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Assignment - 3

1. Write a program to store marks for n number of student in an array and print their marks.

Answer:

```
#include<stdio.h>

int main(){
    int arr[100];
    int n;
    printf("Enter total number of students : ");
    scanf("%d",&n);
    printf("Enter marks of each student : \n");
    for (int i = 0; i < n; i++)
        scanf("%d", &arr[i]);
    printf("\nEntered marks are : \n");
    for (int i = 0; i < n; i++)
        printf("Student %d => %d \n", i + 1, arr[i]);
    return 0;
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_1InputOutput.c -o 3_1InputOutput && 3_1InputOutput
Enter total number of students : 4
Enter marks of each student :
80 70 60 85

Entered marks are :
Student 1 => 80
Student 2 => 70
Student 3 => 60
Student 4 => 85
```

2. Write a program that stores the marks of the subject Mathematics and English of n number of students in an array and then prints their total marks.

Answer:

```
#include <stdio.h>

int main() {
    int n;

    printf("Enter the number of students: ");
    scanf("%d", &n);

    int mathMarks[n];
    int englishMarks[n];
    int totalMarks[n];

    // Input marks for each student
    for (int i = 0; i < n; i++) {
        printf("Enter marks for Student %d\n", i + 1);
        printf("Mathematics: ");
        scanf("%d", &mathMarks[i]);
        printf("English: ");
        scanf("%d", &englishMarks[i]);

        totalMarks[i] = mathMarks[i] + englishMarks[i];
    }

    // Print total marks for each student
    printf("\nTotal Marks of Students:\n");
    for (int i = 0; i < n; i++) {
```

```
printf("Student %d: %d\n", i + 1, totalMarks[i]);  
}  
return 0;  
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_2AddMarks.c -o 3_2AddMarks && 3_2AddMarks  
Enter the number of students: 3  
Enter marks for Student 1  
Mathematics: 10  
English: 20  
Enter marks for Student 2  
Mathematics: 40  
English: 20  
Enter marks for Student 3  
Mathematics: 50  
English: 10  
  
Total Marks of Students:  
Student 1: 30  
Student 2: 60  
Student 3: 60
```

3. Write a program to insert an element in an array in a particular position.

Answer:

```
#include <stdio.h>

int main(){
    int arr[100];
    int n;
    printf("Enter the size of array : ");
    scanf("%d", &n);
    int position, element;
    printf("Enter elements for the array : ");
    for(int i = 0; i < n; i++)
        scanf("%d", &arr[i]);

    printf("Enter the position to insert the new element (0 to %d): ", n);
    scanf("%d", &position);

    if (position < 0 || position > n)
        printf("Invalid position! Please enter a position between 0 and %d.\n", n);
    else {
        printf("Enter the element to be inserted: ");
        scanf("%d", &element);

        n++;
        for(int i = n; i > position; i--)
            arr[i] = arr[i - 1];
```

```

arr[position] = element;

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

return 0;
}

```

Output:

```

E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_3InsertElement.c -o 3_3InsertElement && 3_3InsertElement
Enter the size of array : 5
Enter the size of array : 5
Enter elements for the array : 1 2 3 4 5
Enter elements for the array : 1 2 3 4 5
Enter the position to insert the new element (0 to 5): 2
Enter the element to be inserted: 10
Enter the position to insert the new element (0 to 5): 2
Enter the element to be inserted: 10
Enter the element to be inserted: 10
Array after insertion:
1 2 10 3 4 5

```

4. Write a program to delete an element from a particular position of an array.

Answer:

```
#include <stdio.h>

int main(){
    int arr[100];
    int n;
    printf("Enter the size of array : ");
    scanf("%d", &n);
    int position;

    printf("Enter elements for the array : ");
    for(int i = 0; i < n; i++)
        scanf("%d", &arr[i]);

    printf("Enter the position to delete (0 to %d): ", n-1);
    scanf("%d", &position);

    if (position < 0 || position >= n)
        printf("Invalid position! Please enter a position between 0 and %d.\n", n);
    else {
        for(int i = position; i < n - 1; i++)
            arr[i] = arr[i + 1];

        n--;

        printf("Array after deletion :\n");
        for (int i = 0; i < n; i++)
```

```
printf("%d ", arr[i]);

}

return 0;

}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_4DeleteElement.c -o 3_4DeleteElement && 3_4DeleteElement
Enter the size of array : 5
Enter elements for the array : 1 2 3 4 5
Enter the position to delete (0 to 4): 2
Array after deletion :
1 2 4 5
```

