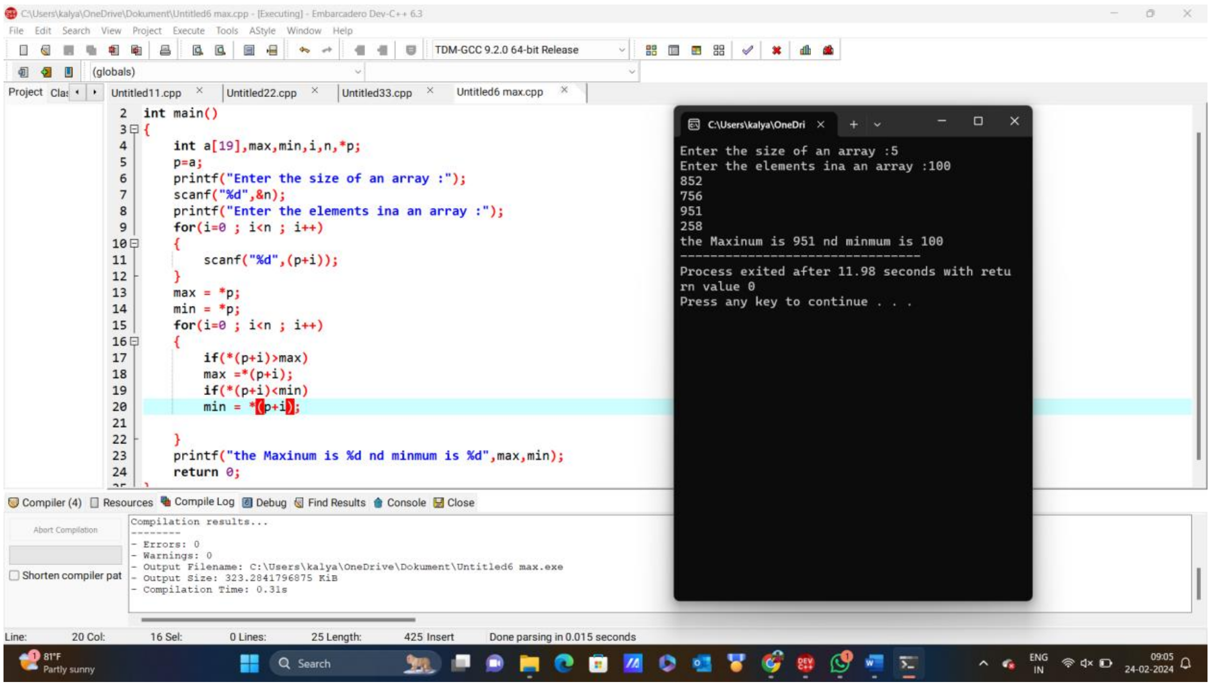
C programming

Day – 4 class work:

1. Write a program to find the maximum and minimum values in an array using pointers.

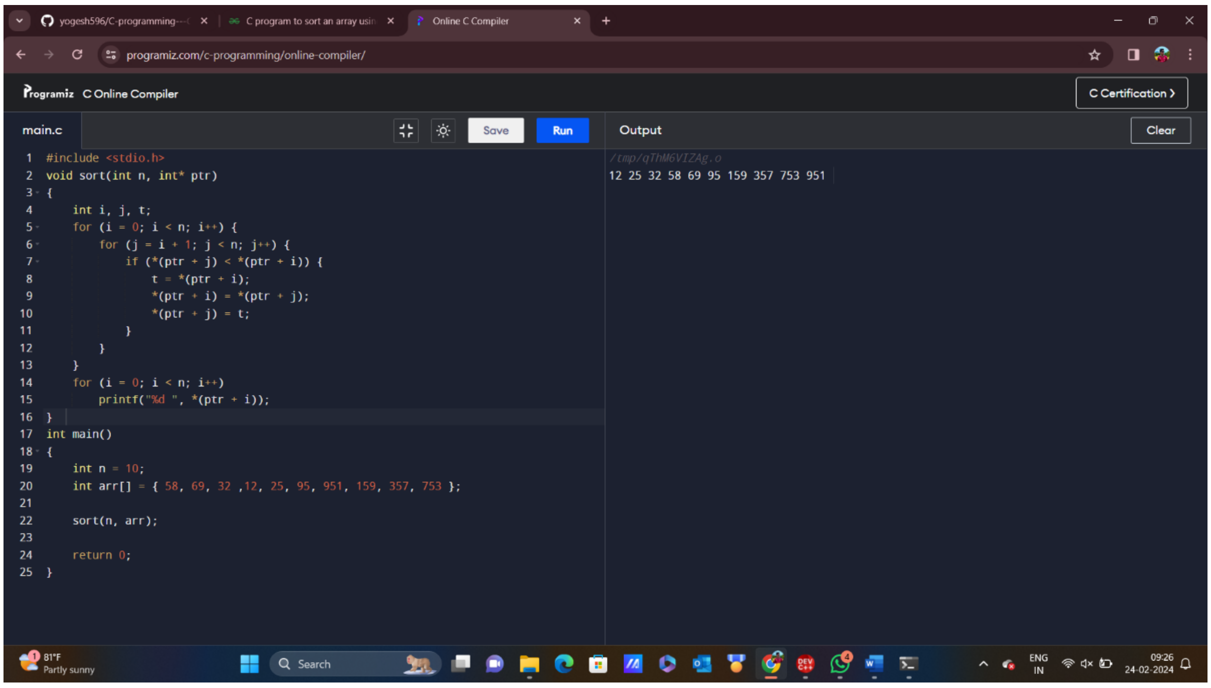


```c
int main()
{
    int a[19],max,min,i,n,*p;
    p=a;
    printf("Enter the size of an array :");
    scanf("%d",&n);
    printf("Enter the elements ina an array :");
    for(i=0 ; i<n ; i++)
    {
        scanf("%d",(p+i));
    }
    max = *p;
    min = *p;
    for(i=0 ; i<n ; i++)
    {
        if(*(p+i)>max)
        max =*(p+i);
        if(*(p+i)<min)
        min = *(p+i);

    }
    printf("the Maxinum is %d nd minmum is %d",max,min);
    return 0;
```

```
Enter the size of an array :5
Enter the elements ina an array :100
852
756
951
258
the Maxinum is 951 nd minmum is 100
--------------------------------
Process exited after 11.98 seconds with retu
rn value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\Untitled6 max.exe
- Output Size: 323.2841796875 KiB
- Compilation Time: 0.31s
```

