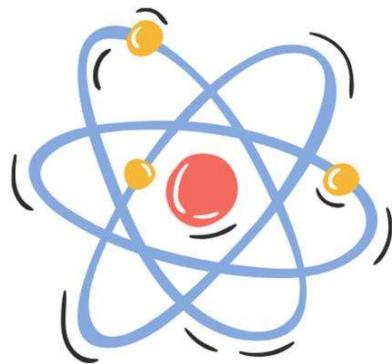


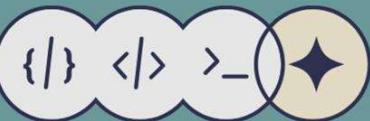
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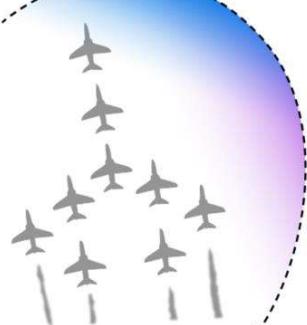
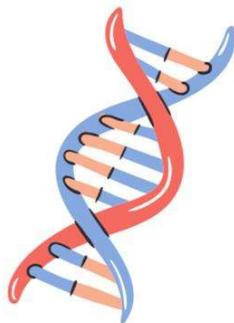
SOMESH RAJ



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NOT FOUND



Jo प्राप्त है ,  
Wo पर्याप्त है मेरे दोस्त !



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# EXERCISE 1

## Fundamental C Programs

- 1) C "Hello, World!" Program

```
#include <stdio.h>

int main() {
    printf("hello world");

    return 0;
}
```

## 2.a) C program for Input/output of Integer, Character and Floating point numbers

```
#include <stdio.h>

int main() {

    char ch ;
    printf("\n enter ch : ");
    scanf("%c",&ch);
    printf("%c",ch);

    int a ;
    printf("\n enter a : ");
    scanf("%d",&a);
    printf("%d",a);

    float b ;
    printf("\n enter b : ");
    scanf("%f",&b);
    printf("%f",b);

    return 0;
}
```

## 2.b) C Program to Add Two Integers

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

    int a,b,sum ;
    printf("enter a and b : \n ");
    scanf("%d %d",&a,&b);
    sum = a + b;
    printf("sum of a and b is %d",sum);
    return 0;

}
```

## 3) C Program to Multiply two Floating Point Numbers

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

    float a,b,mul ;
    printf("enter a and b : \n ");
    scanf("%f %f",&a,&b);

    mul = a * b;
    printf("multiplication of a and b is %f",mul);
    return 0;

}
```

## 4) C Program to Find ASCII Value of a Character

```
#include <stdio.h>

int main() {

    char ch ;
    printf("enter ch : \n ");
    scanf("%c",&ch);
    printf("ASCII value of %c is %d",ch,ch);

    return 0;
}
```

## 5) C Program to Compute Quotient and Remainder

```
// divident(D) = quotient(q) * divisor(d) + remainder(r)

#include <stdio.h>
int main() {
int D,d ;
printf(" enetr D and d : \n ");
scanf ("%d %d",&D,&d);
printf (" the quotient is %d ", D / d);
printf ("\n the remainder is %d",D % d);
return 0;
}
```

## 6) C Program to Find the Size of int, float, double and char

```
#include <stdio.h>

int main() {
    printf("size of int is %d",sizeof(int));
    printf("\n size of float is %d",sizeof(float));
    printf("\n size of double is %d",sizeof(double));
    printf("\n size of char is %d",sizeof(char));

    return 0;
}
```

## 7.a) C Program to Swap Two Numbers using third variable

```
#include <stdio.h>

int main() {
int a,b,c;
printf("enter a and b : \n");
scanf("%d %d",&a,&b);
c = a;
a = b;
b = c;
printf("value of a is %d",a);
printf("\n value of b is %d",b);
return 0;
}
```

## 7.b) C Program to Swap Two Numbers without using third variable

```
#include <stdio.h>

int main() {
int a,b;
printf("enter a and b : \n");
scanf("%d %d",&a,&b);
a = a-b;
b = a+b;
a = b-a;
printf("value of a is %d",a);
printf("\n value of b is %d",b);
return 0;
}
```

## 8) C Program to find area of a triangle

```
#include <stdio.h>

int main() {
float b,h,area;
printf("enter b and h : \n");
scanf("%f %f",&b,&h);
area = 0.5*b*h;
printf("area of triangle is %f",area);
return 0;
}
```

## 9) C Program to find area of a circle

```
#include <stdio.h>

int main() {
float r,area;
printf("enter r: \n");
scanf("%f",&r);
area = 3.14*r*r;
printf("area of circle is %f",area);
return 0;
}
```

## 10) C Program to find area of a Square

```
#include <stdio.h>

int main() {
float side,area;
printf("enter side: \n");
scanf("%f",&side);
area = side * side;
printf("area of square is %f",area);
return 0;
}
```

## 11) C program to find square root of a number using sqrt function

```
#include <stdio.h>
#include<math.h>
int main() {
float n,sq_root;
printf("enter n: \n");
scanf("%f",&n);
sq_root = sqrt (n);
printf("square root of %.2f is %.2f",n,sq_root);
return 0;
}
```

## 12) C Program to calculate gross salary of a person. Where DA is 12% of basic Salary, HR is 7% of basic Salary and TA is 5% of Basic Salary.

```
#include <stdio.h>
int main() {
float basic_salary,DA,HR,TA,gross_salary;;
printf("enter basic salary : \n");
scanf("%f",&basic_salary);
DA = 0.12 * basic_salary;
HR = 0.07 * basic_salary;
TA = 0.05 * basic_salary;
gross_salary = basic_salary + DA + HR + TA;
printf("gross salary is equal to
%.2f",gross_salary);
return 0;
}
```

# Exercise 2 (if else)

## Decision Making Statements or Conditional Statements

1) C Program to Check Whether a Number is Even or Odd

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

    return 0;
}
```

2) C Program to Check Whether a Character is Vowel or Consonant

```
#include <stdio.h>
int main() {
    char ch;
    printf("enter character : \n");
    scanf("%c",&ch);
    if (((ch>='a' && ch<= 'z') || (ch>='A' && ch<= 'Z'))){
        if ( ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u'
            || ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U')
            printf(" %c is vowel",ch);
        else
            printf(" %c is consonant",ch);
    }
    else
        printf(" %c is neither vowel nor consonant",ch);
    return 0;
}
```

### 3) C Program to Find the Largest Number Among Two Numbers

```
#include <stdio.h>
int main() {
int num1 , num2;
printf("enter num1 and num2 : \n");
scanf("%d %d",&num1 , &num2 );
if(num1 > num2)
printf("%d is largest",num1);
else if (num2 > num1)
printf("%d is largest",num2);
else
printf("both num1 and num2 are equal to %d",num1);

return 0;
}
```

### 4) C Program to Find the Largest Number Among Three Numbers

```
#include <stdio.h>
int main() {
int num1 , num2,num3;
printf("enter num1,num2 and num3 : \n");
scanf("%d %d %d",&num1 , &num2 , &num3);
if(num1 > num2 && num1>num3)
printf("%d is largest",num1);
else if (num2 > num1 && num2>num3)
printf("%d is largest",num2);
else
printf("%d is largest",num3);
return 0;
}
```

## 5) C Program to Check Leap Year

```
#include <stdio.h>
int main() {
int year;
printf("enter year: \n ");
scanf("%d",&year);
if ((year % 4 ==0 && year % 100 != 0) || year % 400 == 0)
printf (" %d is a leap year",year);
else
printf (" %d is not a leap year",year);
return 0;
}
```

## 6) Write a C program to check whether a character is uppercase or lowercase alphabet.

```
#include <stdio.h>
int main() {
char ch;
printf("enter character : \n");
scanf("%c",&ch);
if (ch>='a' && ch<= 'z' )
printf("%c is a lowercse alphabet",ch);
else if (ch>='A' && ch<= 'Z' )
printf("%c is an uppercase alphabet",ch);
else
printf("%c is not an alphabet",ch);

return 0;
}
```

7) Write a C program to input week number  
print week day.

```
#include <stdio.h>
int main() {
int n;
printf("enter n (1-7): \n");
scanf("%d",&n);
if (n==1)
printf("monday");
else if (n==2)
printf("tuesday");
else if (n==3)
printf("wednesday");
else if (n==4)
printf("thursday");
else if (n==5)
printf("friday");
else if (n==6)
printf("saturday");
else if (n==7)
printf("sunday");
else
printf ("not valid input");
return 0;
}
```

8) Write a C program to input month number and print number of days in that month.

```
#include <stdio.h>
int main() {
int n;
printf("enter n (1-12): \n");
scanf("%d",&n);
if (n ==1 || n==3 || n == 5 || n ==7 || n ==8 || n==10 || n == 12)
printf (" 31 days");
else if (n ==4 || n==6 || n == 9 || n ==11 )
printf (" 30 days");
else if (n == 2)
printf ("28 days");
else
printf("not valid input");

return 0;
}
```

9) Write a C program to find all roots of a quadratic equation.

```
#include <stdio.h>
#include <math.h>
int main() {
int a,b,c,D,r1,r2;
printf("enter a , b and c : \n");
scanf("%d %d %d",&a, &b,&c);
D = b*b - 4*a*c;
if (D<0)
printf("Q.E do not have real roots");
else {
    r1 = (-b + sqrt(D))/(2*a);
    r2 = (-b - sqrt(D))/(2*a);
printf ("Q.E have real root i.e %d and %d",r1,r2);
}
return 0;
}
```

10) Write a C program to calculate profit or loss.

```
#include <stdio.h>
int main() {
    int cost_price , selling_price , profit;
    printf("enter cost_price and selling_price : \n");
    scanf("%d %d",&cost_price , &selling_price);
    profit = selling_price - cost_price ;
    if (selling_price > cost_price )
        printf("profit of %d",profit);
    else if (selling_price < cost_price )
        printf("loss of %d",-profit);
    else
        printf("no profit no loss");

    return 0;
}
```

11) Write a C program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following:  
Percentage  $\geq$  90% : Grade A , Percentage  $\geq$  80% : Grade B , Percentage  $\geq$  70% : Grade C , Percentage  $\geq$  60% : Grade D , Percentage  $\geq$  40% : Grade E , Percentage  $<$  40% : Grade F

```
#include <stdio.h>
int main() {
float phy,chem,bio,maths,comp,percentage;
printf("enter marks of phy,chem,bio,maths,comp : \n");
scanf("%f %f %f %f %f",&phy,&chem,&bio,&maths,&comp);
percentage = (phy + chem + bio + maths + comp)/5;
if (percentage >= 90){
    printf(" percentage is %.2f : grade A",percentage);
}
else if (percentage >= 80){
    printf(" percentage is %.2f : grade B",percentage);
}
else if (percentage >= 70){
    printf(" percentage is %.2f : grade C",percentage);
}
else if (percentage >= 60){
    printf(" percentage is %.2f : grade D",percentage);
}
else if (percentage >= 40){
    printf(" percentage is %.2f : grade E",percentage);
}
else {
    printf(" percentage is %.2f : grade F",percentage);
}
return 0;
}
```

12) Write a C program to input basic salary of an employee and calculate its Gross salary according to following:

Basic Salary <= 10000 : HRA = 20%, DA = 80% ,

Basic Salary <= 20000 : HRA = 25%, DA = 90%,

Basic Salary > 20000 : HRA = 30%, DA = 95% .