5. Write a program to convert a decimal number taken as input from a user to the corresponding binary number and store the result in an array.

Answer:

```
#include <stdio.h>

int noOfDigit(int n){
    int count = 0;
    while(n){
        count++;
        n /= 2;
    }
    return count;
}

int main(){
    int n;
    printf("Enter a number : ");
    scanf("%d", &n);

    int arrSize = noOfDigit(n);
    int arr[arrSize], i = arrSize - 1;

    while(n){
        arr[i] = n % 2;
        n /= 2;
        i--;
    }
}
```



```
for (int i = 0; i < arrSize; i++) printf("%d", arr[i]);
```

```
return 0;
```

```
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_DecimalToBinary.c -o 3_DecimalToBinary && 3_DecimalToBinary
Enter a number : 5
101
```

6. Write a program to input a binary number in an array and convert it into a corresponding decimal number.

Answer:

```
#include <stdio.h>

#include<string.h>

int binaryToDecimal(int arr[], int n){
    int ans = 0;
    for(int i = 0; i < n; i++){
        ans = ans * 2 + arr[i];
    }
    return ans;
}

int noOfDigit(int n){
    int count = 0;
    while(n){
        count++;
        n /= 2;
    }
    return count;
}

int main(){
    char str[33];

    printf("Enter a binary number : ");
    scanf("%s", str);
```

```
int n = strlen(str), arr[n];  
for(int i = 0; i < n; i++){  
    arr[i] = str[i] - '0';  
}  
  
int ans = binaryToDecimal(arr, n);  
  
printf("Answer : %d", ans);  
  
return 0;  
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_6BinaryToDecimal.c -o 3_6BinaryToDecimal && 3_6BinaryToDecimal  
Enter a binary number : 1111  
Answer : 15
```

7. Write a program to find the smallest and the largest elements in an array.

Answer:

```
#include <stdio.h>
```

```
int smallest(int arr[], int n){
```

```
    int min = arr[0];
```

```
    for(int i = 1; i < n; i++){
```

```
        if(arr[i] < min) min = arr[i];
```

```
    }
```

```
    return min;
```

```
}
```

```
int largest(int arr[], int n){
```

```
    int max = arr[0];
```

```
    for(int i = 1; i < n; i++){
```

```
        if(arr[i] > max) max = arr[i];
```

```
    }
```

```
    return max;
```

```
}
```

```
int main(){
```

```
    int n;
```

```
    printf("Enter the size of array : ");
```

```
    scanf("%d", &n);
```

```
int arr[n];

printf("Enter elements for the array : ");

for(int i = 0; i < n; i++)
    scanf("%d", &arr[i]);

printf("Largest Element : %d \n", largest(arr, n));
printf("Smallest Element : %d \n", smallest(arr, n));

return 0;
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_7MaxMinInArray.c -o 3_7MaxMinInArray && 3_7MaxMinInArray
Enter the size of array : 5
Enter elements for the array : 20 10 5 30 40
Largest Element : 40
Smallest Element : 5
```