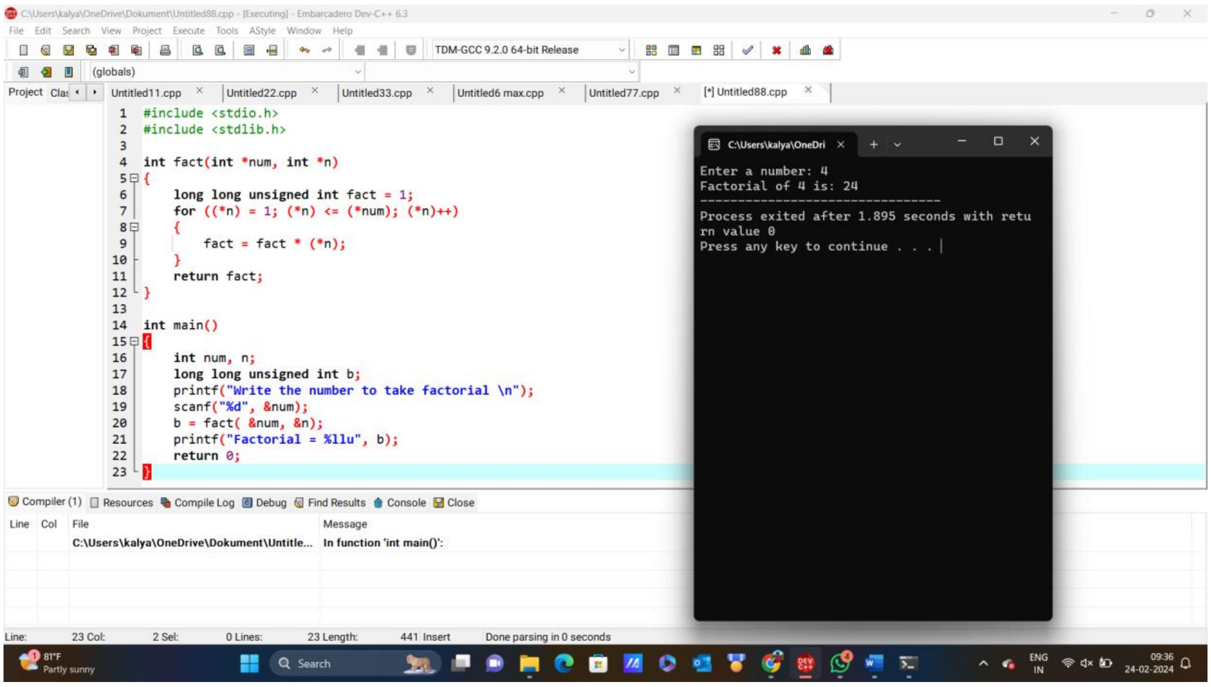
2.Write a program to sort an array of integers in ascending order using pointers..



```c
#include <stdio.h>
void sort(int n, int* ptr)
{
    int i, j, t;
    for (i = 0; i < n; i++) {
        for (j = i + 1; j < n; j++) {
            if (*(ptr + j) < *(ptr + i)) {
                t = *(ptr + i);
                *(ptr + i) = *(ptr + j);
                *(ptr + j) = t;
            }
        }
    }
    for (i = 0; i < n; i++)
        printf("%d ", *(ptr + i));
}
int main()
{
    int n = 10;
    int arr[] = { 58, 69, 32 ,12, 25, 95, 951, 159, 357, 753 };

    sort(n, arr);

    return 0;
}
```

```
/tmp/qThM6VIZAg.o
12 25 32 58 69 95 159 357 753 951
```

3.Write a program to find the factorial of a number using pointers.

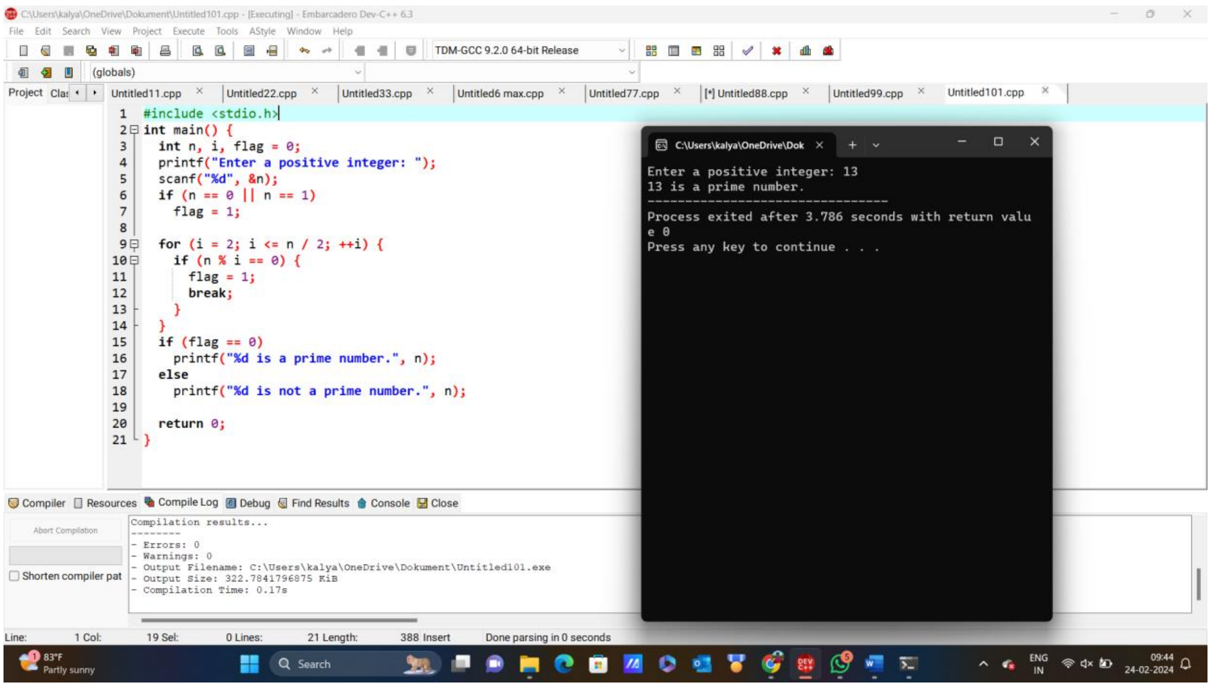


```
#include <stdio.h>
#include <stdlib.h>

int fact(int *num, int *n)
{
     long long unsigned int fact = 1;
     for ((*n) = 1; (*n) <= (*num); (*n)++)
     {
         fact = fact * (*n);
     }
     return fact;
}

int main()
{
     int num, n;
     long long unsigned int b;
     printf("Write the number to take factorial \n");
     scanf("%d", &num);
     b = fact( &num, &n);
     printf("Factorial = %llu", b);
     return 0;
}
```

```
Enter a number: 4
Factorial of 4 is: 24
--------------------------------
Process exited after 1.895 seconds with retu
rn value 0
Press any key to continue . . .
```

```
Line  Col  File                                        Message
           C:\Users\kalya\OneDrive\Dokument\Untitle...  In function 'int main()':
```

4.Write a program to check if a given number is prime using pointers.