```
#include <stdio.h>

int main() {
    float
basic_salary,gross_salary,HRA,DA;
    printf (" enetr basic salary :");
    scanf("%f",&basic_salary);
    if (basic_salary <= 10000){
        HRA = 0.2 * basic_salary ;
        DA = 0.8 * basic_salary ;
    }
    else if (basic_salary <= 20000){
        HRA = 0.25 * basic_salary ;
        DA = 0.9 * basic_salary ;
    }
    else {
        HRA = 0.3 * basic_salary ;
        DA = 0.95 * basic_salary ;
    }
    gross_salary=basic_salary + HRA + DA;

    printf ("gross salary is equal to %.2f",gross_salary);

    return 0;
}
```

13) Write a C program to input electricity unit charges and calculate total electricity bill according to the given condition: For first 50 units Rs. 0.50/unit For next 100 units Rs. 0.75/unit For next 100 units Rs. 1.20/unit For unit above 250 Rs. 1.50/unit An additional surcharge of 20% is added to the bill .

```
#include <stdio.h>

int main() {
    float units , bill ;
    printf(" enetr total units consumed : ");
    scanf("%f",&units);

    if (units<=50){
        bill = units * 0.50 ;
    }
    else if (units<=150){
        bill = 50 * 0.50 + (units-50) * 0.75 ;
    }
    else if (units<=250){
        bill = 50 * 0.50 + 100 * 0.75 + (units-150) * 1.20;
    }
    else {
        bill = 50 * 0.50 + 100 * 0.75 + 100 * 1.20 + (units-250) * 1.50;
    }
    bill = bill + 0.2 * bill ;
    printf (" total electricity bill is %.2f", bill);

    return 0;
}
```

## EXERCISE 3

### C Ternary Operator (?:)

1) Write a C program to find maximum between two numbers using conditional operator.

```
#include <stdio.h>

int main() {
    int num1,num2;
    printf("enter num1 , num2 : \n") ;
    scanf("%d %d", &num1 , &num2);
    num1 > num2 ? printf("%d is greater",num1): printf(" %d is greater ",num2);
    return 0;
}
```

2. Write a C program to find maximum between three numbers using conditional operator

```
#include <stdio.h>
int main() {
    int num1,num2,num3;
    printf("enter num1 , num2 , num3 : \n");
    scanf("%d %d %d", &num1 , &num2 , &num3);
    num1 > num2 && num1 > num3 ? printf("%d is greater",num1): num2 > num1 && num2 > num3 ?
    printf("%d is greater",num2):printf(" %d is greater ",num3);
    return 0;
}
```

3. Write a C program to check whether a number is even or odd using conditional operator.

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

4. Write a C program to check whether year is leap year or not using conditional operator

```
#include <stdio.h>
int main() {
    int year ;
    printf("enter year :");
    scanf("%d",&year);

    (year % 4 == 0 && year % 100 != 0) || (year % 400 == 0) ?
    printf("%d is a leap year",year) :
    printf("%d is not a leap year",year);

    return 0;
}
```

5. Write a C program to check whether character is an alphabet or not using conditional operator.

```
#include <stdio.h>
int main() {
    char ch ;
    printf("enetr ch:");
    scanf("%c",&ch);

    (ch >='a' && ch<='z') || ( ch>='A' && ch<='Z') ? printf("%c is an alphabet",ch):
    printf("%c is not an alphabet",ch);

    return 0;
}
```

## EXERCISE 4

### LOOPS

1) C Program to print all the number up to n

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

2) C Program to Calculate the Sum of Natural Numbers

```
#include <stdio.h>
int main() {
    int n,sum=0;
    printf("Enter n :");
    scanf("%d",&n);
    for(int i = 1 ; i<=n ;i++)
        sum =sum+i;
    printf("sum of all natural numbers upto %d is %d",n,sum);
return 0;
```

```
}
```

3) C Program to print all the even number up to n

```
#include <stdio.h>
int main() {
    int n;
    printf("Enter n :");
    scanf("%d",&n);
    for(int i = 1 ; i<=n ;i++){
        if(i%2 == 0)
            printf("%d\n",i);
    }

    return 0;
}
```

4) C Program to print all the odd number up to n

```
#include <stdio.h>
int main() {
    int n;
    printf("Enter n :");
    scanf("%d",&n);
    for(int i = 1 ; i<=n ;i++){
        if(i%2 != 0)
            printf("%d\n",i);
    }

}
```

```
    return 0;
}
```

## 5) C Program to print sum of all even & odd numbers up to n

```
#include <stdio.h>
int main() {
    int n,sum_even =0 , sum_odd=0;
    printf("Enter n :");
    scanf("%d",&n);
    for(int i = 1 ; i<=n ;i++){
        if(i%2 == 0){
            sum_even+=i;
        }
        if(i%2 != 0){
            sum_odd+=i;
        }
    }
    printf("sum of all even number upto %d is %d",n,sum_even);
    printf("\n sum of all odd number upto %d is %d",n,sum_odd);
    return 0;
}
```

## 6) C Program to Find Factorial of a Number

```
#include <stdio.h>
int main() {
    int n,fac=1;
    printf("Enter n :");
    scanf("%d",&n);
    for(int i = 1 ; i<=n ;i++){
        fac = fac * i ;
    }
```

```
    printf("%d! is %d",n,fac);
return 0;
}
```

## 7) C Program to Generate Multiplication Table

```
#include <stdio.h>
int main() {
    int n;
    printf("Enter n :");
    scanf("%d",&n);

    printf("multiplication table of %d is : \n",n);

    for(int i = 1 ; i<=10 ;i++)
        printf("%d \n",i*n);
return 0;
}
```

## 8) C Program to Display Fibonacci Sequence

```
#include <stdio.h>
int main() {
    int n,a=0,b=1,c;
    printf("Enter n :");
    scanf("%d",&n);

    for(int i = 1 ; i<=n ;i++){
        printf("%d ",a);
        c = a+b;
        a=b;
```

```
    b=c;
}
return 0;
}
```

## 9) C Program to print list of all Prime Number up to a certain Limit.

```
#include <stdio.h>
int main() {
    int n,i,j;
    printf("Enter n :");
    scanf("%d",&n);

    for( i = 2 ; i<=n ;i++){
        for( j = 2 ; j<i ; j++){
            if(i%j ==0)
                break;
        }
        if(i==j){
            printf("%d ",i);
        }
    }
    return 0;
}
```

## 10) C Program to find sum of prime numbers

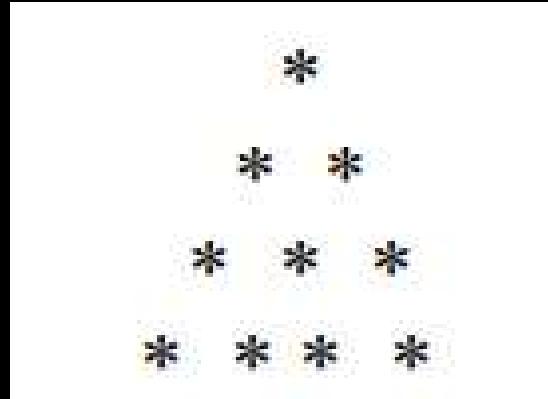
```
#include <stdio.h>
int main() {
    int n,i,j,sum=0;
    printf("Enter n :");
    scanf("%d",&n);

    for( i = 2 ; i<=n ;i++){
        for( j = 2 ; j<i ; j++){
            if(i%j ==0)
                break;
        }
        if(i==j){
            sum+=i;
        }
    }
}
```

```
    }
    printf("sum of all prime numbers upto %d is %d ",n,sum);

    return 0;
}
```

## 11) C program to print right triangle star pattern series

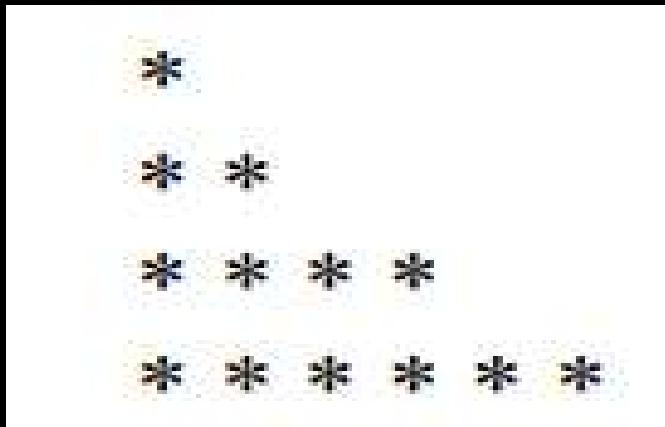


```
#include <stdio.h>
int main() {

    for(int i = 1; i<=4; i++){
        for(int space = 1 ; space <= 4 -i;space ++){
            printf(" ");
        }
        for(int j = 1 ; j<=i ; j++){
            printf("* ");
        }
        printf("\n");
    }
}
```

```
    return 0;  
}
```

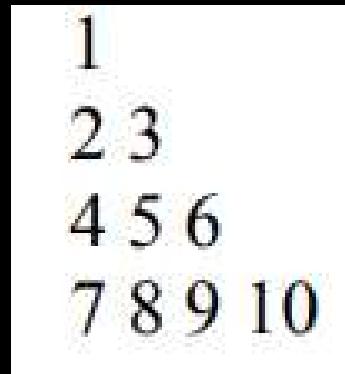
## 12) C program to print equilateral triangle or pyramid star pattern



```
#include <stdio.h>  
int main() {  
  
    for(int i = 1; i<=4; i++){  
        for(int j = 1 ; j<=i ; j++){  
            printf("* ");  
        }  
        printf("\n");  
    }  
}
```

```
    return 0;  
}
```

### 13) C program to print Floyd's triangle



1  
2 3  
4 5 6  
7 8 9 10

```
#include <stdio.h>  
int main() {  
    int n = 1;  
    for(int i = 1; i<=4; i++){  
        for(int j = 1 ; j<=i ; j++){  
            printf("%d ",n);  
            n++;  
        }  
        printf("\n");  
    }  
    return 0;  
}
```

# EXERCISE 5

## Programming exercises

- 1) Program to print all the number up to n
- 2) C Program to Calculate the Sum of Natural Numbers
- 3) C Program to print all the even number up to n
- 4) C Program to print all the odd number up to n
- 5) C Program to print sum of all even & odd numbers up to n
- 6) C Program to Find Factorial of a Number
- 7) C Program to Generate Multiplication Table
- 8) C Program to Display Fibonacci Sequence
- 9) C Program to print list of all Prime Number up to a certain Limit.
- 10) C Program to find sum of prime numbers
- 11) C Program to Count Number of Digits in an Integer
- 12) C Program to Reverse a Number
- 13) C Program to Calculate the Power of a Number
- 14) C Program to Check Whether a Number is Palindrome or Not
- 15) C Program to Check Armstrong Number
- 16) C Program to Display Factors of a Number