8. Write a program for deleting duplicate elements in an array.

Answer:

```
#include<stdio.h>

void deleteElement (int arr[], int **n, int pos){

    int temp = **n;

    for(int i = pos; i < temp; i++){

        arr[i] = arr[i + 1];

    }

    temp--;

    **n = temp;

}

void deleteDuplicate(int arr[], int *n){

    int temp = *n;

    for(int i = 0; i < temp; i++){

        for(int j = i + 1; j < temp; j++){

            if(arr[i] == arr[j]) deleteElement(arr, &n, j);

        }

    }

}

int main(){

    int n;

    printf("Enter the size of array : ");

    scanf("%d", &n);
```

```
int arr[n];

printf("Enter elements for the array : ");

for(int i = 0; i < n; i++)
    scanf("%d", &arr[i]);

deleteDuplicate(arr, &n);

printf("After Deleting duplicate elements: \n");

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

return 0;
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_8DeleteDuplicate.c -o 3_8DeleteDuplicate && 3_8DeleteDuplicate
Enter the size of array : 5
Enter elements for the array : 10 20 30 10 40
After Deleting duplicate elements:
10 20 30 40
```

9. Write a program to search for a particular element in an array.

Answer:

```
#include<stdio.h>
```

```
int searching (int arr[], int n, int el){
```

```
    for(int i = 0; i < n; i++){
```

```
        if(arr[i] == el) return i;
```

```
    }
```

```
    return -1;
```

```
}
```

```
int main(){
```

```
    int n, element;
```

```
    printf("Enter the size of array : ");
```

```
    scanf("%d", &n);
```

```
    int arr[n];
```

```
    printf("Enter elements for the array : ");
```

```
    for(int i = 0; i < n; i++)
```

```
        scanf("%d", &arr[i]);
```

```
    printf("Enter the element you want to search : ");
```

```
    scanf("%d", &element);
```

```
    printf("Index of required element is at: %d", searching(arr, n, element));
```



```
return 0;  
  
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_9SearchElement.c -o 3_9SearchElement && 3_9SearchElement  
Enter the size of array : 5  
Enter elements for the array : 10 1 4 20 30  
Enter the element you want to search : 4  
Index of required element is at: 2
```

10. Write a program to sort n elements (ascending order).

Answer:

```
#include <stdio.h>

void bubbleSort(int array[], int n) {
    int i, j, temp;
    for (i = 0; i < n - 1; i++) {
        for (j = 0; j < n - i - 1; j++) {
            if (array[j] > array[j + 1]) {
                // Swap the elements
                temp = array[j];
                array[j] = array[j + 1];
                array[j + 1] = temp;
            }
        }
    }
}

int main() {
    int n, i;
    printf("Enter the number of elements: ");
    scanf("%d", &n);
    int array[n];

    printf("Enter the elements:\n");
    for (i = 0; i < n; i++) {
        scanf("%d", &array[i]);
    }
}
```

```
bubbleSort(array, n);  
printf("Sorted array in ascending order:\n");  
for (i = 0; i < n; i++) {  
    printf("%d ", array[i]);  
}  
  
return 0;  
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_10Sort.c -o 3_10Sort && 3_10Sort  
Enter the number of elements: 5  
Enter the elements:  
2 5 1 8 3  
Sorted array in ascending order:  
1 2 3 5 8
```

11. Write a program to find second second-highest number from the array without using sorting.

Answer:

```
#include<stdio.h>

#include<limits.h>

int print2ndHighest (int arr[], int size){

    int max = INT_MIN;

    int sl = INT_MIN;

    for(int i = 0; i < size; i++){

        if(max<arr[i]){

            sl = max;

            max = arr[i];

        }

        else if(sl<arr[i] && arr[i]!=max) sl = arr[i];

    }

    return sl;

}

int main(){

    int n;

    printf("Enter the size of array : ");

    scanf("%d", &n);

    int arr[n];

    printf("Enter elements for the array : ");
```

```
for(int i = 0; i < n; i++)  
    scanf("%d", &arr[i]);  
  
printf("Second highest number is : %d", print2ndHighest(arr, n));  
  
return 0;  
}
```

Output:

```
1 2 3 4 5  
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_11_2nd2ndHighestNum.c -o 3_11_2nd2ndHighestNum && 3_11_2nd2ndHighestNum  
Enter the size of array : 5  
Enter elements for the array : 20 10 30 5 40  
Second highest number is : 30
```

