C Programming Source Code

1.Write a C program to display the following pattern:

```
*
* *
* * *
* * * *
* * * * *
```

Answer:

```
#include <stdio.h>
int main() {
   int i, j;
   int rows = 5;
   for(i = 1; i <= rows; i++) {
      for(j = 1; j <= i; j++) {
         printf("* ");
      }
      printf("\n");
   }
   return 0;
}
```

2.Write a C program sort an array in ascending order.

Answer:

```
#include <stdio.h>

int main() {

   int array[5];

   int i, j, temp;

   printf("Enter 5 integers:\n");

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

      printf("Element %d: ", i + 1);

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

```
    }
    for(i = 0; i < 4; i++) {
        for(j = 0; j < 4 - i; j++) {
            if(array[j] > array[j + 1]) {
                temp = array[j];
                array[j] = array[j + 1];
                array[j + 1] = temp;
            }
        }
    }
    printf("Sorted array in ascending order:\n");
    for(i = 0; i < 5; i++) {
        printf("%d ", array[i]);
    }
    printf("\n");
    return 0;
}
```

3.Write a C program to display the following pattern:

5
5 5
5 5 5
5 5 5 5
5 5 5 5 5

Answer:

```
#include <stdio.h>
int main() {
    int i, j;
```

```
    int rows = 5;
    for(i = 1; i <= rows; i++) {
        for(j = 1; j <= i; j++) {
            printf("5 ");
        }
        printf("\n");
    }
    return 0;
}
```

4.Write a c program to create a file"text.txt" and enter your name and roll into the file.

Answer:

```
#include <stdio.h>

int main() {
   FILE *file;
   char name[50];
   int roll;
   file = fopen("text.txt", "w");
   if (file == NULL) {
      printf("Error opening the file!\n");
      return 1;
   }
   printf("Enter your name: ");
   fgets(name, sizeof(name), stdin);
   printf("Enter your roll number: ");
   scanf("%d", &roll);
   fprintf(file, "Name: %s", name);
   fprintf(file, "Roll: %d\n", roll);
```

```
    fclose(file);
    printf("Data successfully written to 'text.txt'.\n");
    return 0;
}
```

5.Write a C program to print whether a given number is even or odd.

Answer:

```
#include <stdio.h>
int main() {
    int number;
    printf("Enter an integer: ");
    scanf("%d", &number);
    if (number % 2 == 0) {
        printf("%d is even.\n", number);
    } else {
        printf("%d is odd.\n", number);
    }
    return 0;
}
```

6.Write a C program sort an array in decending order.

Answer:

```
#include <stdio.h>
int main() {
    int array[5];
    int i, j, temp;
```

```
    printf("Enter 5 integers:\n");
    for(i = 0; i < 5; i++) {
        printf("Element %d: ", i + 1);
        scanf("%d", &array[i]);
    }
    for(i = 0; i < 4; i++) {
        for(j = 0; j < 4 - i; j++) {
            if(array[j] < array[j + 1]) {
                temp = array[j];
                array[j] = array[j + 1];
                array[j + 1] = temp;
            }
        }
    }
    printf("Sorted array in decending order:\n");
    for(i = 0; i < 5; i++) {
        printf("%d ", array[i]);
    }
    printf("\n");
    return 0;
}
```

7.Write a C Program to calculate the area of a retriangle taking its length and width from keyboard.

Answer:

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

```
int main() {
   int base,height;
   printf("Enter the value of base\n");
   scanf("%d",&base);
   printf("Enter the value of height\n");
   scanf("%d",&height);
   printf("The area of a retriangle is %d\n",base*height);
   return 0;
}
```

8. Write a c program to print positive integers from 10 to 35.

Answer:

```
#include <stdio.h>
int main() {
    for (int i = 10; i <= 35; i++) {
       printf("%d\n", i);
   }
   return 0;
}
```

9.Write a C program to reverse an array element.

Answer:

```
#include <stdio.h>
int main() {
   printf("Enter the size of the array\n");
   int n;
```

```
    scanf("%d",&n);
    int arr[n];
    printf("Enter the elements of the array\n");
    for(int i=0;i<n;i++){ //0 1 2 3 4
        scanf("%d",&arr[i]);
    }
    printf("Here is the reversed array\n");
    for(int i=n-1;i>=0;i--){ // 4 3 2 1 0
        printf("%d ",arr[i]);
    }
    return 0;
}
```

10.Write a C Porgram to calculate factorial of a given number using function.

Answer:

```
#include <stdio.h>
int factorial(int n) {
    if (n == 0 || n == 1) {
        return 1;
    } else {
        return n * factorial(n - 1);
    }
}
int main() {
    int num;
```

```
    printf("Enter a number: ");
    scanf("%d", &num);
    if (num < 0) {
        printf("Factorial is not defined for negative numbers.\n");
    } else {
        printf("Factorial of %d is %d\n", num, factorial(num));
    }
    return 0;
}
```

11.Write a C Program to read a string and print if it is a palindrom or not.

Answer:

```
#include <stdio.h>
#include<string.h>
int main() {
    int len,x;
    printf("Enter the length of the String\n");
    scanf("%d",&len);
    char s1[len];
    printf("Enter the String\n");
    scanf("%s",s1);
    for(int i=0;i<len/2;i++){
        if(s1[i]!=s1[len-i-1])
        {
            x=1;
```

```
            break;
        }
    }
    if(x!=1)
    {
        printf("Is Palindrome");
    }
    else{
        printf("Not Palindrome");
    }
    return 0;
}
```

12. Write a c program to perform addition and multiplication of given numbers using function.

Answer:

```
#include <stdio.h>
int add(int a, int b) {
    return a + b;
}
int multiply(int a, int b) {
    return a * b;
}

int main() {
    int num1, num2, sum, product;
```

```
    printf("Enter two numbers: ");
    scanf("%d %d", &num1, &num2);
    sum = add(num1, num2);
    product = multiply(num1, num2);
    printf("Sum: %d\n", sum);
    printf("Product: %d\n", product);
    return 0;
}
```

13. Write a program to display the following pattern.

1 2 3 4 5
1 2 3 4
1 2 3
1 2
1

Answer:

```
#include <stdio.h>
int main() {
    int i, j;
    for(i = 5; i >= 1; i--) {
        for(j = 1; j <= i; j++) {
            printf("%d ", j);
        }
        printf("\n");
    }
    return 0;
}
```

14. Write a c program to perform subtraction and division of given numbers using function.

Answer:

```
#include <stdio.h>
int subtract(int a, int b) {
    return a - b;
```

```
}
float divide(int a, int b) {
    if (b != 0) {
        return (float)a / b;
    } else {
        printf("Error: Division by zero is not allowed.\n");
        return 0;
    }
}
int main() {
    int num1, num2;
    int difference;
    float quotient;
    printf("Enter two numbers: ");
    scanf("%d %d", &num1, &num2);
    difference = subtract(num1, num2);
    quotient = divide(num1, num2);
    printf("Difference: %d\n", difference);
    if (num2 != 0) {
        printf("Quotient: %.2f\n", quotient);
    }

    return 0;
}
```

15.Write a C Program to enter information of 5 students using structure and display that information.

Answer:

```
#include <stdio.h>

struct Student {
    char name[50];
    int roll;
    float marks;
```

```
};

int main() {
    struct Student students[5];
    for (int i = 0; i < 5; i++) {
        printf("Enter information for student %d:\n", i + 1);
        printf("Enter name: ");
        scanf(" %[^\n]%*c", students[i].name);  // To handle spaces in name
        printf("Enter roll number: ");
        scanf("%d", &students[i].roll);
        printf("Enter marks: ");
        scanf("%f", &students[i].marks);
        printf("\n");
    }
    printf("Displaying Information of Students:\n");
    for (int i = 0; i < 5; i++) {
        printf("Student %d\n", i + 1);
        printf("Name: %s\n", students[i].name);
        printf("Roll Number: %d\n", students[i].roll);
        printf("Marks: %.2f\n", students[i].marks);
        printf("\n");
    }
    return 0;
}
```

16. Write a C program to find the largest number of three numbers.

Answer:

```
#include <stdio.h>

int main() {
   int num1, num2, num3;
   printf("Enter three numbers: ");
   scanf("%d %d %d", &num1, &num2, &num3);
   if (num1 >= num2 && num1 >= num3) {
      printf("The largest number is: %d\n", num1);
   } else if (num2 >= num1 && num2 >= num3) {
      printf("The largest number is: %d\n", num2);
   } else {
      printf("The largest number is: %d\n", num3);
   }
   return 0;
}
```

17.Write a C program to display the following output:

```
* * * * *
* * * *
* * *
* *
*
```

Answer:

```
#include <stdio.h>


int main() {
   for (int i = 5; i >= 1; i--) {
```

```
        for (int j = 1; j <= i; j++) {
            printf("* ");
        }
        printf("\n");
    }
return 0;
}
```

18.Write a C program to calculate the sum of two matrix.

Answer:

```
#include <stdio.h>
int main() {
    int row, col, i, j;
    printf("Enter the number of rows: ");
    scanf("%d", &row);
    printf("Enter the number of columns: ");
    scanf("%d", &col);
    int matrix1[row][col], matrix2[row][col], sum[row][col];
    printf("Enter elements of the first matrix:\n");
    for (i = 0; i < row; i++) {
        for (j = 0; j < col; j++) {
            scanf("%d", &matrix1[i][j]);
        }
    }
    printf("Enter elements of the second matrix:\n");
```

```
    for (i = 0; i < row; i++) {
        for (j = 0; j < col; j++) {
            scanf("%d", &matrix2[i][j]);
        }
    }
    for (i = 0; i < row; i++) {
        for (j = 0; j < col; j++) {
            sum[i][j] = matrix1[i][j] + matrix2[i][j];
        }
    }
    printf("Sum of the two matrices:\n");
    for (i = 0; i < row; i++) {
        for (j = 0; j < col; j++) {
            printf("%d ", sum[i][j]);
        }
        printf("\n");
    }
    return 0;
}
```

19.Write a C Program to calculate GPA for the following conditions:

1. If marks>=80 and marks<=100 then A+

2.If marks<80 and marks>=70 then A

3.If marks<70 and marks>=60 then A-

4.If marks<60 and marks>=50 then B otherwise fail.

Answer:

```
#include <stdio.h>

int main() {
   int marks;
   printf("Enter your marks: ");
   scanf("%d", &marks);
   if (marks >= 80 && marks <= 100) {
      printf("Your Grade: A+\n");
   } else if (marks >= 70 && marks < 80) {
      printf("Your Grade: A\n");
   } else if (marks >= 60 && marks < 70) {
      printf("Your Grade: A-\n");
   } else if (marks >= 50 && marks < 60) {
      printf("Your Grade: B\n");
   } else {
      printf("Fail\n");
   }
   return 0;
}
```

20.Write a C program to calculate and display the volume of a cube taking its height,width and depth from keyboard.

Answer:

```
#include <stdio.h>

int main() {
   float height, width, depth, volume;
```

```
    printf("Enter the height of the cube: ");
    scanf("%f", &height);
    printf("Enter the width of the cube: ");
    scanf("%f", &width);
    printf("Enter the depth of the cube: ");
    scanf("%f", &depth);
    volume = height * width * depth;
    printf("The volume of the cube is: %.2f\n", volume);
    return 0;
}
```