```
C: > Users > SOMESH > Documents > coding > c > C som.c > main()
1 // Q1) Program to print all the number up to n
2
3
4 # include <stdio.h>
5 int main (){
6 int n ;
7 printf (" enter n : ");
8 scanf ("%d", &n);
9 int i =1 ;
10 while ( i <= n ){
11     printf ("%d ",i);
12     i++;
13 }
14 return 0;
15 }
```

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c"
enter n : 10
1 2 3 4 5 6 7 8 9 10
PS C:\Users\SOMESH\Documents\coding\c>
```

```
C: > Users > SOMESH > Documents > coding > c > C som.c > main()
1 // Q2) C Program to Calculate the Sum of Natural Numbers
2
3
4 # include <stdio.h>
5 int main (){
6     int n ;
7     printf (" enter n : ");
8     scanf ("%d", &n);
9     int i =1, sum =0 ;
10    while ( i <= n ){
11        sum = sum +i;
12        i++;
13    }
14    printf (" sum of first %d number is %d",n,sum);
15    return 0;
16 }
```

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?) { gcc
enter n : 10
sum of first 10 number is 55
PS C:\Users\SOMESH\Documents\coding\c> █
```

first.cpp som.c Untitled-3 Settings rough.c

C:\> Users > SOMESH > Documents > coding > c > som.c > main()

```
1 // Q3) C Program to print all the even number up to n
2
3
4 # include <stdio.h>
5 int main (){
6     int n ;
7     printf (" enter n : ");
8     scanf ("%d", &n);
9     int i =2, sum =0 ;
10    while ( i <= n ){
11        printf ("%d",i);
12        i=i+2;
13    }
14
15    return 0;
16 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?) { gcc so
enter n : 20
2 4 6 8 10 12 14 16 18 20
PS C:\Users\SOMESH\Documents\coding\c>
```

C: > Users > SOMESH > Documents > coding > c > C som.c > ...

```
1 // Q4) C Program to print all the odd number up to n
2
3
4 # include <stdio.h>
5 int main (){
6     int n ;
7     printf (" enter n : ");
8     scanf ("%d", &n);
9     int i =1, sum =0 ;
10    while ( i <= n ){
11        printf ("%d",i);
12        i=i+2;
13    }
14
15    return 0;
16 }
```

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?) { go
enter n : 20
1 3 5 7 9 11 13 15 17 19
PS C:\Users\SOMESH\Documents\coding\c> █
```

```
C: > Users > SOMESH > Documents > coding > c > C som.c > main()
1 // Q5) C Program to print sum of all even & odd numbers up to n
2
3
4 # include <stdio.h>
5 int main (){
6 int n , sum_odd =0 , sum_even =0;
7 printf (" enter n : ");
8 scanf (" %d", &n);
9 int i =1 ;
10 while ( i <= n ){
11     sum_odd = sum_odd + i ;
12     i=i+2;
13 }
14 int j = 2 ;
15 while ( j <= n ){
16     sum_even = sum_even + j ;
17     j=j+2;
18 }
19 printf (" sum of all odd numbers upto %d is %d \n ", n,sum_odd);
20 printf (" sum of all even numbers upto %d is %d ", n,sum_even);
21 return 0;
22 }
```

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?) { gcc som.c -o so
enter n : 100
sum of all odd numbers upto 100 is 2500
sum of all even numbers upto 100 is 2550
PS C:\Users\SOMESH\Documents\coding\c> []
```

C: > Users > SOMESH > Documents > coding > c > C som.c > main()

```
1 // Q6) C Program to Find Factorial of a Number
2
3
4 # include <stdio.h>
5 int main (){
6     int n ,fac = 1;
7     printf (" enter n : ");
8     scanf ("%d", &n);
9     int i =1 ;
10    while ( i <= n ){
11        fac = fac * i;
12        i++;
13    }
14    printf (" %d! is %d", n, fac);
15    return 0;
16 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ;
enter n : 6
6! is 720
PS C:\Users\SOMESH\Documents\coding\c>
```

first.cpp

som.c

Untitled-3

Settings

```
C: > Users > SOMESH > Documents > coding > c > som.c > main()
1 // Q7) C Program to Generate Multiplication Table
2
3
4 # include <stdio.h>
5 int main (){
6     int n ;
7     printf (" multiplication table of    : ");
8     scanf ("%d", &n);
9     int i = 1 ;
10    while ( i <= 10 ){
11        printf ("%d   ",i*n);
12        i++;
13    }
14
15    return 0;
16 }
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?
multiplication table of    : 15
15 30 45 60 75 90 105 120 135 150
PS C:\Users\SOMESH\Documents\coding\c> █
```

first.cpp

C som.c

X Untitled-3

Settings

C rough.c

C:\> Users > SOMESH > Documents > coding > c > C som.c > main()

```
1 // Q8) C Program to Display Fibonacci Sequence
2
3 // Fibonacci Sequence : 0 1 1 2 3 5 8 13 21 . . . . .
4 # include <stdio.h>
5 int main (){
6     int n,a=0,b =1 ,c ;
7     printf ("enter n : ");
8     scanf ("%d", &n);
9     int i = 1 ;
10    while ( i <= n){
11        printf ("%d ",a);
12        c = a+b ;
13        a = b ;
14        b = c;
15        i++;
16    }
17
18    return 0;
19 }
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```
PS C:\Users\SOMESH> cd "C:\Users\SOMESH\Documents\coding\c\" ; if ($?) { gcc som.c
enter n : 10
0 1 1 2 3 5 8 13 21 34
PS C:\Users\SOMESH\Documents\coding\c>
```





C: > Users > SOMESH > Documents > coding > c > C som.c > main()

```
1 // Q11) C Program to Count Number of Digits in an Integer
2 #include <stdio.h>
3 # include <math.h>
4 int main() {
5     int n;
6
7     printf (" enter n : ");
8     scanf ("%d",&n);
9     int count = 0;
10    while (n !=0){
11        n = n / 10;
12        count++;
13    }
14    printf (" no. of digits: %d", count);
15    return 0;
16 }
17
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?) { g
enter n : 2546846
no. of digits: 7
PS C:\Users\SOMESH\Documents\coding\c>
```

first.cpp

rough.cpp

som.c

X

Untitled-3

C: > Users > SOMESH > Documents > coding > c > som.c > main()

```
1 // Q12) C Program to Reverse a Number
2 #include <stdio.h>
3 int main() {
4     int n , remainder;
5
6     printf (" enter n : ");
7     scanf ("%d",&n);
8     int reversedNum = 0;
9     while (n != 0){
10         remainder = n % 10;
11         reversedNum = reversedNum * 10 + remainder ;
12         n = n / 10;
13     }
14     printf (" reversed number is %d", reversedNum);
15     return 0;
16 }
17
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ; if
enter n : 125484
reversed number is 484521
PS C:\Users\SOMESH\Documents\coding\c>
```

first.cpp

rough.cpp

som.c

X

Untitled-3

Settings

C:\> Users > SOMESH > Documents > coding > c > som.c > ...

```
1 // Q13) C Program to Calculate the Power of a Number
2 #include <stdio.h>
3 #include <math.h>
4 int main() {
5     int a,b,power;
6
7     printf (" enter a and b :\n ");
8     scanf ("%d %d",&a , &b);
9
10    power = pow (a,b);
11    printf (" %d raised to the power %d is : %d",a , b, power);
12    return 0;
13 }
14
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?) { gcc som.c
enter a and b :
3
4
3 raised to the power 4 is : 81
PS C:\Users\SOMESH\Documents\coding\c>
```

The screenshot shows a code editor interface with multiple tabs and a terminal window.

**Code Editor Tabs:**

- first.cpp
- rough.cpp
- som.c** (Active tab)
- Untitled-3

**Code Content (som.c):**

```
C: > Users > SOMESH > Documents > coding > c > som.c > main()
1 // Q14) C Program to Check Whether a Number is Palindrome or Not
2 #include <stdio.h>
3 int main() {
4     int n , remainder;
5
6     printf (" enter n : ");
7     scanf ("%d",&n);
8     int originalNum = n;
9     int reversedNum = 0;
10    while (n != 0){
11        remainder = n % 10;
12        reversedNum = reversedNum * 10 + remainder ;
13        n = n / 10;
14    }
15    if (originalNum == reversedNum){
16        printf ("number is Palindrome ");
17    }
18    else {
19        printf (" number is not Palindrome");
20    }
21
22    return 0;
23 }
```

**Terminal Output:**

- PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c> som.c -o som ; if (\$?) { ./som }
enter n : 1225221
number is Palindrome
- PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c> som.c -o som ; if (\$?) { ./som }
enter n : 121
number is Palindrome
- PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c> som.c -o som ; if (\$?) { ./som }
enter n : 1546
number is not Palindrome
- PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c> som.c -o som ; if (\$?) { ./som }
enter n : 6421
number is not Palindrome
- PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c>

The screenshot shows a code editor with a dark theme. On the left, there are tabs for 'first.cpp', 'rough.cpp', 'som.c' (which is the active tab), and 'Untitled-3'. The main area displays the following C code:

```
C: > Users > SOMESH > Documents > coding > c > som.c > main()
1 // Q15) C Program to Check Armstrong Number
2 #include <stdio.h>
3 #include <math.h>
4 int main() {
5     int num ;
6     printf (" enter number : ");
7     scanf ("%d",&num);
8     int original_num = num;
9     int count = 0;
10    while (num !=0){
11        num = num / 10;
12        count++;
13    }
14    int n = count ;
15    int number = original_num;
16
17    int arm =0, remainder;
18    while (original_num !=0){
19        remainder = original_num % 10;
20        arm = arm + pow (remainder , n);
21        original_num = original_num / 10;
22    }
23
24    if (number == arm){
25        printf (" %d is an Armstrong Number ", number);
26    }
27    else {
28        printf (" %d is not an Armstrong Number ", number);
29    }
30
31    return 0;
32 }
```

To the right of the code editor is a terminal window showing the execution of the program. The terminal output is as follows:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding"
enter number : 407
407 is an Armstrong Number
PS C:\Users\SOMESH\Documents\coding>c> cd "c:\Users\SOMES
{ .\som }
enter number : 1634
1634 is an Armstrong Number
PS C:\Users\SOMESH\Documents\coding>c> cd "c:\Users\SOMES
{ .\som }
enter number : 2024
2024 is not an Armstrong Number
PS C:\Users\SOMESH\Documents\coding>c> cd "c:\Users\SOMES
{ .\som }
enter number : 371
371 is an Armstrong Number
PS C:\Users\SOMESH\Documents\coding>c> cd "c:\Users\SOMES
{ .\som }
enter number : 370
370 is an Armstrong Number
PS C:\Users\SOMESH\Documents\coding>c> cd "c:\Users\SOMES
{ .\som }
enter number : 8208
8208 is an Armstrong Number
PS C:\Users\SOMESH\Documents\coding>c> cd "c:\Users\SOMES
{ .\som }
enter number : 9474
9474 is an Armstrong Number
PS C:\Users\SOMESH\Documents\coding>c> cd "c:\Users\SOMES
{ .\som }
enter number : 1234
1234 is not an Armstrong Number
PS C:\Users\SOMESH\Documents\coding>c>
```

The screenshot shows a code editor interface with multiple tabs and a terminal window.