12. Write a program to perform addition and subtraction between two matrices.

Answer:

```
#include<stdio.h>

int main(){
    int n;
    printf("Enter number of rows / columns : ");
    scanf("%d", &n);
    int arr[n][n], brr[n][n] , add[n][n], sub[n][n];
    printf("Enter elements for first array : \n");
    for(int i = 0; i < n; i++)
        for(int j = 0; j < n; j++)
            scanf("%d", &arr[i][j]);
    printf("Enter elements for second array : \n");
    for(int i = 0; i < n; i++)
        for(int j = 0; j < n; j++)
            scanf("%d", &brr[i][j]);

    for(int i = 0; i < n; i++)
        for(int j = 0; j < n; j++)
            add[i][j] = arr[i][j] + brr[i][j];

    for(int i = 0; i < n; i++)
        for(int j = 0; j < n; j++)
            sub[i][j] = arr[i][j] - brr[i][j];
```

```

printf("Result after Addition : \n");

for(int i = 0; i < n; i++){
    for(int j = 0; j < n; j++)
        printf("%d  ", add[i][j]);

    printf("\n");
}

printf("\n\nResult after Subtraction : \n");

for(int i = 0; i < n; i++){
    for(int j = 0; j < n; j++)
        printf("%d  ", sub[i][j]);

    printf("\n");
}

return 0;
}

```

Output:

```

E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_12AddSubtractionArray.c -o 3_12AddSubtractionArray && 3_12AddSubtractionArray
Enter number of rows / columns : 2
Enter elements for first array :
1 2 3 4
Enter elements for second array :
5 6 7 8
Result after Addition :
6 8
10 12

Result after Subtraction :
-4 -4
-4 -4

```

13. Write a program to transpose a matrix.

Answer:

```
#include<stdio.h>

int main(){
    int r, c;

    printf("Enter number of row : ");
    scanf("%d", &r);

    printf("Enter number of column : ");
    scanf("%d", &c);

    int arr[r][c];

    printf("Enter elements for array : \n");
    for(int i = 0; i < r; i++)
        for(int j = 0; j < c; j++)
            scanf("%d", &arr[i][j]);

    printf("\nTranspose: \n");
    for(int i = 0; i < c; i++){
        for(int j = 0; j < r; j++) printf("%d  ", arr[j][i]);
        printf("\n");
    }

    return 0;
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_13Transpose.c -o 3_13Transpose && 3_13Transpose
Enter number of row : 2
Enter number of column : 3
Enter elements for array :
1 2 3
4 5 6

Transpose:
1 4
2 5
3 6
```


14. Write a program to add the elements of each row and each column of a matrix.

Answer:

```
#include<stdio.h>

int main(){
    int r, c, sum = 0;
    printf("Enter number of row : ");
    scanf("%d", &r);
    printf("Enter number of column : ");
    scanf("%d", &c);
    int arr[r][c];
    printf("Enter elements for array : \n");
    for(int i = 0; i < r; i++)
        for(int j = 0; j < c; j++)
            scanf("%d", &arr[i][j]);
    for(int i = 0; i < r; i++)
        for(int j = 0; j < c; j++)
            sum += arr[i][j];
    printf("Answer : %d", sum);
    return 0;
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_14AddMatrix.c -o 3_14AddMatrix && 3_14AddMatrix
Enter number of row : 2
Enter number of column : 3
Enter elements for array :
1 2 3
4 5 6
Answer : 21
```