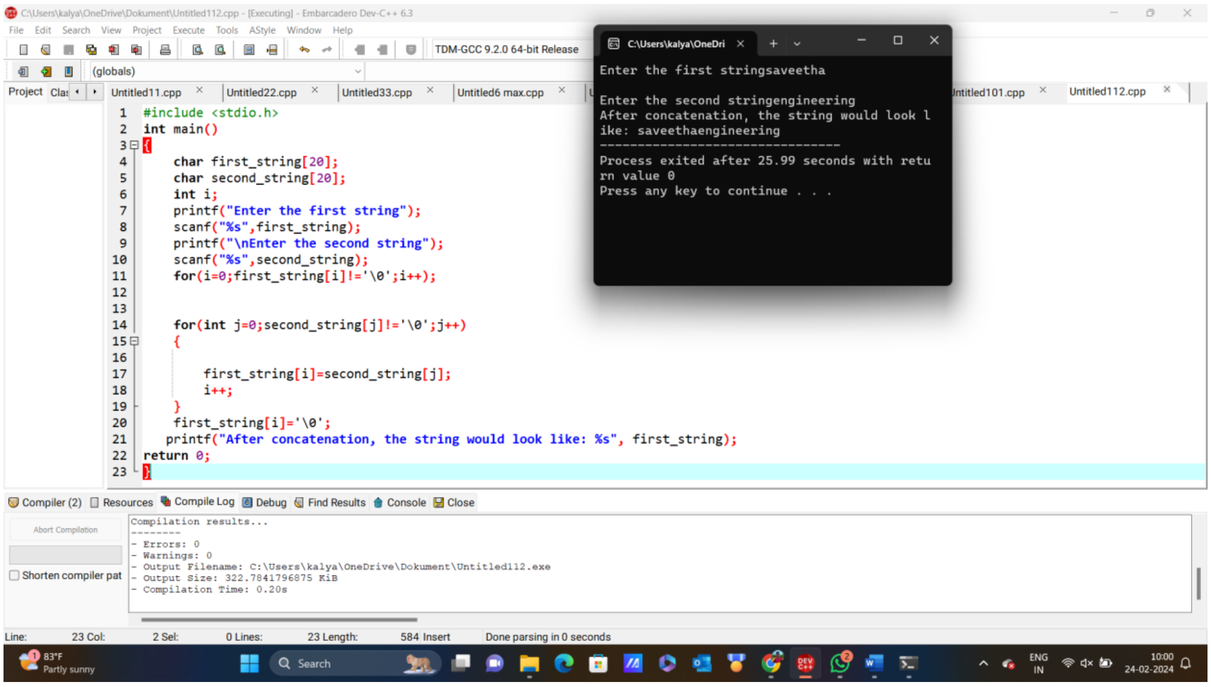


```
#include <stdio.h>
int main() {
  int n, i, flag = 0;
  printf("Enter a positive integer: ");
  scanf("%d", &n);
  if (n == 0 || n == 1)
    flag = 1;

  for (i = 2; i <= n / 2; ++i) {
    if (n % i == 0) {
      flag = 1;
      break;
    }
  }
  if (flag == 0)
    printf("%d is a prime number.", n);
  else
    printf("%d is not a prime number.", n);

  return 0;
}
```

```
Enter a positive integer: 13
13 is a prime number.
--------------------------------
Process exited after 3.786 seconds with return valu
e 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\Untitled101.exe
- Output Size: 322.7841796875 KiB
- Compilation Time: 0.17s
```

5.Write a program to concatenate two strings using pointers.



```c
#include <stdio.h>
int main()
{
    char first_string[20];
    char second_string[20];
    int i;
    printf("Enter the first string");
    scanf("%s",first_string);
    printf("\nEnter the second string");
    scanf("%s",second_string);
    for(i=0;first_string[i]!='\0';i++);


    for(int j=0;second_string[j]!='\0';j++)
    {

        first_string[i]=second_string[j];
        i++;
    }
    first_string[i]='\0';
   printf("After concatenation, the string would look like: %s", first_string);
return 0;
}
```

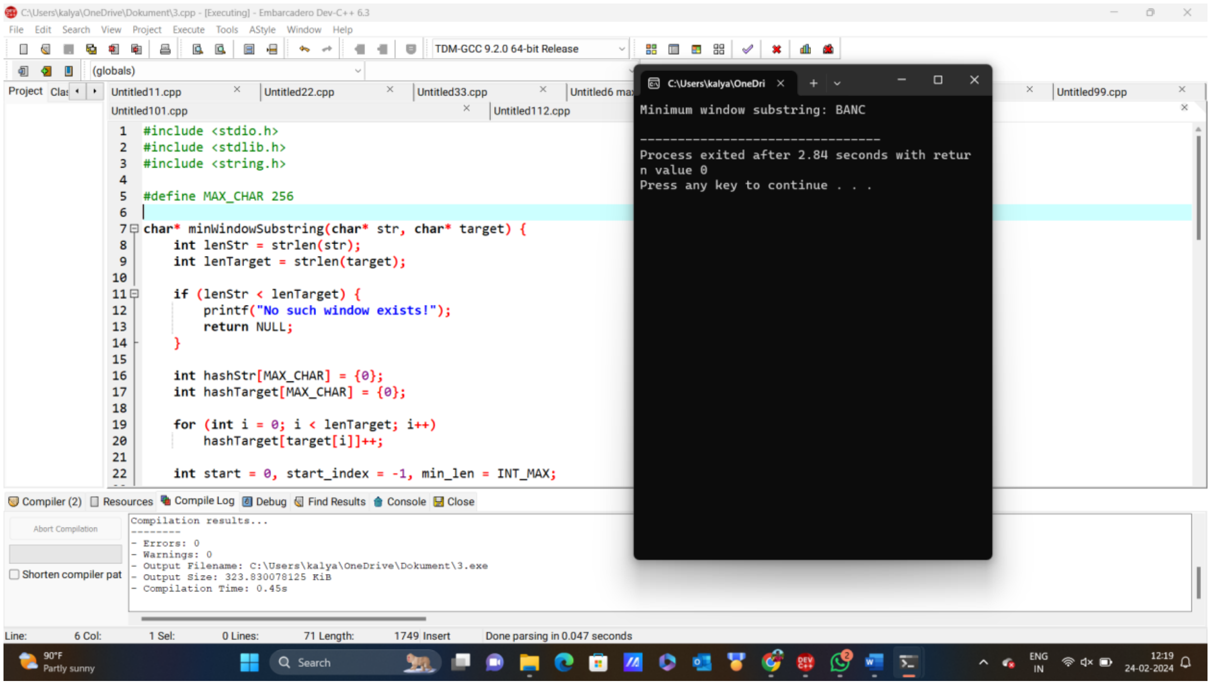
```
Enter the first stringsaveetha

Enter the second stringengineering
After concatenation, the string would look l
ike: saveethaengineering
--------------------------------
Process exited after 25.99 seconds with retu
rn value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\Untitled112.exe
- Output Size: 322.7841796875 KiB
- Compilation Time: 0.20s
```