**Code Editor Tabs:**

- first.cpp
- rough.cpp
- som.c (active tab)
- Untitled-3

**Code Editor Content (som.c):**

```
C: > Users > SOMESH > Documents > coding > c > som.c > main()
1 // Q16) C Program to Display Factors of a Number
2 #include <stdio.h>
3 int main() {
4     int n ;
5     printf (" enter n : ");
6     scanf ("%d",&n);
7     printf (" factors of %d are \n",n);
8     int i=1 ;
9     while ( i <=n){
10         if (n% i == 0){
11             printf ("%d ",i);
12         }
13         i++;
14     }
15     return 0;
16 }
```

**Terminal Output:**

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Code + ...
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c" ; if ($?) { gcc som.c -o som } ; if ($?) { .\som }
enter n : 20
factors of 20 are
1 2 4 5 10 20
PS C:\Users\SOMESH\Documents\coding\c> cd "c:\Users\SOMESH\Documents\coding\c" ; if ($?) { gcc som.c -o som } ; if ($?) { .\som }
enter n : 120
factors of 120 are
1 2 3 4 5 6 8 10 12 15 20 24 30 40 60 120
PS C:\Users\SOMESH\Documents\coding\c>
```

# Exercise 6

## switch problems

- 1) C Program to find weather a character is vowel or consonant.
- 2) C Program to Make a Simple calculator.
- 3) C program to check whether number is EVEN or ODD using switch.
- 4) C program to find number of days in a month using switch case.
- 5) C program to read weekday number and print weekday name using switch.

som.c      C rough.c    ●    C som.cpp    ┌ ostream.tcc    C rough.cpp ▶ ⚖ ...    PROBLEMS    OUTPUT    DEBUG

```
> Users > SOMESH > Documents > coding > c > C rough.c > main()
```

```
1 // Q1) C Program to find weather a character is vowel or consonant.
```

```
2
```

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

```
4 int main() {
```

```
5     char ch;
```

```
6     printf("Enter a character: ");
```

```
7     scanf(" %c", &ch);
```

```
8     switch (ch) {
```

```
9         case 'A':
```

```
10        case 'E':
```

```
11        case 'I':
```

```
12        case 'O':
```

```
13        case 'U':
```

```
14        case 'a':
```

```
15        case 'e':
```

```
16        case 'i':
```

```
17        case 'o':
```

```
18        case 'u':
```

```
19            printf("%c is a vowel.\n", ch);
```

```
20            break;
```

```
21     default:
```

```
22         if (ch >= 'A' && ch <= 'Z' || ch >='a' && ch <='z')
```

```
23             printf("%c is a consonant.\n", ch);
```

```
24         else
```

```
25             printf("Invalid input.\n");
```

```
26         break;
```

```
27     }
```

```
28
```

```
29     return 0;
```

```
30 }
```

```
PS C:\Users\SOMESH> cd "c\rough"
```

```
($?) { .\rough }
```

```
Enter a character: A
```

```
A is a vowel.
```

```
PS C:\Users\SOMESH\Documents\coding\c\rough> .c -o rough ; if ($?) {
```

```
Enter a character: a
```

```
a is a vowel.
```

```
PS C:\Users\SOMESH\Documents\coding\c\rough> .c -o rough ; if ($?) {
```

```
Enter a character: g
```

```
g is a consonant.
```

```
PS C:\Users\SOMESH\Documents\coding\c\rough> .c -o rough ; if ($?) {
```

```
Enter a character: f
```

```
f is a consonant.
```

```
PS C:\Users\SOMESH\Documents\coding\c\rough> .c -o rough ; if ($?) {
```

```
Enter a character: i
```

```
i is a vowel.
```

```
PS C:\Users\SOMESH\Documents\coding\c\rough> .c -o rough ; if ($?) {
```

```
Enter a character: U
```

```
U is a vowel.
```

```
PS C:\Users\SOMESH\Documents\coding\c\rough>
```

```
ers > SOMESH > Documents > coding > c > C rough.c > main0
// Q2) C Program to Make a Simple calculator..
#include <stdio.h>

int main() {
    char operator;
    int num1, num2, result;
    printf("Enter operator (+, -, *, /): ");
    scanf(" %c", &operator);

    printf("Enter two numbers : \n ");
    scanf("%d %d", &num1, &num2);

    switch(operator) {
        case '+':
            result = num1 + num2;
            printf("Sum of %d and %d is %d \n", num1, num2, result);
            break;
        case '-':
            result = num1 - num2;
            printf("Difference of %d and %d is %d \n", num1, num2, result);
            break;
        case '*':
            result = num1 * num2;
            printf("Product of %d and %d is %d \n", num1, num2, result);
            break;
        case '/':
            result = num1 / num2;
            printf("Quotient of %d and %d is %d \n", num1, num2, result);
            break;
        default:
            printf("Error! Invalid operator.\n");
    }

    return 0;
}

PS C:\Users\SOMESH> cd 'c:\Users\SOME
PS C:\Users\SOMESH\Documents\coding\c
Enter operator (+, -, *, /): *
Enter two numbers :
5
6
Product of 5 and 6 is 30
PS C:\Users\SOMESH\Documents\coding\c
.
PS C:\Users\SOMESH\Documents\coding\c
Enter operator (+, -, *, /): /
Enter two numbers :
100
5
Quotient of 100 and 5 is 20
PS C:\Users\SOMESH\Documents\coding\c
.
PS C:\Users\SOMESH\Documents\coding\c
Enter operator (+, -, *, /): +
Enter two numbers :
200
500
Sum of 200 and 500 is 700
PS C:\Users\SOMESH\Documents\coding\c
```

C:\Users>SOMESH\Documents>coding>c> C rough.c>...

```
1 // Q3) C program to check whether number is EVEN or ODD using switch.
2
3 # include <stdio.h>
4
5 int main() {
6     int num;
7
8     printf("Enter a number: ");
9     scanf("%d", &num);
10
11    switch(num % 2) {
12        case 0:
13            printf("%d is even.\n", num);
14            break;
15        case 1:
16            printf("%d is odd.\n", num);
17            break;
18        default:
19            printf("Invalid input.\n");
20            break;
21    }
22
23    return 0;
24 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Enter a number: 25

25 is odd.

PS C:\Users\SOMESH\Documents\coding\c\output> cd 'c:\Users\SOMESH\Documents\coding\c'

PS C:\Users\SOMESH\Documents\coding\c\output> & .\rough.exe'

Enter a number: 250

250 is even.

PS C:\Users\SOMESH\Documents\coding\c\output> cd 'c:\Users\SOMESH\Documents\coding\c'

PS C:\Users\SOMESH\Documents\coding\c\output> & .\rough.exe'

Enter a number: 125

125 is odd.

PS C:\Users\SOMESH\Documents\coding\c\output> []

som.c    C rough.c    X    som.cpp    ostream.tcc    rough.cpp    D v ...    PROBLEMS    OUTPUT    DEBUG

```
> Users > SOMESH > Documents > coding > c > C rough.c > main()
1 // Q4) C program to find number of days in a month using switch case.
2
3 #include <stdio.h>
4
5 int main() {
6     int month;
7
8     printf("Enter month (1-12): ");
9     scanf("%d", &month);
10
11
12     switch (month) {
13         case 1:
14         case 3:
15         case 5:
16         case 7:
17         case 8:
18         case 10:
19         case 12:
20             printf(" 31 days");
21             break;
22         case 4:
23         case 6:
24         case 9:
25         case 11:
26             printf(" 30 days");
27             break;
28         case 2:
29             printf(" 28 days");
30             break;
31         default:
32             printf("Invalid month!\n");
33     }
34     return 0;
35 }
```

PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c'
PS C:\Users\SOMESH\Documents\coding\c> rough
Enter month (1-12): 2
28 days
PS C:\Users\SOMESH\Documents\coding\c> rough
Enter month (1-12): 4
30 days
PS C:\Users\SOMESH\Documents\coding\c> rough
Enter month (1-12): 8
31 days
PS C:\Users\SOMESH\Documents\coding\c>

The screenshot shows a terminal window with the following text:

```
PS C:\Users\SOMESH\Documents\coding\c\som.c> cd 'c:/Users/SOMESH/Documents/coding/c/som.c'
PS C:/Users/SOMESH/Documents/coding/c/som.c> main()
Enter a weekday number (1-7): 5
Friday
PS C:/Users/SOMESH/Documents/coding/c/som.c> t
PS C:/Users/SOMESH/Documents/coding/c/som.c> Enter a weekday number (1-7): 7
Sunday
PS C:/Users/SOMESH/Documents/coding/c/som.c> t
PS C:/Users/SOMESH/Documents/coding/c/som.c> Enter a weekday number (1-7): 8
Invalid weekday number!
PS C:/Users/SOMESH/Documents/coding/c/som.c> t
PS C:/Users/SOMESH/Documents/coding/c/som.c> Enter a weekday number (1-7): 2
Tuesday
PS C:/Users/SOMESH/Documents/coding/c/som.c>
```

Below the terminal window is a code editor showing a C program. The code reads a weekday number from the user and prints its name using a switch statement.

```
1 // Q5) C program to read weekday number and print weekday name using switch.
2
3 #include <stdio.h>
4
5 int main() {
6     int weekday;
7
8     printf("Enter a weekday number (1-7): ");
9     scanf("%d", &weekday);
10
11    switch (weekday) {
12        case 1:
13            printf("Monday\n");
14            break;
15        case 2:
16            printf("Tuesday\n");
17            break;
18        case 3:
19            printf("Wednesday\n");
20            break;
21        case 4:
22            printf("Thursday\n");
23            break;
24        case 5:
25            printf("Friday\n");
26            break;
27        case 6:
28            printf("Saturday\n");
29            break;
30        case 7:
31            printf("Sunday\n");
32            break;
33        default:
34            printf("Invalid weekday number!\n");
35            break;
36    }
37}
```

# EXERCISE 7

## Programming exercises

- 1) C Program to Calculate Average of n ( $n < 10$ ) numbers using arrays
- 2) C Program to Find Largest Element of an Array
- 3) Write a program in C to find the maximum and minimum element in an array.
- 4) Write a program in C to separate odd and even integers in separate arrays.
- 5) Write a program in C to sort elements of array in ascending order.
- 6) C Program to Add Two Matrix Using Multi-dimensional Arrays
- 7) C Program to multiply Two Matrix Using Multi-dimensional Arrays