15. Write a program to perform the multiplication of two matrices.

Answer:

```
#include<stdio.h>

int main(){
    int r1 , c1 , r2 , c2;

    printf("Enter values for the First Matrix : \n");
    printf("Enter number of rows : ");
    scanf("%d", &r1);
    printf("Enter number of columns : ");
    scanf("%d",&c1);

    int arr1[r1][c1];

    printf("Enter Elements of First array :\n");
    for(int i = 0; i < r1; i++)
        for(int j = 0; j < c1; j++)
            scanf("%d", &arr1[i][j]);

    printf("\nEnter values for the Second Matrix : \n");
    printf("Enter number of rows : ");
    scanf("%d", &r2);
    printf("Enter number of columns : ");
    scanf("%d",&c2);

    if(c1 != r2) {
```

```
printf("Given Two matrices can't be multiplied.");  
return 0;  
}
```

```
int arr2[r2][c2], ans[r1][c2];
```

```
printf("Enter Elements of Second array :\n");
```

```
for(int i = 0; i < r2; i++)  
    for(int j = 0; j < c2; j++)  
        scanf("%d", &arr2[i][j]);
```

```
for(int i = 0; i < r1; i++)  
    for(int j = 0; j < c2; j++)  
        ans[i][j] = 0;
```

```
for(int i = 0; i < r1; i++)  
    for(int j = 0; j < c2; j++)  
        for(int k = 0; k < c1; k++)  
            ans[i][j] += arr1[i][k] * arr2[k][j];
```

```
printf("\nAnswer : \n");
```

```
for(int i = 0; i < r1; i++){  
    for(int j = 0; j < c2; j++)  
        printf("%d ", ans[i][j]);  
    printf("\n");
```

```
}  
  
return 0;  
  
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_15Multiplication.c -o 3_15Multiplication && 3_15Multiplication  
Enter values for the First Matrix :  
Enter number of rows : 2  
Enter number of columns : 2  
Enter Elements of First array :  
1 2 3 4  
  
Enter values for the Second Matrix :  
Enter number of rows : 2  
Enter number of columns : 2  
Enter Elements of Second array :  
6 7 8 9  
  
Answer :  
22 25  
50 57
```

16. Write a program to check whether a matrix is an identity matrix or not.

Answer:

```
#include<stdio.h>

int main(){

    int r, check = 0;

    printf("Enter number of row : ");

    scanf("%d", &r);


    int arr[r][r];

    printf("Enter elements for array : \n");

    for(int i = 0; i < r; i++)

        for(int j = 0; j < r; j++)

            scanf("%d", &arr[i][j]);


    for(int i = 0; i < r; i++){

        for(int j = 0; j < r; j++){

            if((i == j && arr[i][j] != 1) || (i != j && arr[i][j] != 0)) {

                check++;

                break;

            }

        }

        if(check) break;

    }


    if(check) printf("Given Matrix is not Identity Matrix");
```

```
else printf("Given Matrix is Identity Matrix");
```

```
return 0;
```

```
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_16IdentityMatrix.c -o 3_16IdentityMatrix && 3_16IdentityMatrix
Enter number of row : 3
Enter elements for array :
1 0 0
0 1 0
0 0 1
Given Matrix is Identity Matrix
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_16IdentityMatrix.c -o 3_16IdentityMatrix && 3_16IdentityMatrix
Enter number of row : 3
Enter elements for array :
1 0 1
0 1 0
0 0 1
Given Matrix is not Identity Matrix
```

17. Write a program to check whether a matrix is a sparse matrix or not

Answer:

```
#include<stdio.h>

int main(){
    int r, c, zeroCount = 0, count = 0;
    printf("Enter number of row : ");
    scanf("%d", &r);
    printf("Enter number of column : ");
    scanf("%d", &c);

    int arr[r][c];
    printf("Enter elements for array : \n");
    for(int i = 0; i < r; i++)
        for(int j = 0; j < c; j++)
            scanf("%d", &arr[i][j]);

    for(int i = 0; i < r; i++)
        for(int j = 0; j < c; j++){
            if(arr[i][j] == 0) zeroCount++;
            else count++;
        }

    if(zeroCount > count) printf("Given Matrix is Sparse Matrix");
    else printf("Given Matrix is not Sparse Matrix");
```

```
return 0;  
  
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_17SpaseMatrixCheck.c -o 3_17SpaseMatrixCheck && 3_17SpaseMatrixCheck  
Enter number of row : 3  
Enter number of column : 2  
Enter elements for array :  
1 2  
0 0  
0 0  
Given Matrix is Sparse Matrix  
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_17SpaseMatrixCheck.c -o 3_17SpaseMatrixCheck && 3_17SpaseMatrixCheck  
Enter number of row : 3  
Enter number of column : 2  
Enter elements for array :  
1 2  
3 4  
0 0  
Given Matrix is not Sparse Matrix
```


18. Write a C program to create a structure named company which has name, address, phone and no Of Employee as member variables. Read the name of the company, its address, phone and no Of Employee. Finally display these members" values.