ANALYTICAL SESSION

Day – 4

1. Minimum window size.

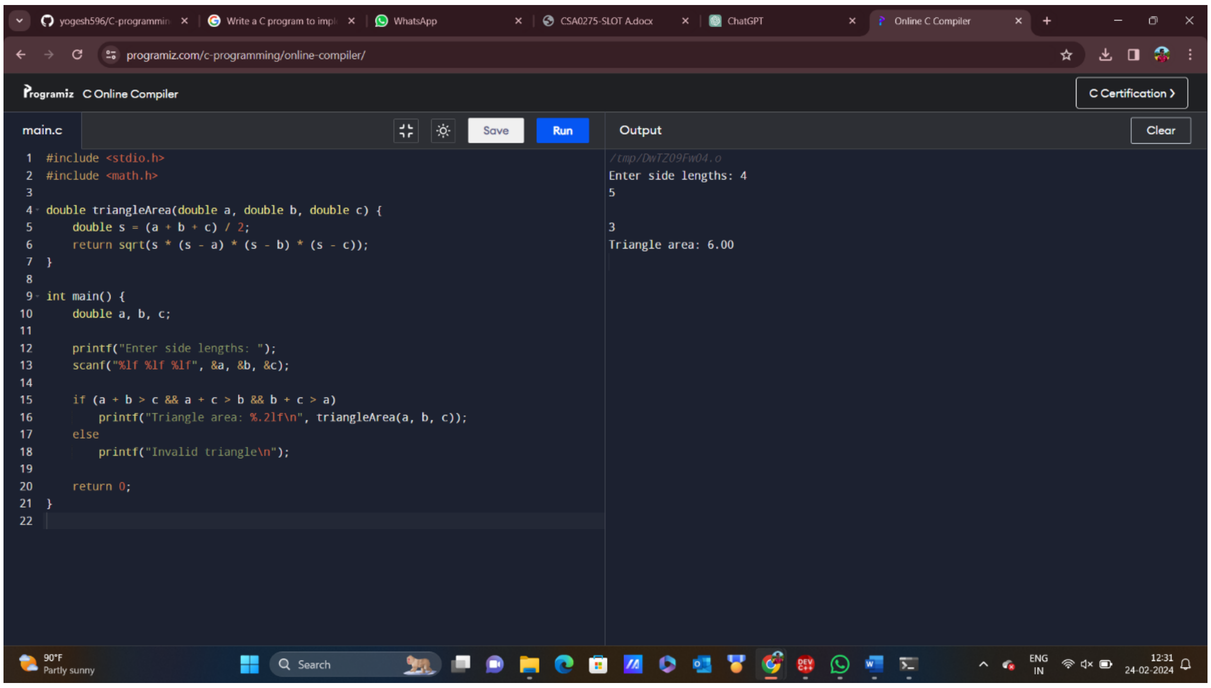


```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

#define MAX_CHAR 256

char* minWindowSubstring(char* str, char* target) {
    int lenStr = strlen(str);
    int lenTarget = strlen(target);

    if (lenStr < lenTarget) {
        printf("No such window exists!");
        return NULL;
    }

    int hashStr[MAX_CHAR] = {0};
    int hashTarget[MAX_CHAR] = {0};

    for (int i = 0; i < lenTarget; i++)
        hashTarget[target[i]]++;

    int start = 0, start_index = -1, min_len = INT_MAX;
```

```
Minimum window substring: BANC

--------------------------------
Process exited after 2.84 seconds with retur
n value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\3.exe
- Output Size: 323.830078125 KiB
- Compilation Time: 0.45s
```

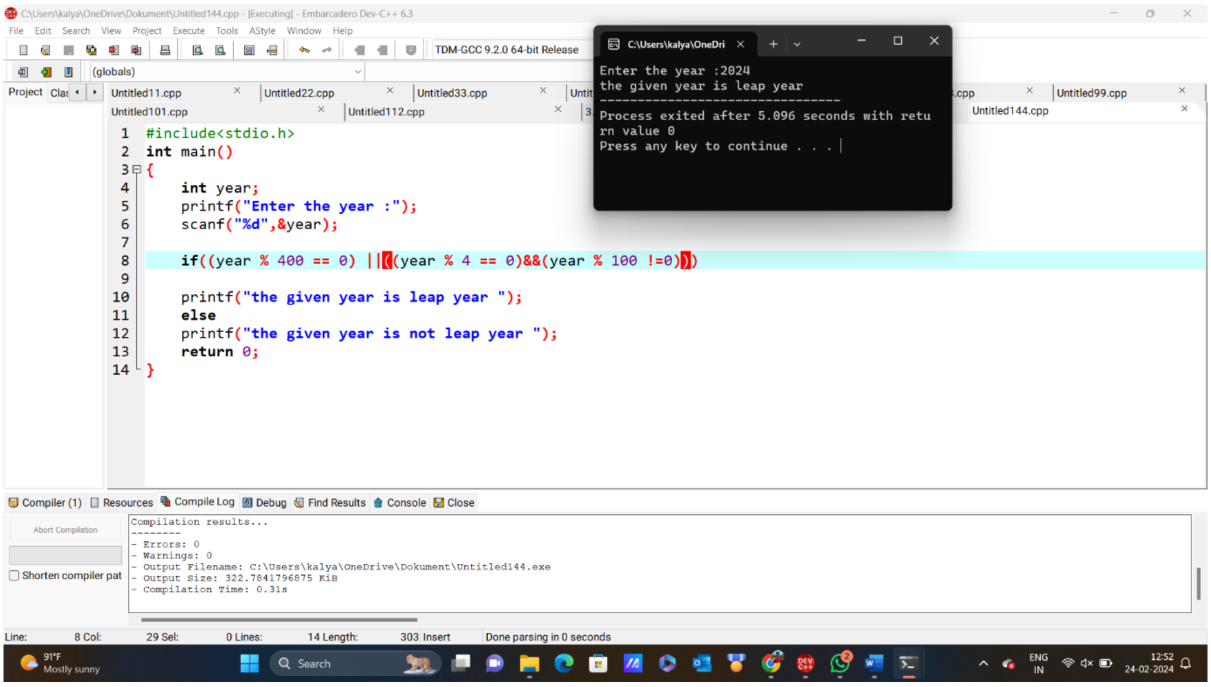
2. area of triangle.



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

double triangleArea(double a, double b, double c) {
    double s = (a + b + c) / 2;
    return sqrt(s * (s - a) * (s - b) * (s - c));
}

int main() {
    double a, b, c;

    printf("Enter side lengths: ");
    scanf("%lf %lf %lf", &a, &b, &c);

    if (a + b > c && a + c > b && b + c > a)
        printf("Triangle area: %.2lf\n", triangleArea(a, b, c));
    else
        printf("Invalid triangle\n");