C som.c C rough.c • C som.cpp E ostream.tcc E rough.cpp E Untitled-1

```
C: > Users > SOMESH > Documents > coding > c > C rough.c > main()
1 // Q1) C Program to Calculate Average of n (n < 10) numbers using arrays
2
3 #include <stdio.h>
4
5 int main() {
6     int n;
7     float A[10], sum = 0.0, avg;
8
9     printf("Enter n (less than 10): ");
10    scanf("%d", &n);
11
12
13    for (int i = 1; i <= n; i++) {
14        printf("Enter number %d: ", i );
15        scanf("%f", &A[i]);
16        sum = sum + A[i];
17    }
18
19    avg = sum / n;
20    printf("Average is: %f ", avg);
21
22    return 0;
23 }
24
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output'
PS C:\Users\SOMESH\Documents\coding\c\output> & .\rough.exe
Enter n (less than 10): 5
Enter number 1: 12
Enter number 2: 14
Enter number 3: 16
Enter number 4: 18
Enter number 5: 20
Average is: 16.000000
PS C:\Users\SOMESH\Documents\coding\c\output> []
```

```
som.c   X  C rough.c  X  C som.cpp  E ostream.tcc  C rough.cpp  E Unti D v  ...  
C:\Users\SOMESH\Documents\coding\c\rough.c > main()  
1 // Q2) C Program to Find Largest Element of an Array  
2  
3 #include <stdio.h>  
4  
5 int main() {  
6     int arr[100], size, i;  
7     int max;  
8  
9     printf("Enter the size of the array: ");  
0     scanf("%d", &size);  
1  
2     printf("Enter %d elements:\n", size);  
3     for (i = 0; i < size; i++) {  
4         printf("Element %d: ", i + 1);  
5         scanf("%d", &arr[i]);  
6     }  
7  
8     max = arr[0];  
9  
0     for (i = 1; i < size; i++) {  
1         if (arr[i] > max) {  
2             max = arr[i];  
3         }  
4     }  
5  
6     printf("The largest element in the array is: %d\n", max);  
7  
8     return 0;  
9 }  
0
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output'  
PS C:\Users\SOMESH\Documents\coding\c\output> Enter the size of the array: 10  
Enter 10 elements:  
Element 1: 5  
Element 2: 6  
Element 3: 4  
Element 4: 8  
Element 5: 9  
Element 6: 3  
Element 7: 7  
Element 8: 20  
Element 9: 21  
Element 10: 6
```

The largest element in the array is: 21  
PS C:\Users\SOMESH\Documents\coding\c\output>

```
C:\Users\SOMESH> cd 'C:\Users\SOMESH\Documents\coding\c\output'  
C:\Users\SOMESH> rough.c > main()  
1 // Q3) C Program to Find smallest Element of an Array  
2  
3 #include <stdio.h>  
4  
5 int main() {  
6     int arr[100], size, i;  
7     int min;  
8  
9     printf("Enter the size of the array: ");  
10    scanf("%d", &size);  
11    (char [20])"Enter %d elements:\n"  
12    printf("Enter %d elements:\n", size);  
13    for (i = 0; i < size; i++) {  
14        printf("Element %d: ", i + 1);  
15        scanf("%d", &arr[i]);  
16    }  
17  
18    min = arr[0];  
19  
20    for (i = 1; i < size; i++) {  
21        if (arr[i] < min) {  
22            min = arr[i];  
23        }  
24    }
```

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

```
PS C:\Users\SOMESH> cd 'C:\Users\SOMESH\Documents\coding\c\output'  
PS C:\Users\SOMESH\Documents\coding\c\output> & .\rough.exe  
Enter the size of the array: 5  
Enter 5 elements:  
Element 1: 89  
Element 2: 56  
Element 3: 24  
Element 4: 63  
Element 5: 25  
The minimum element in the array is: 24  
PS C:\Users\SOMESH\Documents\coding\c\output>
```

```
C: > Users > SOMESH > Documents > coding > c > C rough.c > main()
```

```
1 // Q4) Write a program in C to separate odd and even integers in separate
2
3 #include <stdio.h>
4
5 #define MAX_SIZE 100
6
7 int main() {
8     int arr[MAX_SIZE], even[MAX_SIZE], odd[MAX_SIZE];
9     int i, n, even_count = 0, odd_count = 0;
10
11    printf("Enter the number of elements in the array: ");
12    scanf("%d", &n);
13
14    printf("Enter %d elements:\n", n);
15    for (i = 0; i < n; i++) {
16        printf("Enter element %d: ", i + 1);
17        scanf("%d", &arr[i]);
18    }
19    for (i = 0; i < n; i++) {
20        if (arr[i] % 2 == 0) {
21            even[even_count] = arr[i];
22            even_count++;
23        } else {
24            odd[odd_count] = arr[i];
25            odd_count++;
26        }
27    }
28    printf("\n Even integers: ");
29    for (i = 0; i < even_count; i++) {
30        printf("%d ", even[i]);
31    }
32    printf("\n Odd integers: ");
33    for (i = 0; i < odd_count; i++) {
34        printf("%d ", odd[i]);
35    }
36    return 0;
37 }
```

```
PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output' & .\rough
Enter the number of elements in the array: 10
Enter 10 elements:
Enter element 1: 10
Enter element 2: 12
Enter element 3: 13
Enter element 4: 15
Enter element 5: 16
Enter element 6: 19
Enter element 7: 55
Enter element 8: 63
Enter element 9: 50
Enter element 10: 103

Even integers: 10 12 16 50
Odd integers: 13 15 19 55 63 103
PS C:\Users\SOMESH\Documents\coding\c\output>
```

```
C som.c    C rough.c X  C som.cpp    E ostream.tcc    C rough.cpp    ▶ □ ... PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
```

```
C: > Users > SOMESH > Documents > coding > c > C rough.c > main()
```

```
1 // Q5) Write a program in C to sort elements of array in ascending order.
```

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

```
3
```

```
4 #define MAX_SIZE 100
```

```
5
```

```
6 int main() {
```

```
7     int arr[MAX_SIZE];
```

```
8     int i, j, temp, n;
```

```
9
```

```
10    printf("Enter the number of elements in the array: ");
```

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

```
12
```

```
13    printf("Enter %d elements:\n", n);
```

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

```
15        printf("Enter element %d: ", i + 1);
```

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

```
17    }
```

```
18
```

```
19    for (i = 0; i < n - 1; i++) {
```

```
20        for (j = 0; j < n - i - 1; j++) {
```

```
21            if (arr[j] > arr[j + 1]) {
```

```
22
```

```
23                temp = arr[j];
```

```
24                arr[j] = arr[j + 1];
```

```
25                arr[j + 1] = temp;
```

```
26            }
```

```
27        }
```

```
28    }
```

```
29
```

```
30    printf("\n Sorted array in ascending order: ");
```

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

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

```
33    }
```

```
34
```

```
35    return 0;
```

```
36 }
```

```
PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output'
```

```
PS C:\Users\SOMESH\Documents\coding\c\output> & .\rough.exe'
```

```
Enter the number of elements in the array: 10
```

```
Enter 10 elements:
```

```
Enter element 1: 1
```

```
Enter element 2: 5
```

```
Enter element 3: 9
```

```
Enter element 4: 56
```

```
Enter element 5: 48
```

```
Enter element 6: 35
```

```
Enter element 7: 46
```

```
Enter element 8: 75
```

```
Enter element 9: 62
```

```
Enter element 10: 3
```

```
Sorted array in ascending order: 1 3 5 9 35 46 48 56 62 75
```

```
PS C:\Users\SOMESH> * History restored
```

```
PS C:\Users\SOMESH>
```

C som.c X C rough.c E som.cpp E ostream.tcc E rough.cpp E Untitled-1

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS C/C++ Compile Run

```
C:\Users> SOMESH > Documents > coding > c > C som.c > main()
1 // 6) C Program to Add Two Matrix Using Multi-dimensional Arrays
2
3 #include <stdio.h>
4
5 int main() {
6     int A[100][100], B[100][100], C[100][100], i, j, r1, r2, c1, c2;
7     printf("Enter number of rows and columns of matrix A: \n");
8     scanf("%d %d", &r1, &c1);
9     printf("Enter number of rows and columns of matrix B: \n");
10    scanf("%d %d", &r2, &c2);
11    if (r1 != r2 || c1 != c2) {
12        printf("Matrix A and B cannot be added.\n");
13        return 0;
14    }
15    printf("Enter elements of matrix A: \n");
16    for (i = 0; i < r1; i++) {
17        for (j = 0; j < c1; j++) {
18            scanf("%d", &A[i][j]);
19        }
20    }
21    printf("Enter elements of matrix B: \n");
22    for (i = 0; i < r2; i++) {
23        for (j = 0; j < c2; j++) {
24            scanf("%d", &B[i][j]);
25        }
26        for (int i = 0 ; i<r1 ;i++){
27            for (int j = 0; j<c1 ; j++){
28                C[i][j]= A[i][j] + B[i][j];
29            }
30        }
31    }
32    printf (" addition of matrix A and matrix B is: \n ");
33    for (int i = 0 ; i<r1 ;i++){
34        for (int j = 0; j<c1 ; j++){
35            printf (" %d", C[i][j]);
36        }
37        printf ("\n");
38    }
39    return 0;
40 }
```

PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output'
PS C:\Users\SOMESH\Documents\coding\c\output> & .\som.exe
Enter number of rows and columns of matrix A:
2
2
Enter number of rows and columns of matrix B:
2
2
Enter elements of matrix A:
2
5
6
7
Enter elements of matrix B:
3
4
6
7
addition of matrix A and matrix B is:
5 9
12 14
PS C:\Users\SOMESH\Documents\coding\c\output> cd 'c:\Users\SOMESH\Documents\coding\c\output'
PS C:\Users\SOMESH\Documents\coding\c\output> & .\som.exe
Enter number of rows and columns of matrix A:
1
2
Enter number of rows and columns of matrix B:
3
4
Matrix A and B cannot be added.
PS C:\Users\SOMESH\Documents\coding\c\output>

C som.c C rough.c C som.cpp E ostream.tcc C rough.cpp E Untitled-1 D PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
C: > Users > SOMESH > Documents > coding > c > C som.c > main()
1 // 7) C Program to multiply Two Matrix Using Multi-dimensional Arrays
2 #include <stdio.h>
3 int main() {
4     int A[100][100], B[100][100], C[100][100], i, j, k, r1, r2, c1, c2;
5     printf("Enter number of rows and columns of matrix A: \n");
6     scanf("%d %d", &r1, &c1);
7     printf("Enter number of rows and columns of matrix B: \n");
8     scanf("%d %d", &r2, &c2);
9     if (c1 != r2) {
10         printf("Matrix A and B cannot be multiplied.\n");
11         return 0;
12     }
13     printf("Enter elements of matrix A: \n");
14     for (i = 0; i < r1; i++) {
15         for (j = 0; j < c1; j++) {
16             scanf("%d", &A[i][j]);
17         }
18     }
19     printf("Enter elements of matrix B: \n");
20     for (i = 0; i < r2; i++) {
21         for (j = 0; j < c2; j++) {
22             scanf("%d", &B[i][j]);
23         }
24     }
25     for (i = 0; i < r1; i++) {
26         for (j = 0; j < c2; j++) {
27             int sum = 0;
28             for (k = 0; k < c1; k++) {
29                 sum += A[i][k] * B[k][j];
30             }
31             C[i][j] = sum;
32         }
33     }
34     printf("Matrix C (Result of A * B): \n");
35     for (i = 0; i < r1; i++) {
36         for (j = 0; j < c2; j++) {
37             printf("%d ", C[i][j]);
38         }
39         printf("\n");
40     }
41     return 0;
42 }
```

PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output' & .\som
Enter number of rows and columns of matrix A:
2
2
Enter number of rows and columns of matrix B:
2
2
Enter elements of matrix A:
1
1
1
1
Enter elements of matrix B:
1
1
1
1
Matrix C (Result of A \* B):
2 2
2 2
PS C:\Users\SOMESH\Documents\coding\c\output>

# prime number codes

C: first.cpp rough.cpp som.c Untitled ... PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORT

```
C: > Users > SOMESH > Documents > coding > c > som.c > main()
1 // Q15) C Program to Check prime nos
2 #include <stdio.h>
3 int main() {
4     int n ;
5     printf (" enter number : ");
6     scanf ("%d",&n);
7     int count = 0;
8     int num= n;
9     for (int i = 2 ; i < n ; i++){
10         if (n % i == 0){
11             count++;
12         }
13     }
14     if (count==0){
15         printf ("%d is a prime number ", num);
16     }
17     else {
18         printf ("%d is not a prime number ", num);
19     }
20     return 0;
21 }
22
```

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c"
; if ($?) { .\som }
enter number : 11
11 is a prime number
PS C:\Users\SOMESH\Documents\coding\c> cd "c:\Us
    gcc som.c -o som } ; if (?) { .\som }
enter number : 5
5 is a prime number
PS C:\Users\SOMESH\Documents\coding\c> cd "c:\Us
    gcc som.c -o som } ; if (?) { .\som }
enter number : 20
20 is not a prime number
PS C:\Users\SOMESH\Documents\coding\c>
PS C:\Users\SOMESH\Documents\coding\c> cd "c:\Us
    gcc som.c -o som } ; if (?) { .\som }
enter number : 2
2 is a prime number
PS C:\Users\SOMESH\Documents\coding\c> cd "c:\Us
    gcc som.c -o som } ; if (?) { .\som }
enter number : 2024
2024 is not a prime number
PS C:\Users\SOMESH\Documents\coding\c>
```

A screenshot of a terminal window showing the execution of a C program to print prime numbers up to n. The terminal output is as follows:

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?) { g  
som } ; if ($?) { .\som }  
enter number : 50  
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47  
PS C:\Users\SOMESH\Documents\coding\c> cd "c:\Users\SOMESH\Documents\coding"  
$?) { gcc som.c -o som } ; if ($?) { .\som }  
enter number : 100  
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97  
PS C:\Users\SOMESH\Documents\coding\c>
```

Edit Selection View Go Run ... ⏪ ⏩ Search

first.cpp rough.cpp som.c ✘ Untitled-3 PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

C: > Users > SOMESH > Documents > coding > c > som.c > main()

```
1 // Q15) C Program to print sum of all prime numbers upto n
2 #include <stdio.h>
3 int main() {
4     int n,i,j,sum=0 ;
5     printf (" enter number : ");
6     scanf ("%d",&n);
7     for (i = 2 ; i <n ; i++ ){
8
9         for ( j= 2 ; j <i ;j++){
10            if (i %j == 0) {
11                break;
12            }
13        }
14        if (i ==j){
15            sum = sum +i;
16        }
17    }
18    printf ("sum of prime nos. up to %d is %d",n,sum);
19    return 0;
20 }
```

PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c"
m.c -o som } ; if (\$?) { .\som }
enter number : 100
sum of prime nos. up to 100 is 1060
PS C:\Users\SOMESH\Documents\coding\c>

Edit Selection View Go Run ... ← → ⌂ Search

first.cpp rough.cpp som.c Untitled-3 PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
> Users > SOMESH > Documents > coding > c > som.c > main()
1 // Q15) C Program to print all prime numbers from m to n
2 #include <stdio.h>
3 int main() {
4     int m,n,i,j ;
5     printf (" enter m and n: \n ");
6     scanf ("%d %d",&m , &n);
7     for (i = m ; i <=n ; i++ ){
8
9         for ( j= 2 ; j <i ;j++){
10             if (i %j == 0) {
11                 break;
12             }
13         }
14     if (i ==j){
15         printf ("%d ",i);
16     }
17 }
18
19     return 0;
20 }
21
```

PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c> som.c -o som } ; if (\$?) { .\som }
enter m and n:
2
89
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73
PS C:\Users\SOMESH\Documents\coding\c> cd "c:\Users\SOMESH\Documents\coding\c> som.c -o som } ; if (\$?) { .\som }
enter m and n:
97
131
97 101 103 107 109 113 127 131
PS C:\Users\SOMESH\Documents\coding\c>

The screenshot shows a terminal window with the following content:

```
rst.cpp rough.cpp som.c Untitled-3 PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Code ...  
Users > SOMESH > Documents > coding > c > som.c > ...  
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?) { gcc som.c -o som } ; if ($?) { .\som }  
enter m and n:  
2  
21  
3 5 7 11 13 17 19  
PS C:\Users\SOMESH\Documents\coding\c> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?) { gcc som.c -o som } ; if ($?) { .\som }  
enter m and n:  
50  
131  
53 59 61 67 71 73 79 83 89 97 101 103 107 109 113 127  
PS C:\Users\SOMESH\Documents\coding\c> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?) { gcc som.c -o som } ; if ($?) { .\som }  
enter m and n:  
200  
500  
211 223 227 229 233 239 241 251 257 263 269 271 277 281 283 293 307 311 313 317  
331 337 347 349 353 359 367 373 379 383 389 397 401 409 419 421 431 433 439 443  
3 449 457 461 463 467 479 487 491 499  
PS C:\Users\SOMESH\Documents\coding\c>
```

Edit Selection View Go Run ... ← → ⌂ Search

first.cpp rough.cpp som.c ✘ Untitled-3 Settings ⌂ ... PROBLEMS 2 OUTPUT TERMINAL ... ⌂ Code + ⌂

```
C:\Users>SOMESH> Documents > coding > c > C som.c > main()
1 // Q15) C Program to print sum of all prime numbers b/t m to n
2 #include <stdio.h>
3 int main() {
4     int m,n,i,j,sum=0 ;
5     printf (" enter m and n: \n ");
6     scanf ("%d %d",&m , &n);
7     for ( i = m+1 ; i < n ; i++ ){
8
9         for ( j= 2 ; j < i ;j++){
10             if (i %j == 0) {
11                 break;
12             }
13         }
14         if (i ==j){
15             sum=sum+i;
16         }
17     }
18     printf ("sum of all prime numbers b/t %d to %d is %d", m,n,sum);
19     return 0;
20 }
```

PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c"
gcc som.c -o som } ; if (\$?) { .\som }
enter m and n:
2
21
sum of all prime numbers b/t 2 to 21 is 75
PS C:\Users\SOMESH\Documents\coding\c> cd "c:\Users\SOMESH\Documents\coding\c\" ; if (\$?) { gcc som.c -o som } ; if (\$?) { .\som }
enter m and n:
200
500
sum of all prime numbers b/t 200 to 500 is 17309
PS C:\Users\SOMESH\Documents\coding\c>

# Important codes for viva exam

The screenshot shows a code editor interface with multiple tabs at the top: File, Edit, Selection, View, Go, Run, Terminal, Help, and a search bar. Below the tabs, there are several code files listed: mulmat.c.c, som.c, code.c (which is currently selected), samosa.c, rough.c, and others. The main area displays the content of the code.c file.

```
C: > Users > SOMESH > Documents > coding > c > code.c > main()
1 //C Program to Calculate Average of n (n < 10) numbers using arrays
2
3 #include <stdio.h>
4
5 int main() {
6
7     int n;
8     printf ("enter n (n<10): ");
9     scanf ("%d",&n);
10
11    float A [100] , sum = 0.0 , avg ;
12
13    for (int i = 0 ; i <n ; i++){
14        printf ("element no.%d = ",i);
15        scanf ("%f",&A[i]);
16        sum = sum + A[i];
17    }
18    avg = sum / n;
19    printf("average is %f",avg);
20    return 0;
21 }
```

To the right of the code editor, there is a terminal window showing the execution of the program:

```
PS C:\Users\SOMESH> cd 'c:\Users\SOME
PS C:\Users\SOMESH\Documents\coding\c
enter n (n<10): 5
element no.0 = 10
element no.1 = 20
element no.2 = 30
element no.3 = 40
element no.4 = 50
average is 30.000000
PS C:\Users\SOMESH\Documents\coding\c
```

```
C mulmat.c.c C som.c C samosa.c C rough.c ●
C: > Users > SOMESH > Documents > coding > c > C rough.c > main()
1 #include <stdio.h>
2
3 // Function to swap two integers
4 void swap(int *x, int *y) {
5     int temp = *x;
6     *x = *y;
7     *y = temp;
8 }
9 // Function to perform bubble sort
10 void bubbleSort(int arr[], int n) {
11     for (int i = 0; i < n-1; i++) {
12         for (int j = 0; j < n-1-i; j++) {
13             if (arr[j] > arr[j+1]) {
14                 swap(&arr[j], &arr[j+1]);
15             }
16         }
17     }
18 }
19
20 int main() {
21     int arr[7] = {64, 34, 25, 12, 22, 11, 90}; // Sample array
22
23     printf("Original array: ");
24     for (int i = 0; i < 7; i++) {
25         printf("%d ", arr[i]);
26     }
27     printf("\n");
28
29     bubbleSort(arr, 7); // Call bubble sort function
30
31     printf("Sorted array: ");
32     for (int i = 0; i < 7; i++) {
33         printf("%d ", arr[i]);
34     }
35
36     return 0;
37 }
```

**sorting of array in  
ascending order  
using function**

```
C: > Users > SOMESH > Documents > coding > c > C code.c > main()
1 // Write a program in C to sort elements of array in ascending order.
2
3 #include <stdio.h>
4
5
6 int main() {
7
8     int n ;
9     printf("Enter the size of the array: ");
10    scanf("%d", &n);
11
12    int A [100];
13    printf("Enter elements of the array:\n");
14    for (int i = 0; i < n; i++) {
15        scanf("%d", &A[i]);
16    }
17
18    for (int i = 0; i < n - 1; i++) {
19        for (int j = 0; j < n - 1- i; j++) {
20            if (A[j] > A[j + 1]) {
21
22                int temp = A[j];
23                A[j] = A[j + 1];
24                A[j + 1] = temp;
25            }
26        }
27    }
28
29    printf("Array sorted in ascending order: ");
30    for (int i = 0; i < n; i++) {
31        printf("%d ", A[i]);
32    }
33    printf("\n");
34
35    return 0;
36 }
37
```

```
PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output' & .\main
PS C:\Users\SOMESH\Documents\coding\c\output> Enter the size of the array: 5
Enter elements of the array:
12
14
65
258
45
Array sorted in ascending order: 12 14 45 65 258
PS C:\Users\SOMESH\Documents\coding\c\output>
```

## sorting of array in ascending order

File Edit Selection View Go Run Terminal Help ← → ⌂ Search

C mulmat.c.c C som.c C samosa.c C rough.c X ⌂ ... PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
C:\> Users > SOMESH > Documents > coding > c > C rough.c > bubbleSort(int[], int)
1 #include <stdio.h>
2
3 // Function to swap two integers
4 void swap(int *x, int *y) {
5     int temp = *x;
6     *x = *y;
7     *y = temp;
8 }
9 // Function to perform bubble sort
10 void bubbleSort(int arr[], int n) {
11     for (int i = 0; i < n-1; i++) {
12         for (int j = 0; j < n-1-i; j++) {
13             if (arr[j] < arr[j+1]) {
14                 swap(&arr[j], &arr[j+1]);
15             }
16         }
17     }
18 }
19
20 int main() {
21     int arr[7] = {64, 34, 25, 12, 22, 11, 90}; // Sample array
22
23     printf("Original array: ");
24     for (int i = 0; i < 7; i++) {
25         printf("%d ", arr[i]);
26     }
27     printf("\n");
28
29     bubbleSort(arr, 7); // Call bubble sort function
30
31     printf("Sorted array: ");
32     for (int i = 0; i < 7; i++) {
33         printf("%d ", arr[i]);
34     }
35     return 0;
36 }
37
```

PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output'
PS C:\Users\SOMESH\Documents\coding\c\output>
Original array: 64 34 25 12 22 11 90
Sorted array: 90 64 34 25 22 12 11
PS C:\Users\SOMESH\Documents\coding\c\output>

**sorting of array in  
Desending order  
using function**

