("%d ",arr[i][j]);
    }
    printf("\n");
}

printf("sum of left diagonals ");
for(i=0;i<n;i++){
    j=i;
    printf("%d ",arr[i][j]);
}
printf("is :: ");

for(i=0;i<n;i++){
    j=i;
    sum += arr[i][j];
}
printf("%d",sum);
```

```
return 0;  
}
```

Output::

```
enter size of array :: 3  
Enter a number :: 1  
Enter a number :: 2  
Enter a number :: 3  
Enter a number :: 4  
Enter a number :: 5  
Enter a number :: 6  
Enter a number :: 7  
Enter a number :: 8  
Enter a number :: 9  
Inserted matrix -->  
1 2 3  
4 5 6  
7 8 9  
sum of left diagonals 1 5 9 is :: 15
```