Day – 6

33. Write a c program to access array elements using pointers.

Ans: Input:

#include <stdio.h>

Int main() {

Int arr[] = {10, 20, 30, 40, 50};

Int \*p = arr;

Printf(“Array elements accessed using pointer:\n”);

For (int i = 0; i < 5; i++) {

Printf(“%d”, \*(p + i));

}

Return 0;

}

Output:

Array elements accessed using pointer:

10 20 30 40 50

34. Write a c program which will add two distances given two feets and inches using structure.

Ans: Input:

#include <stdio.h>

Struct Distance {

Int feet;

Int inches;

};

Int main() {

Struct Distance d1, d2, sum;

Printf(“Enter first distance (feet inches): “);

Scanf(“%d %d”, &d1.feet, &d1.inches);

Printf(“Enter second distance (feet inches): “);

Scanf(“%d %d”, &d2.feet, &d2.inches);

Sum.feet = d1.feet + d2.feet;

Sum.inches = d1.inches + d2.inches;

If (sum.inches >= 12) {

Sum.feet += sum.inches / 12;

Sum.inches %= 12;

}

Printf(“Total Distance = %d feet %d inches\n”, sum.feet, sum.inches);

Return 0;

}

Output:

Enter first distance (feet inches): 5 8

Enter second distance (feet inches): 3 10

Total Distance = 9 feet 6 inches

35. Write a c program which will take the 5 books name with author, ISBN no and price using array & structure.

Ans: Input:

#include<stdio.h>

Struct details {

Char name[50], author[50];

Int ISBN no;

Float price;

}

Struct details b[5];

Int main(){

For (int i=0; i<5; i++){

Printf(“Enter the name of book:”);

Gets(b[i]name);

Printf(“Enter the author name:”);

Gets(b[i]author);

Printf(“Enter the ISBN no:”);

Scanf(“%d”,&b[i].ISBN no);

Printf(“Enter the price of the book:”);

Scanf(“%f”,&b[i]price);

}

Printf(“Displaying the details of the book:”);

For(int i=0; i<5; i++){

Printf(“The name of the book is %s”,b[i].name);

Printf(“The name of the author is %s”,b[i].author);

Printf(“The ISBN no is %d”,b[i].ISBNno);

Printf(“The price of the book is %f”,b[i].price);

}

Return 0;

}

Output:

Enter the name of book: programming in c

Enter the author name: Reema Thareya

Enter ISBN no: 11900A6

Enter the price of the book: 640

Displaying the details of the book:

The name of the book is programming in c

The name of the author is Reema Thareya

The ISBN no is 11900A6

The price of the book is 640

36. Write a c program to adding 2 complex no using structure.

Ans: Input:

#include <stdio.h>

Struct Complex {

Float real;

Float imag;

};

Int main() {

Struct Complex c1, c2, sum;

Printf(“Enter first complex number (real and imaginary): “);

Scanf(“%f %f”, &c1.real, &c1.imag);

Printf(“Enter second complex number (real and imaginary): “);

Scanf(“%f %f”, &c2.real, &c2.imag);

Sum.real = c1.real + c2.real;

Sum.imag = c1.imag + c2.imag;

Printf(“Sum = %.2f + %.2fi\n”, sum.real, sum.imag);

Return 0;

}

Output:

Enter first complex number (real and imaginary): 2.5 3.5

Enter second complex number (real and imaginary): 1.5 2.5

Sum = 4.00 + 6.00i

37. Write a c program to find max and min element in an array of size 8.

Ans: Input:

#include <stdio.h>

Int main() {

Int arr[8], i;

Int max, min;

Printf(“Enter 8 elements:\n”);

For (i = 0; i < 8; i++) {

Scanf(“%d”, &arr[i]);

}

Max = min = arr[0];

For (i = 1; i < 8; i++) {

If (arr[i] > max)

Max = arr[i];

If (arr[i] < min)

Min = arr[i];

}

Printf(“Maximum element: %d\n”, max);

Printf(“Minimum element: %d\n”, min);

Return 0;

}

Output:

Enter 8 elements:

3 7 1 9 4 8 2 6

Maximum element: 9

Minimum element: 1

38. Write a c program to find no using linear and binary search in 1D array.

Ans: Linear input:

#include <stdio.h>

Int main() {

Int arr[100], n, i, key, found = 0;

Printf(“Enter number of elements: “);

Scanf(“%d”, &n);

Printf(“Enter %d elements:\n”, n);

For (i = 0; i < n; i++) {

Scanf(“%d”, &arr[i]);

}

Printf(“Enter the number to search: “);

Scanf(“%d”, &key);

For (i = 0; i < n; i++) {

If (arr[i] == key) {

Found = 1;

Break;

}

}

If (found)

Printf(“Element found at index %d\n”, i);

Else

Printf(“Element not found\n”);

Return 0;

}

Output:

Enter number of elements: 5

Enter 5 elements:

10 20 30 40 50

Enter the number to search: 30

Element found at index 2

Binary input:

#include <stdio.h>

Int main() {

Int arr[100], n, key, low, high, mid, i;

Printf(“Enter number of elements: “);

Scanf(“%d”, &n);

Printf(“Enter %d sorted elements:\n”, n);

For (i = 0; i < n; i++) {

Scanf(“%d”, &arr[i]);

}

Printf(“Enter the number to search: “);

Scanf(“%d”, &key);

Low = 0;

High = n – 1;

While (low <= high) {

Mid = (low + high) / 2;

If (arr[mid] == key) {

Printf(“Element found at index %d\n”, mid);

Return 0;

} else if (key < arr[mid]) {

High = mid – 1;

} else {

Low = mid + 1;

}

}

Printf(“Element not found\n”);

Return 0;

}

Output:

Enter number of elements: 6

Enter 6 sorted elements:

5 10 15 20 25 30

Enter the number to search: 20

Element found at index 3

39. Write a c program to transpose an array.

Ans: Input:

#include <stdio.h>

Int main() {

Int mat[10][10], trans[10][10], rows, cols, i, j;

Printf(“Enter number of rows and columns: “);

Scanf(“%d %d”, &rows, &cols);

Printf(“Enter matrix elements:\n”);

For (i = 0; i < rows; i++) {

For (j = 0; j < cols; j++) {

Scanf(“%d”, &mat[i][j]);

}

}

For (i = 0; i < rows; i++) {

For (j = 0; j < cols; j++) {

Trans[j][i] = mat[i][j];

}

}

Printf(“Transposed matrix:\n”);

For (i = 0; i < cols; i++) {

For (j = 0; j < rows; j++) {

Printf(“%d “, trans[i][j]);

}

Printf(“\n”);

}

Return 0;

}

Output:

Enter number of rows and columns: 2 3

Enter matrix elements:

1 2 3

4 5 6

Transposed matrix:

1 4

2 5

3 6

40. Write a c program to sum of 2 matrix order of 2X2.

Ans: Input:

#include <stdio.h>

Int main() {

Int mat1[2][2], mat2[2][2], sum[2][2];

Int i, j;

Printf(“Enter first 2x2 matrix elements:\n”);

For (i = 0; i < 2; i++) {

For (j = 0; j < 2; j++) {

Scanf(“%d”, &mat1[i][j]);

}

}

Printf(“Enter second 2x2 matrix elements:\n”);

For (i = 0; i < 2; i++) {

For (j = 0; j < 2; j++) {

Scanf(“%d”, &mat2[i][j]);

}

}

For (i = 0; i < 2; i++) {

For (j = 0; j < 2; j++) {

Sum[i][j] = mat1[i][j] + mat2[i][j];

}

}

Printf(“Sum of the two matrices:\n”);

For (i = 0; i < 2; i++) {

For (j = 0; j < 2; j++) {

Printf(“%d “, sum[i][j]);

}

Printf(“\n”);

}

Return 0;

}

Output:

Enter first 2x2 matrix elements:

1 2

3 4

Enter second 2x2 matrix elements:

5 6

7 8

Sum of the two matrices:

6 8

10 12