    return 0;
}
```

```
/tmp/DwTZ09Fw04.o
Enter side lengths: 4
5

3
Triangle area: 6.00
```

3.check weather given year is leap year or not.

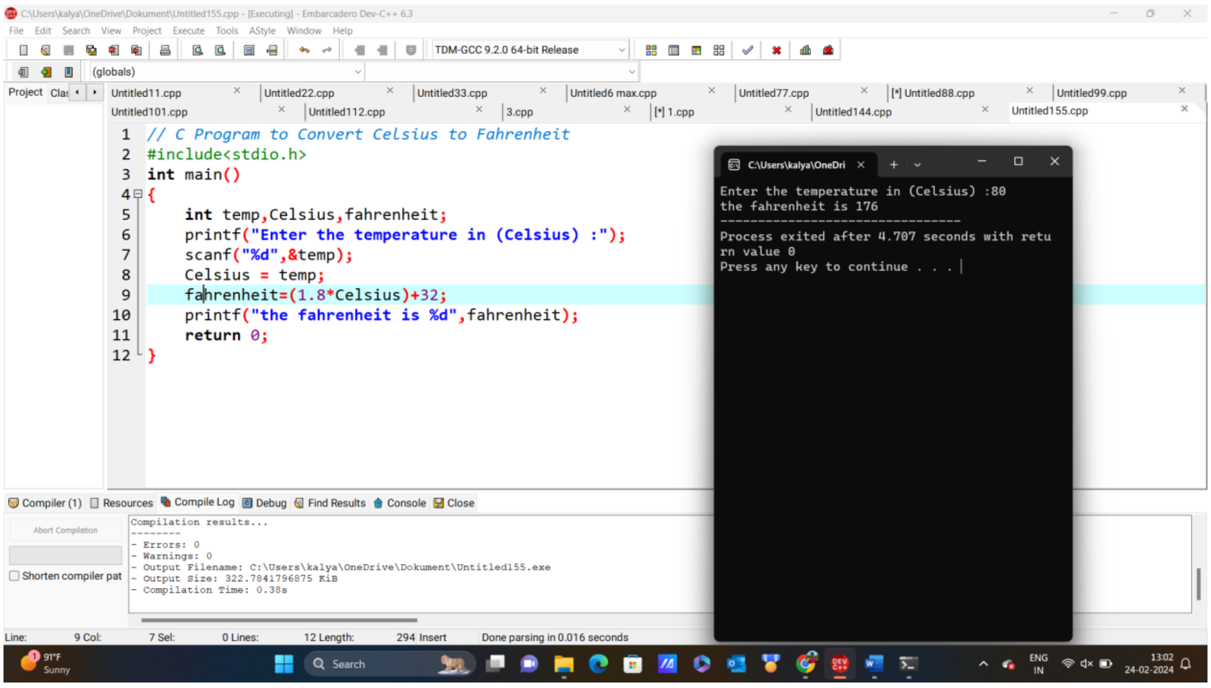


```c
#include<stdio.h>
int main()
{
    int year;
    printf("Enter the year :");
    scanf("%d",&year);

    if((year % 400 == 0) ||((year % 4 == 0)&&(year % 100 !=0)))

    printf("the given year is leap year ");
    else
    printf("the given year is not leap year ");
    return 0;
}
```

```
Enter the year :2024
the given year is leap year
--------------------------------
Process exited after 5.096 seconds with retu
rn value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\Untitled144.exe
- Output Size: 322.7841796875 KiB
- Compilation Time: 0.31s
```

4. cel to frheit

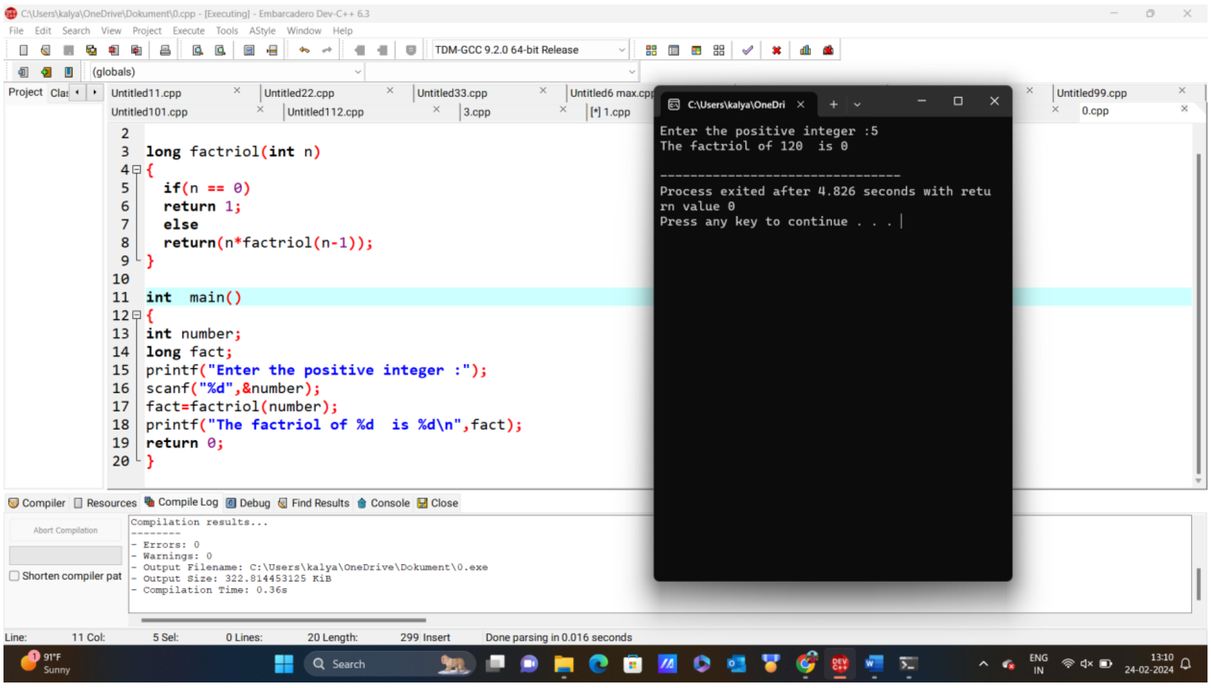


```c
// C Program to Convert Celsius to Fahrenheit
#include<stdio.h>
int main()
{
    int temp,Celsius,fahrenheit;
    printf("Enter the temperature in (Celsius) :");
    scanf("%d",&temp);
    Celsius = temp;
    fahrenheit=(1.8*Celsius)+32;
    printf("the fahrenheit is %d",fahrenheit);
    return 0;
}
```