Answer:

```
#include<stdio.h>
```

```
#include<string.h>
```

```
struct company{  
    char name[50];  
    char address[100];  
    int phone;  
    int noOfEmployee;  
};
```

```
int main(){  
    struct company c;  
  
    printf("Enter the company name: ");  
    fgets(c.name, sizeof(c.name), stdin);  
  
    printf("Enter the company address: ");  
    fgets(c.address, sizeof(c.address), stdin);  
  
    printf("Enter the company phone number: ");  
    scanf("%d", &c.phone);
```

```
printf("Enter the number of employees: ");  
scanf("%d", &c.noOfEmployee);  
  
printf("\nCompany Details:\n");  
printf("Name: %s", c.name);  
printf("Address: %s", c.address);  
printf("Phone: %d\n", c.phone);  
printf("Number of Employees: %d\n", c.noOfEmployee);  
  
return 0;  
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_18CompanyStructure.c -o 3_18CompanyStructure && 3_18CompanyStructure  
Enter the company name: UEM PVT  
Enter the company address: Newtown  
Enter the company phone number: 1234567890  
Enter the number of employees: 20  
  
Company Details:  
Name: UEM PVT  
Address: Newtown  
Phone: 1234567890  
Number of Employees: 20
```

19. Define a structure “complex” (typedef) to read two complex numbers and perform addition, and subtraction of these two complex numbers and display the result.

Answer:

```
#include<stdio.h>

#include<string.h>

typedef struct complex{
    float real;
    float imag;
} complex;

complex add(complex c1, complex c2) {
    complex result;
    result.real = c1.real + c2.real;
    result.imag = c1.imag + c2.imag;
    return result;
}

complex subtract(complex c1, complex c2) {
    complex result;
    result.real = c1.real - c2.real;
    result.imag = c1.imag - c2.imag;
    return result;
}

int main(){
    complex c1, c2, sum, diff;
```

```
printf("Enter the real and imaginary part of the first complex number:\n");
scanf("%f %f", &c1.real, &c1.imag);

printf("Enter the real and imaginary part of the second complex number:\n");
scanf("%f %f", &c2.real, &c2.imag);
sum = add(c1, c2);
diff = subtract(c1, c2);

printf("\nResult of Addition: %.2f + %.2fi\n", sum.real, sum.imag);
printf("Result of Subtraction: %.2f + %.2fi\n", diff.real, diff.imag);

return 0;
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_19ComplexNumAddSub.c -o 3_19ComplexNumAddSub && 3_19ComplexNumAddSub
Enter the real and imaginary part of the first complex number:
10
5
Enter the real and imaginary part of the second complex number:
5
3

Result of Addition: 15.00 + 8.00i
Result of Subtraction: 5.00 + 2.00i
```

20. Write a C program to read the Roll No, Name, Address, and Age marks of 12 students in the BCT class and display the details from the function.