```
C mulmat.c C som.c C code.c X C samosa.c C rough.c ⏪ ⏴ ... PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS  
C: > Users > SOMESH > Documents > coding > c > C code.c > main()  
1 // Write a program in C to sort elements of array in descending order.  
2  
3 #include <stdio.h>  
4  
5  
6 int main() {  
7  
8     int n ;  
9     printf("Enter the size of the array: ");  
10    scanf("%d", &n);  
11  
12    int A [100];  
13    printf("Enter elements of the array:\n");  
14    for (int i = 0; i < n; i++) {  
15        scanf("%d", &A[i]);  
16    }  
17  
18    for (int i = 0; i < n - 1; i++) {  
19        for (int j = 0; j < n - 1- i; j++) {  
20            if (A[j] < A[j + 1]) {  
21                int temp = A[j];  
22                A[j] = A[j + 1];  
23                A[j + 1] = temp;  
24            }  
25        }  
26    }  
27  
28  
29    printf("Array sorted in ascending order: ");  
30    for (int i = 0; i < n; i++) {  
31        printf("%d ", A[i]);  
32    }  
33    printf("\n");  
34  
35    return 0;  
36 }  
37
```

PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output' & .\main  
PS C:\Users\SOMESH\Documents\coding\c\output> Enter the size of the array: 5  
Enter elements of the array:  
1  
3  
5  
94  
65  
Array sorted in ascending order: 94 65 5 3 1  
PS C:\Users\SOMESH\Documents\coding\c\output>

# sorting of array in Desending order

C mulmat.c.c C som.c X C rough.c ▶ ⌂ ... PROBLEMS OUTPUT DEB

C: > Users > SOMESH > Documents > coding > c > C som.c > main()

```
1 // factorial using recursion
2 #include <stdio.h>
3
4 int fact (int n){
5     if(n == 0)
6         return 1 ;
7     else
8         return n*fact(n-1);
9 }
10
11 int main() {
12     int num;
13     printf("enter num : ");
14     scanf("%d",&num);
15     printf("%d! is %d",num,fact(num));
16     fact(num);
17
18     return 0;
19 }
```

PS C:\Users\SOMESH> cd

PS C:\Users\SOMESH\Documents>

enter num : 5

5! is 120

PS C:\Users\SOMESH\Documents>

C som.c X C rough.c E som.cpp E ostream.tcc E rough.cpp E Untitled-1

```

C:\Users>SOMESH>Documents>coding>c> C som.c > main()
1 // 6) C Program to Add Two Matrix Using Multi-dimensional Arrays
2
3 #include <stdio.h>
4
5 int main() {
6     int A[100][100], B[100][100], C[100][100], i, j, r1, r2, c1, c2;
7     printf("Enter number of rows and columns of matrix A: \n");
8     scanf("%d %d", &r1, &c1);
9     printf("Enter number of rows and columns of matrix B: \n");
10    scanf("%d %d", &r2, &c2);
11    if (r1 != r2 || c1 != c2) {
12        printf("Matrix A and B cannot be added.\n");
13        return 0;
14    }
15    printf("Enter elements of matrix A: \n");
16    for (i = 0; i < r1; i++) {
17        for (j = 0; j < c1; j++) {
18            scanf("%d", &A[i][j]);
19        }
20    }
21    printf("Enter elements of matrix B: \n");
22    for (i = 0; i < r2; i++) {
23        for (j = 0; j < c2; j++) {
24            scanf("%d", &B[i][j]);
25        }
26        for (int i = 0 ; i<r1 ;i++){
27            for (int j = 0; j<c1 ; j++){
28                C[i][j]= A[i][j] + B[i][j];
29            }
30        }
31    }
32    printf (" addition of matrix A and matric B is: \n ");
33    for (int i = 0 ; i<r1 ;i++){
34        for (int j = 0; j<c1 ; j++){
35            printf (" %d", C[i][j]);
36        }
37        printf ("\n");
38    }
39    return 0;
40 }

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS C/C++ Compile Run

PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output'
PS C:\Users\SOMESH\Documents\coding\c\output> & .\som.exe'
Enter number of rows and columns of matrix A:
2
2
Enter number of rows and columns of matrix B:
2
2
Enter elements of matrix A:
2
5
6
7
Enter elements of matrix B:
3
4
6
7
addition of matrix A and matric B is:
5 9
12 14
PS C:\Users\SOMESH\Documents\coding\c\output> cd 'c:\Users\SOMESH\Documents\coding\c\output'
PS C:\Users\SOMESH\Documents\coding\c\output> & .\som.exe'
Enter number of rows and columns of matrix A:
1
2
Enter number of rows and columns of matrix B:
3
4
Matrix A and B cannot be added.
PS C:\Users\SOMESH\Documents\coding\c\output>

C som.c C rough.c C som.cpp E ostream.tcc C rough.cpp E Untitled-1 D PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
C: > Users > SOMESH > Documents > coding > c > C som.c > main()
1 // 7) C Program to multiply Two Matrix Using Multi-dimensional Arrays
2 #include <stdio.h>
3 int main() {
4     int A[100][100], B[100][100], C[100][100], i, j, k, r1, r2, c1, c2;
5     printf("Enter number of rows and columns of matrix A: \n");
6     scanf("%d %d", &r1, &c1);
7     printf("Enter number of rows and columns of matrix B: \n");
8     scanf("%d %d", &r2, &c2);
9     if (c1 != r2) {
10         printf("Matrix A and B cannot be multiplied.\n");
11         return 0;
12     }
13     printf("Enter elements of matrix A: \n");
14     for (i = 0; i < r1; i++) {
15         for (j = 0; j < c1; j++) {
16             scanf("%d", &A[i][j]);
17         }
18     }
19     printf("Enter elements of matrix B: \n");
20     for (i = 0; i < r2; i++) {
21         for (j = 0; j < c2; j++) {
22             scanf("%d", &B[i][j]);
23         }
24     }
25     for (i = 0; i < r1; i++) {
26         for (j = 0; j < c2; j++) {
27             int sum = 0;
28             for (k = 0; k < c1; k++) {
29                 sum += A[i][k] * B[k][j];
30             }
31             C[i][j] = sum;
32         }
33     }
34     printf("Matrix C (Result of A * B): \n");
35     for (i = 0; i < r1; i++) {
36         for (j = 0; j < c2; j++) {
37             printf("%d ", C[i][j]);
38         }
39         printf("\n");
40     }
41     return 0;
42 }
```

PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output' & .\som
Enter number of rows and columns of matrix A:
2
2
Enter number of rows and columns of matrix B:
2
2
Enter elements of matrix A:
1
1
1
1
Enter elements of matrix B:
1
1
1
1
Matrix C (Result of A \* B):
2 2
2 2
PS C:\Users\SOMESH\Documents\coding\c\output>

C som.c C rough.c C som.cpp E ostream.tcc C rough.cpp E Untitled-1 D PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
C: > Users > SOMESH > Documents > coding > c > C som.c > main()
1 // 7) C Program to multiply Two Matrix Using Multi-dimensional Arrays
2 #include <stdio.h>
3 int main() {
4     int A[100][100], B[100][100], C[100][100], i, j, k, r1, r2, c1, c2;
5     printf("Enter number of rows and columns of matrix A: \n");
6     scanf("%d %d", &r1, &c1);
7     printf("Enter number of rows and columns of matrix B: \n");
8     scanf("%d %d", &r2, &c2);
9     if (c1 != r2) {
10         printf("Matrix A and B cannot be multiplied.\n");
11         return 0;
12     }
13     printf("Enter elements of matrix A: \n");
14     for (i = 0; i < r1; i++) {
15         for (j = 0; j < c1; j++) {
16             scanf("%d", &A[i][j]);
17         }
18     }
19     printf("Enter elements of matrix B: \n");
20     for (i = 0; i < r2; i++) {
21         for (j = 0; j < c2; j++) {
22             scanf("%d", &B[i][j]);
23         }
24     }
25     for (i = 0; i < r1; i++) {
26         for (j = 0; j < c2; j++) {
27             int sum = 0;
28             for (k = 0; k < c1; k++) {
29                 sum += A[i][k] * B[k][j];
30             }
31             C[i][j] = sum;
32         }
33     }
34     printf("Matrix C (Result of A * B): \n");
35     for (i = 0; i < r1; i++) {
36         for (j = 0; j < c2; j++) {
37             printf("%d ", C[i][j]);
38         }
39         printf("\n");
40     }
41     return 0;
42 }
```

PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\output' & .\som
Enter number of rows and columns of matrix A:
2
2
Enter number of rows and columns of matrix B:
2
2
Enter elements of matrix A:
1
1
1
1
Enter elements of matrix B:
1
1
1
1
Matrix C (Result of A \* B):
2 2
2 2
PS C:\Users\SOMESH\Documents\coding\c\output>

C:\Users>SOMESH\Documents>coding>c> C rough.c>...

```
1 // Q3) C program to check whether number is EVEN or ODD using switch.
2
3 # include <stdio.h>
4
5 int main() {
6     int num;
7
8     printf("Enter a number: ");
9     scanf("%d", &num);
10
11    switch(num % 2) {
12        case 0:
13            printf("%d is even.\n", num);
14            break;
15        case 1:
16            printf("%d is odd.\n", num);
17            break;
18        default:
19            printf("Invalid input.\n");
20            break;
21    }
22
23    return 0;
24 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Enter a number: 25

25 is odd.

PS C:\Users\SOMESH\Documents\coding\c\output> cd 'c:\Users\SOMESH\Documents\coding\c'

PS C:\Users\SOMESH\Documents\coding\c\output> & .\rough.exe'

Enter a number: 250

250 is even.

PS C:\Users\SOMESH\Documents\coding\c\output> cd 'c:\Users\SOMESH\Documents\coding\c'

PS C:\Users\SOMESH\Documents\coding\c\output> & .\rough.exe'

Enter a number: 125

125 is odd.

PS C:\Users\SOMESH\Documents\coding\c\output> []

pyq

```
C: > Users > SOMESH > Documents > coding > c > C samosa.c > ...
1 // C program to demonstrate pointer to pointer
2 #include <stdio.h>
3
4 int main()
5 {
6     int var = 789;
7
8     int *ptr1 = &var;
9
10    int **ptr2 = &ptr1;
11
12
13    printf("Value of var = %d\n", var);
14    printf("Value of var using single pointer = %d\n", *ptr1);
15    printf("Value of var using double \a pointer = %d\n", **ptr2);
16
17    return 0;
18 }
19
20 |
```

main.c



Save

Run

Output