```
Enter the temperature in (Celsius) :80
the fahrenheit is 176
--------------------------------
Process exited after 4.707 seconds with retu
rn value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\Untitled155.exe
- Output Size: 322.7841796875 KiB
- Compilation Time: 0.38s
```

5.factriol of an number.

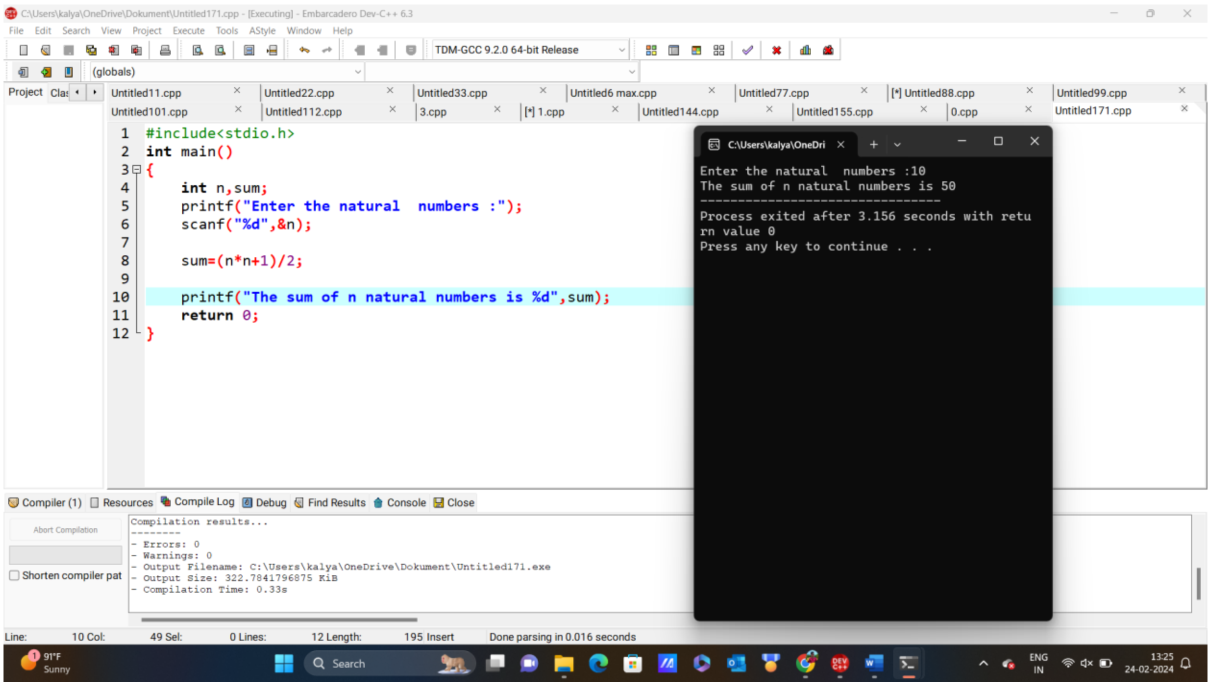


```c

long factriol(int n)
{
  if(n == 0)
  return 1;
  else
  return(n*factriol(n-1));
}

int  main()
{
int number;
long fact;
printf("Enter the positive integer :");
scanf("%d",&number);
fact=factriol(number);
printf("The factriol of %d  is %d\n",fact);
return 0;
}
```

```
Enter the positive integer :5
The factriol of 120  is 0

--------------------------------
Process exited after 4.826 seconds with retu
rn value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\0.exe
- Output Size: 322.814453125 KiB
- Compilation Time: 0.36s
```

6.sum of n natural numbers

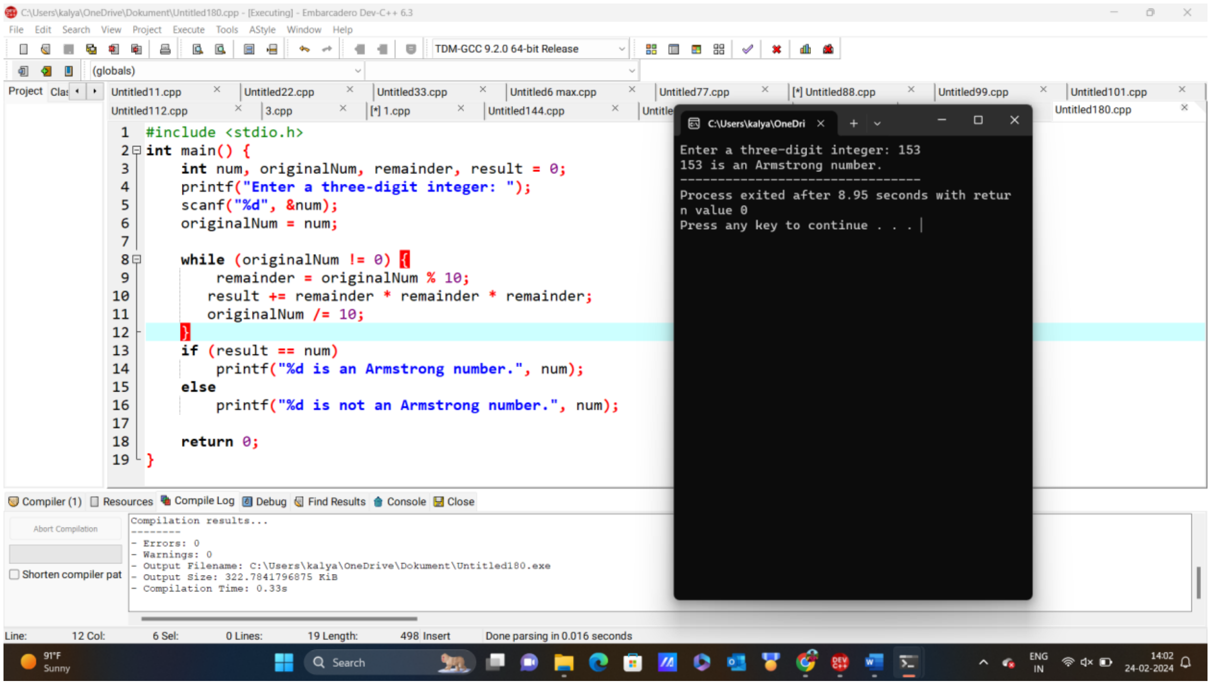

C:\Users\kalya\OneDrive\Dokument\Untitled171.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Compiler (1) Resources Compile Log Debug Find Results Console Close
Abort Compilation
Shorten compiler pat
Line: 10 Col: 49 Sel: 0 Lines: 12 Length: 195 Insert Done parsing in 0.016 seconds

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

	sum=(n*n+1)/2;

	printf("The sum of n natural numbers is %d",sum);
	return 0;
}
```

```
Enter the natural  numbers :10
The sum of n natural numbers is 50
--------------------------------
Process exited after 3.156 seconds with retu
rn value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\Untitled171.exe
- Output Size: 322.7841796875 KiB
- Compilation Time: 0.33s
```