Answer:

```
#include <stdio.h>

struct student {
    int rollNo;
    char name[50];
    char address[100];
    int age;
    float marks;
};

// Function to display student details
void displayDetails(struct student s[], int n) {
    printf("\nStudent Details:\n");
    for (int i = 0; i < n; i++) {
        printf("\nStudent %d:\n", i + 1);
        printf("Roll No: %d\n", s[i].rollNo);
        printf("Name: %s", s[i].name);
        printf("Address: %s", s[i].address);
        printf("Age: %d\n", s[i].age);
        printf("Marks: %.2f\n", s[i].marks);
    }
}

int main() {
```

```
struct student bctClass[12];

// Reading details of 12 students
for (int i = 0; i < 12; i++) {
    printf("Enter details of student %d:\n", i + 1);

    printf("Roll No: ");
    scanf("%d", &bctClass[i].rollNo);
    getchar(); // To consume the newline character after entering Roll No

    printf("Name: ");
    fgets(bctClass[i].name, sizeof(bctClass[i].name), stdin);

    printf("Address: ");
    fgets(bctClass[i].address, sizeof(bctClass[i].address), stdin);

    printf("Age: ");
    scanf("%d", &bctClass[i].age);

    printf("Marks: ");
    scanf("%f", &bctClass[i].marks);

    getchar(); // To consume the newline character after entering marks
    printf("\n");
}
```

```
// Displaying student details  
  
displayDetails(bctClass, 12);  
  
return 0;  
  
}
```

Output:

```
E:\College Assignments\Sem 1\C_MCA102\Assignment-3>gcc 3_20StudentStruct.c -o 3_20StudentStruct && 3_20StudentStruct  
Enter details of student 1:  
Roll No: 10  
Name: jdnj bjj  
Address: jdnvjd bdjj  
Age: 20  
Marks: 80  
  
Enter details of student 2:  
Roll No: 78  
Name: dcn nd  
Address: jnck dcn  
Age: 20  
Marks: 89  
  
Enter details of student 3:  
Roll No: 20  
Name: uvbdj bdjbhd  
Address: ghbdb d bsj  
Age: 45  
Marks: 11  
  
Enter details of student 4:  
Roll No: 54  
Name: dnck kj  
Address: djd  
Age: 5  
Marks: 48  
  
Enter details of student 5:  
Roll No: 8  
Name: den ej je  
Address: bffbhe  
Age: 87  
Marks: 87
```

Enter details of student 6:

Roll No: 20

Name: cvc fnjcnb

Address: xcvb bcfg

Age: 8c

Marks:

Enter details of student 7:

Roll No: 80

Name: vd

Address: fdv

Age: 8

Marks: 84

Enter details of student 8:

Roll No: 5

Name: fvd

Address: fddf

Age: 45

Marks: 45

Enter details of student 9:

Roll No: 20

Name: fdg

Address: dfg

Age: 4

Marks: 5

Enter details of student 10:

Roll No: 8

Name: fgf

Address: dgd

Age: 8

Marks: 55

Enter details of student 11:

Roll No: 5

Name: dfgdf

Address: dgdgd

Age: 20

Marks: 20

Enter details of student 12:

Roll No: 8

Name: dgd

Address: dgdd

Age: 89

Marks: 50

Student Details:

Student 1:

Roll No: 10

Name: jdnj bjj

Address: jdnvjd bdjj

Age: 20

Marks: 80.00

Student 2:

Roll No: 78

Name: dcn nd

Address: jnck dcn

Age: 20

Marks: 89.00

Student 3:

Roll No: 20

Name: uvbdj bdjbhd

Address: ghbdb d bsj

Age: 45

Marks: 11.00

Student 4:

Roll No: 54

Name: dnck kj

Address: djd

Age: 5

Marks: 48.00

Student 5:
Roll No: 8
Name: den ej je
Address: bffbhe
Age: 87
Marks: 87.00

Student 6:
Roll No: 20
Name: cvc fnjcnb
Address: xcvb bcfg
Age: 8
Marks: 74615375098679939000000000000000.00

Student 7:
Roll No: 80
Name: vd
Address: fdv
Age: 8
Marks: 84.00

Student 8:
Roll No: 5
Name: fvd
Address: fddf
Age: 45
Marks: 45.00

Student 9:
Roll No: 20
Name: fdg
Address: dfg
Age: 4
Marks: 5.00

Student 10:
Roll No: 8
Name: fgf
Address: dgd
Age: 8
Marks: 55.00

Student 11:
Roll No: 5
Name: dfgdf
Address: dgdgd
Age: 20
Marks: 20.00

Student 12:
Roll No: 8
Name: dgd
Address: dgdd
Age: 89
Marks: 50.00