```
1 // Q6) C Program to Find Factorial of a Number
2
3 #include <stdio.h>
4 int main (){
5     int n, factorial = 1;
6     printf (" enter n ");
7     scanf (" %d", &n);
8
9     for ( int i = 1 ; i <= n ; i = i+1){
10
11         factorial = factorial * i;
12     }
13     printf (" %d! is %d", n,factorial);
14     return 0;
15 }
```

```
/tmp/IsGVrrywhK.o
enter n 10
10! is 3628800
```

```
C: > Users > SOMESH > Documents > coding > c > C som.c > main()
```

```
1 // Q6) C Program to Find Factorial of a Number
2
3
4 # include <stdio.h>
5 int main (){
6     int n ,fac = 1;
7     printf (" enter n : ");
8     scanf ("%d", &n);
9     int i =1 ;
10    while ( i <= n ){
11        fac = fac * i;
12        i++;
13    }
14    printf (" %d! is %d", n, fac);
15    return 0;
16 }
```

PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ;
enter n : 6
6! is 720
PS C:\Users\SOMESH\Documents\coding\c>
```

C mulmat.c.c C som.c C code.c X C samosa.c C ▷ ⚡ ... PROBLEMS OUTPUT DEBUG CONSOLE

```
C:\Users\SOMESH\Documents\coding>c>C code.c>main()
1 // 2) C Program to Find Largest Element of an Array
2
3 #include <stdio.h>
4
5 int main() {
6
7     int n;
8     printf ("enter n (n<10): ");
9     scanf ("%d",&n);
10
11     int A [100] ;
12
13     for (int i = 0; i < n ; i++ ){
14         printf ("element %d : ",i+1);
15         scanf("%d",&A[i]);
16     }
17     int max = A[0];
18     for ( int i =0 ;i< n; i++){
19         if (A[i]> max){
20             max = A[i];
21         }
22     }
23     printf ("largest element of array is %d",max);
24     return 0;
25 }
26
```

PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding'
PS C:\Users\SOMESH\Documents\coding>
enter n (n<10): 4
element 1 : 23
element 2 : 46
element 3 : 52
element 4 : 74
largest element of array is 74
PS C:\Users\SOMESH\Documents\coding>

The screenshot shows a code editor interface with a dark theme. On the left, there are tabs for multiple files: mulmat.c.c, som.c, code.c (which is the active tab), and samosa.c. The main area displays the code for 'code.c'.

```
C mulmat.c.c    C som.c      C code.c  X  C samosa.c  C ▶ ⓘ ... PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL  
C: > Users > SOMESH > Documents > coding > c > C code.c > main()  
1 // 2) C Program to Find smallest Element of an Array  
2  
3 #include <stdio.h>  
4  
5 int main() {  
6  
7     int n;  
8     printf ("enter n (n<10): ");  
9     scanf ("%d",&n);  
10  
11     int A [100] ;  
12  
13     for (int i = 0; i < n ; i++ ){  
14         printf ("element %d : ",i+1);  
15         scanf("%d",&A[i]);  
16     }  
17     int min = A[0];  
18     for ( int i =0 ;i< n; i++){  
19         if (A[i]< min){  
20             min = A[i];  
21         }  
22     }  
23     printf ("smallest element of array is %d",min);  
24     return 0;  
25 }  
26
```

The output window on the right shows the terminal session:

```
PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c\out'  
PS C:\Users\SOMESH\Documents\coding\c\out> enter n (n<10): 5  
element 1 : 2  
element 2 : 1  
element 3 : 6  
element 4 : 42  
element 5 : 51  
smallest element of array is 1  
PS C:\Users\SOMESH\Documents\coding\c\out>
```



```
C:\> Users > SOMESH > Documents > coding > c > C som.c > main()
1  /*
2
3  Q13) C program to print equilateral triangle or pyramid star pattern
4  *
5  * *
6  * * * *
7  * * * * *
8
9  */
10
11
12 # include <stdio.h>
13 int main (){
14 for (int i = 1 ; i <=4 ; i++){
15
16     for ( int j = 1 ; j <= i ; j++){
17         printf ("*");
18     }
19     printf ("\n");
20 }
21
22 return 0;
23 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\SOMESH> cd "c:\Users\SOMESH\Documents\coding\c\" ; if ($?) { gcc som.c -o som } ; if ($?) { .\som }
*
**
***
****
```

PS C:\Users\SOMESH\Documents\coding\c>

first.cpp

C som.c



Untitled-3

Settings

C rough.c

C:\> Users > SOMESH > Documents > coding > c > C som.c > main()

```
1 // Q8) C Program to Display Fibonacci Sequence
2
3 // Fibonacci Sequence : 0 1 1 2 3 5 8 13 21 . . . .
4 # include <stdio.h>
5 int main (){
6     int n,a=0,b =1 ,c ;
7     printf ("enter n : ");
8     scanf ("%d", &n);
9     int i = 1 ;
10    while ( i <= n){
11        printf ("%d ",a);
12        c = a+b ;
13        a = b ;
14        b = c;
15        i++;
16    }
17
18    return 0;
19 }
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```
PS C:\Users\SOMESH> cd "C:\Users\SOMESH\Documents\coding\c\" ; if ($?) { gcc som.c
enter n : 10
0 1 1 2 3 5 8 13 21 34
PS C:\Users\SOMESH\Documents\coding\c>
```

The screenshot shows a code editor interface with multiple tabs at the top. The active tab is 'apple.c'. To the right of the tabs is a navigation bar with icons for back, forward, search, and other file operations. Below the tabs, the file path is displayed as ':> Users > SOMESH > Documents > coding > c > apple.c > main()'.

The code itself is a C program. It includes standard input-output headers and defines two functions: `hcf` and `lcm`. The `hcf` function calculates the Greatest Common Divisor (GCD) of two numbers using the Euclidean algorithm. The `lcm` function calculates the Least Common Multiple (LCM) of two numbers using the formula  $\text{lcm}(a, b) = \frac{|a \cdot b|}{\text{hcf}(a, b)}$ . The `main` function prompts the user to enter two numbers, calculates their HCF and LCM, and then prints the results.

```
mulmat.c.c    C som.c    C code.c    C apple.c    C samosa.c    ⌂ ⌃ ⌚ ...    PROBLEMS    OUTPUT    DEBUG C
::> Users > SOMESH > Documents > coding > c > C apple.c > main()
1 #include <stdio.h>
2
3 // Function to calculate the HCF (GCD) of two numbers
4 int hcf(int a, int b) {
5     if (b == 0)
6         return a;
7     return hcf(b, a % b);
8 }
9
10 // Function to calculate the LCM of two numbers
11 int lcm(int a, int b) {
12     return (a * b) / hcf(a, b);
13 }
14
15 int main() {
16     int num1, num2;
17
18     // Input two numbers from user
19     printf("Enter two numbers:\n ");
20     scanf("%d %d", &num1, &num2);
21
22     // Calculate and print HCF and LCM
23     printf("HCF of %d and %d is: %d\n", num1, num2, hcf(num1, num2));
24     printf("LCM of %d and %d is: %d\n", num1, num2, lcm(num1, num2));
25
26     return 0;
27 }
28
```

On the right side of the editor, there is a terminal window showing the command-line interface. It starts with 'PS C:\Users\SOMESH> cd 'c'; then it enters the directory and runs the program with inputs '20' and '50'. The output shows the HCF and LCM of 20 and 50.

```
PS C:\Users\SOMESH> cd 'c';
PS C:\Users\SOMESH\Documents\coding\c> Enter two numbers:
20
50
HCF of 20 and 50 is: 10
LCM of 20 and 50 is: 100
PS C:\Users\SOMESH\Documents\coding\c>
```

C: som.c    C: code.c    C: apple.c    ●    ▶ ⌂ ...

C: > Users > SOMESH > Documents > coding > c > C: apple.c > ...

```
1 // liner search
2
3 #include <stdio.h>
4
5 int main() {
6
7     int n, A[100];
8     printf("enter n :");
9     scanf("%d",&n);
10    for (int i = 0; i<n ; i++){
11        printf("element %d :",i+1);
12        scanf ("%d",&A[i]);
13    }
14    int key;
15    printf("enter key :");
16    scanf("%d",&key);
17
18    for (int i =0;i <n ; i++){
19        if (key == A[i]){
20            printf("key is found at %d",i);
21            return 0;
22        }
23    }
24    printf ("key noy found");
25
26    return 0;
27 }
```

PROBLEMS    OUTPUT    DEBUG CONSOLE

```
PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c'
PS C:\Users\SOMESH\Documents\coding\c> enter n :10
element 1 :56
element 2 :85
element 3 :49
element 4 :35
element 5 :46
element 6 :75
element 7 :215
element 8 :26
element 9 :35
element 10 :2
enter key :215
key is found at 6
PS C:\Users\SOMESH\Documents\coding\c> PS C:\Users\SOMESH\Documents\coding\c> enter n : 3
element 1 :56
element 2 :89
element 3 :65
enter key :5
key noy found
PS C:\Users\SOMESH\Documents\coding\c>
```

```
 som.c    code.c    apple.c    PROBLEMS    OUTPUT    DEBUG    COM  
C: > Users > SOMESH > Documents > coding > c > C apple.c > main()  
1 // liner search  
2  
3 #include <stdio.h>  
4  
5 int main() {  
6  
7     int A[10] = { 1,5,50,64,26,56,6,65,96,4} ;  
8  
9  
10    int key;  
11    printf("enter key :");  
12    scanf("%d",&key);  
13  
14    for (int i =0;i <10 ; i++){  
15        if (key == A[i]){  
16            printf("key is found at %d",i);  
17            return 0;  
18        }  
19    }  
20    printf ("key noy found");  
21  
22    return 0;  
23 }
```

```
PS C:\Users\SOMESH> cd 'c:\U  
PS C:\Users\SOMESH\Documents  
enter key :56  
key is found at 5  
PS C:\Users\SOMESH\Documents  
PS C:\Users\SOMESH\Documents  
enter key :100  
key noy found  
PS C:\Users\SOMESH\Documents
```

```
C:\> Users > SOMESH > Documents > coding > c > apple.c > search(int [], int, int)
1 #include <stdio.h>
2 int i;
3 int search(int A[], int n, int key) {
4     for (i = 0; i < n; i++) {
5         if (key == A[i])
6             return i;
7     }
8 }
9
10 int main() {
11     int n;
12     printf("Enter n: ");
13     scanf("%d", &n);
14
15     int A[100];
16     for (int i = 0; i < n; i++) {
17         printf("Enter element %d: ", i + 1);
18         scanf("%d", &A[i]);
19     }
20
21     int key;
22     printf("Enter key: ");
23     scanf("%d", &key);
24
25     search(A, n, key);
26     if (key == A[i]){
27         printf (" key found at %d",i);
28         return 0;
29     }
30     printf("key not found");
31
32     return 0;
33 }
34
```

```
PS C:\Users\SOMESH> cd 'c:\Users\SOMESH\Documents\coding\c'
PS C:\Users\SOMESH\Documents\coding\c> search
Enter n: 5
Enter element 1: 36
Enter element 2: 46
Enter element 3: 25
Enter element 4: 6542
Enter element 5: 65
Enter key: 25
key found at 2
PS C:\Users\SOMESH\Documents\coding\c>
```