7.Amstrong number

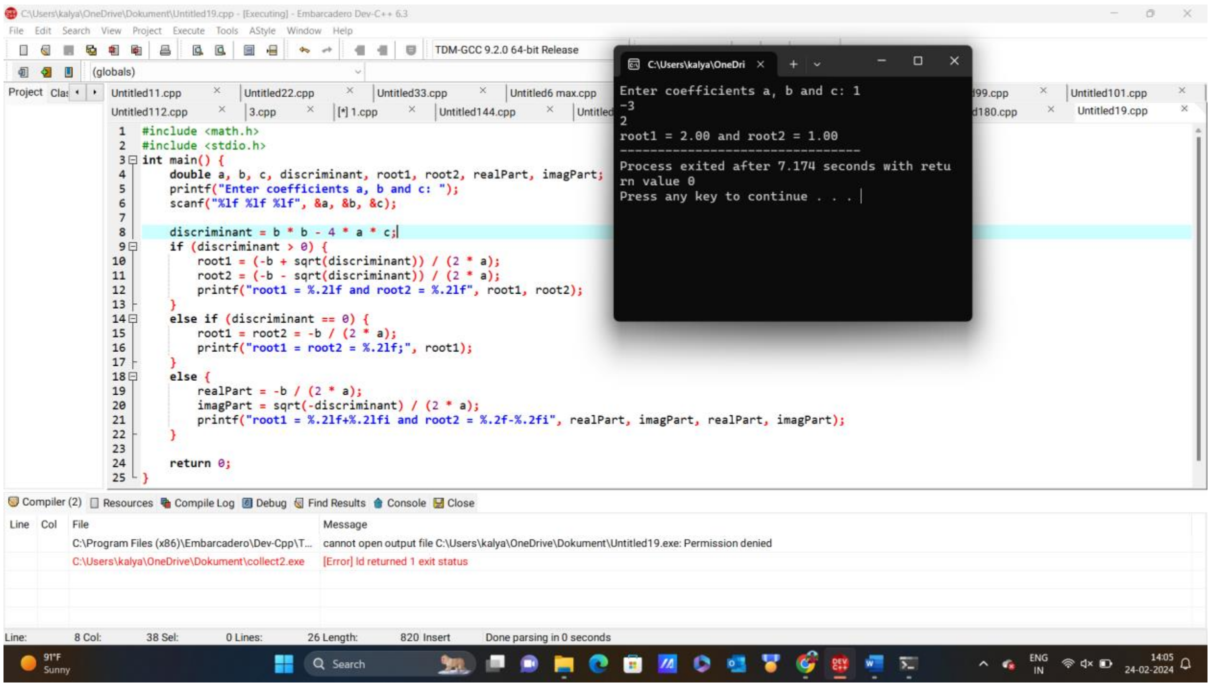

C:\Users\kalya\OneDrive\Dokument\Untitled180.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Compiler (1) Resources Compile Log Debug Find Results Console Close
Abort Compilation
Shorten compiler pat
Line: 12 Col: 6 Sel: 0 Lines: 19 Length: 498 Insert Done parsing in 0.016 seconds

```c
#include <stdio.h>
int main() {
    int num, originalNum, remainder, result = 0;
    printf("Enter a three-digit integer: ");
    scanf("%d", &num);
    originalNum = num;

    while (originalNum != 0) {
        remainder = originalNum % 10;
       result += remainder * remainder * remainder;
       originalNum /= 10;
    }
    if (result == num)
        printf("%d is an Armstrong number.", num);
    else
        printf("%d is not an Armstrong number.", num);

    return 0;
}
```

```
Enter a three-digit integer: 153
153 is an Armstrong number.
--------------------------------
Process exited after 8.95 seconds with retur
n value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\Untitled180.exe
- Output Size: 322.7841796875 KiB
- Compilation Time: 0.33s
```

8. roots of quadric equation

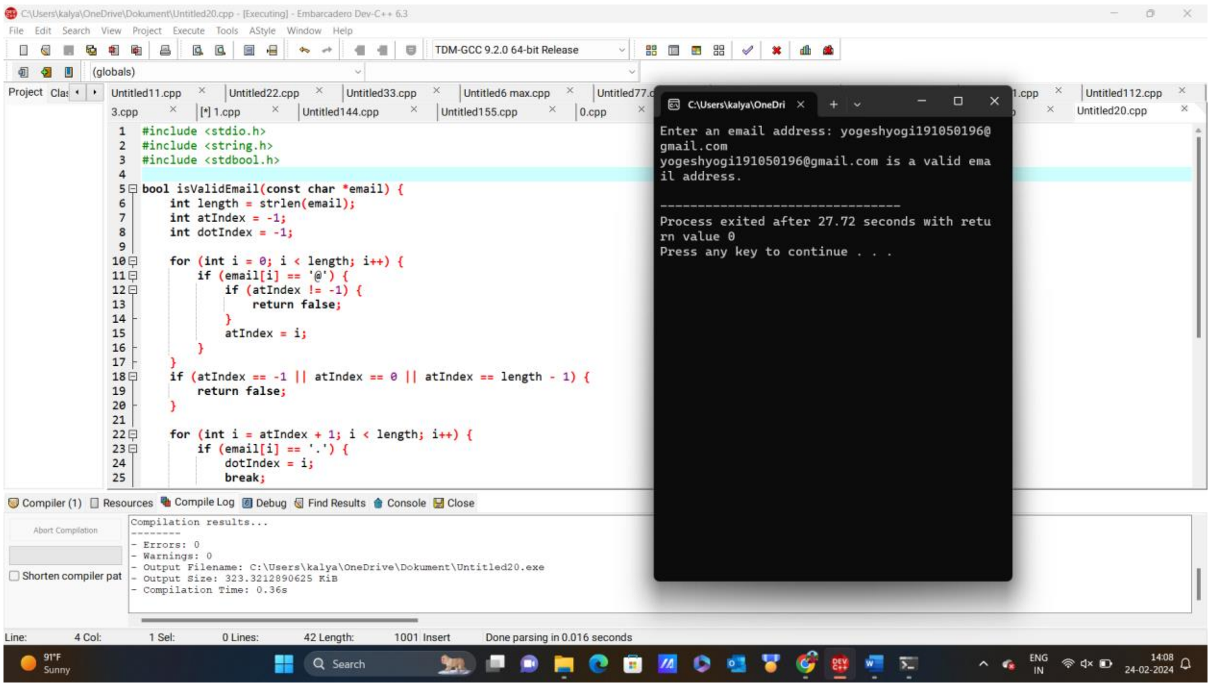


```c
#include <math.h>
#include <stdio.h>
int main() {
    double a, b, c, discriminant, root1, root2, realPart, imagPart;
    printf("Enter coefficients a, b and c: ");
    scanf("%lf %lf %lf", &a, &b, &c);

    discriminant = b * b - 4 * a * c;
    if (discriminant > 0) {
        root1 = (-b + sqrt(discriminant)) / (2 * a);
        root2 = (-b - sqrt(discriminant)) / (2 * a);
        printf("root1 = %.2lf and root2 = %.2lf", root1, root2);
    }
    else if (discriminant == 0) {
        root1 = root2 = -b / (2 * a);
        printf("root1 = root2 = %.2lf;", root1);
    }
    else {
        realPart = -b / (2 * a);
        imagPart = sqrt(-discriminant) / (2 * a);
        printf("root1 = %.2lf+%.2lfi and root2 = %.2f-%.2fi", realPart, imagPart, realPart, imagPart);
    }

    return 0;
}
```

```
Enter coefficients a, b and c: 1
-3
2
root1 = 2.00 and root2 = 1.00
--------------------------------
Process exited after 7.174 seconds with retu
rn value 0
Press any key to continue . . .
```

```
C:\Program Files (x86)\Embarcadero\Dev-Cpp\T...   cannot open output file C:\Users\kalya\OneDrive\Dokument\Untitled19.exe: Permission denied
C:\Users\kalya\OneDrive\Dokument\collect2.exe     [Error] ld returned 1 exit status
```

9.gmail verification

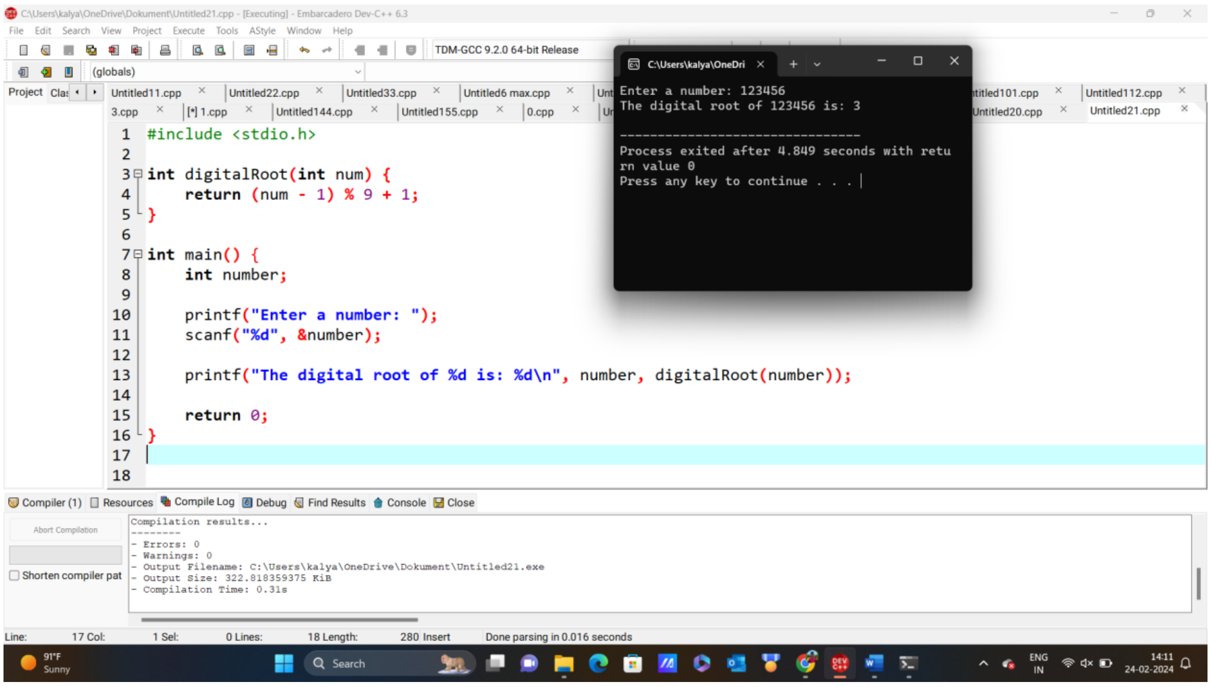


```c
#include <stdio.h>
#include <string.h>
#include <stdbool.h>

bool isValidEmail(const char *email) {
    int length = strlen(email);
    int atIndex = -1;
    int dotIndex = -1;

    for (int i = 0; i < length; i++) {
        if (email[i] == '@') {
            if (atIndex != -1) {
                return false;
            }
            atIndex = i;
        }
    }
    if (atIndex == -1 || atIndex == 0 || atIndex == length - 1) {
        return false;
    }

    for (int i = atIndex + 1; i < length; i++) {
        if (email[i] == '.') {
            dotIndex = i;
            break;
```

```
Enter an email address: yogeshyogi191050196@
gmail.com
yogeshyogi191050196@gmail.com is a valid ema
il address.

--------------------------------
Process exited after 27.72 seconds with retu
rn value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\Untitled20.exe
- Output Size: 323.3212890625 KiB
- Compilation Time: 0.36s
```

10.digits of roots

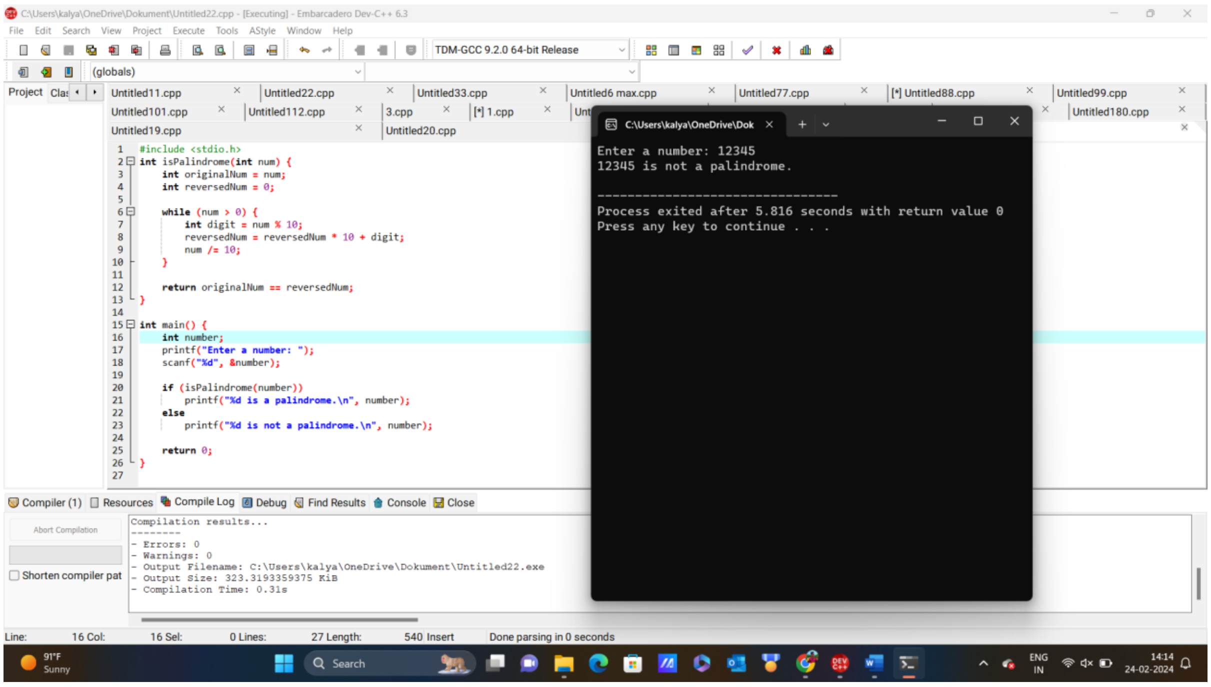


```c
#include <stdio.h>

int digitalRoot(int num) {
    return (num - 1) % 9 + 1;
}

int main() {
    int number;

    printf("Enter a number: ");
    scanf("%d", &number);

    printf("The digital root of %d is: %d\n", number, digitalRoot(number));

    return 0;
}
```

```
Enter a number: 123456
The digital root of 123456 is: 3

--------------------------------
Process exited after 4.849 seconds with retu
rn value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\Untitled21.exe
- Output Size: 322.818359375 KiB
- Compilation Time: 0.31s
```

11.paildrome



```c
#include <stdio.h>
int isPalindrome(int num) {
    int originalNum = num;
    int reversedNum = 0;

    while (num > 0) {
        int digit = num % 10;
        reversedNum = reversedNum * 10 + digit;
        num /= 10;
    }

    return originalNum == reversedNum;
}

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

    if (isPalindrome(number))
        printf("%d is a palindrome.\n", number);
    else
        printf("%d is not a palindrome.\n", number);

    return 0;
}
```

```
Enter a number: 12345
12345 is not a palindrome.

--------------------------------
Process exited after 5.816 seconds with return value 0
Press any key to continue . . .
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kalya\OneDrive\Dokument\Untitled22.exe
- Output Size: 323.3193359375 KiB
- Compilation Time: 0.31s
```