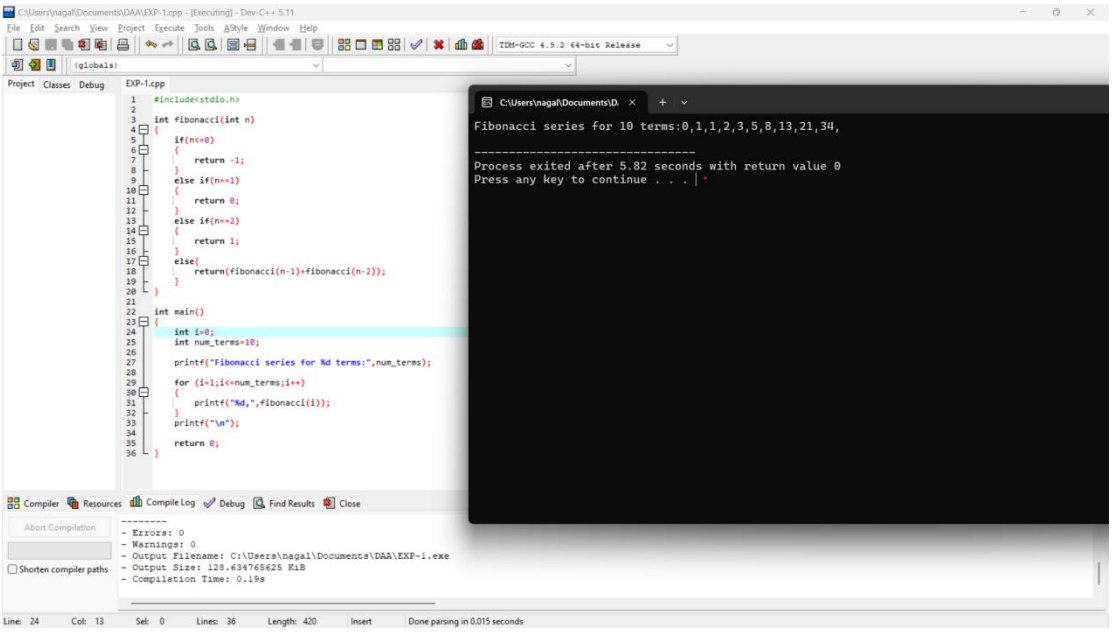
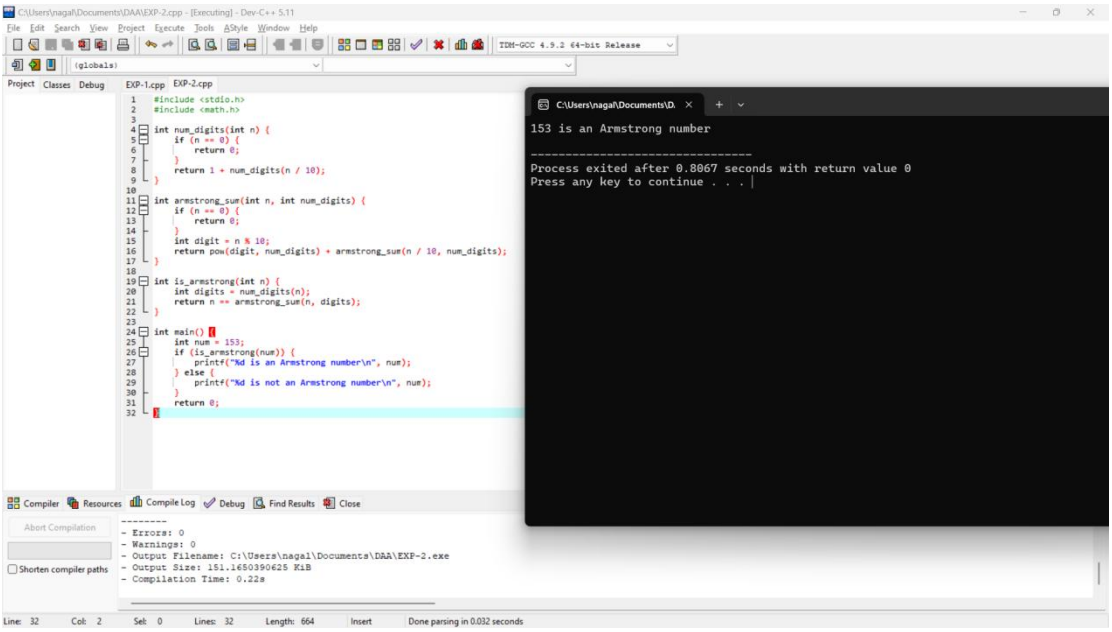
CSA0659-DESIGN AND ANALYSIS OF ALGORITHMS

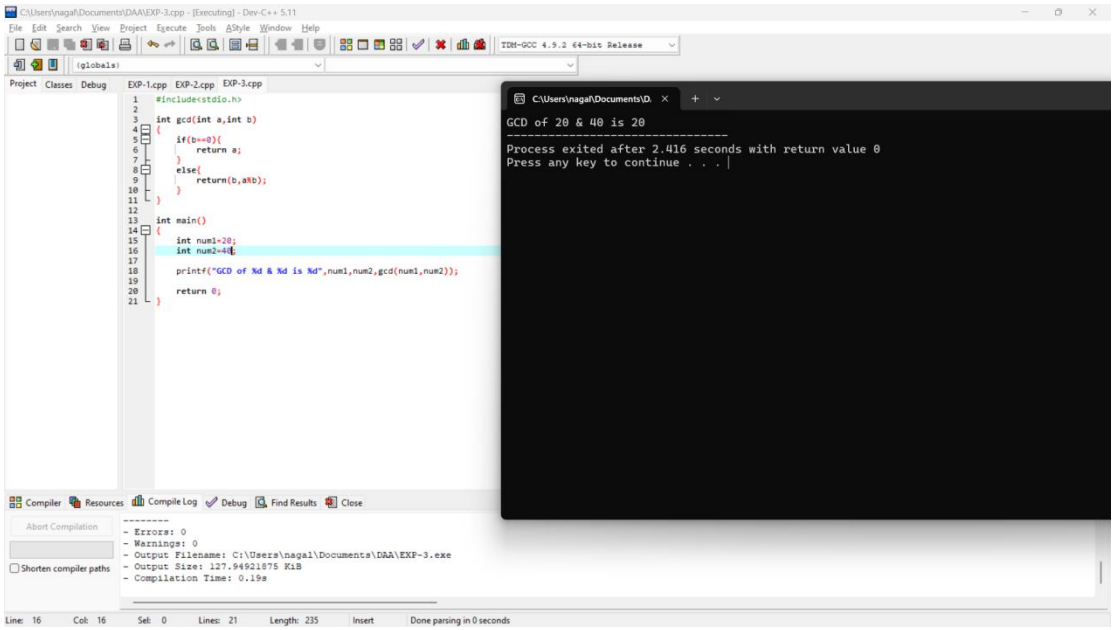
1.



2.



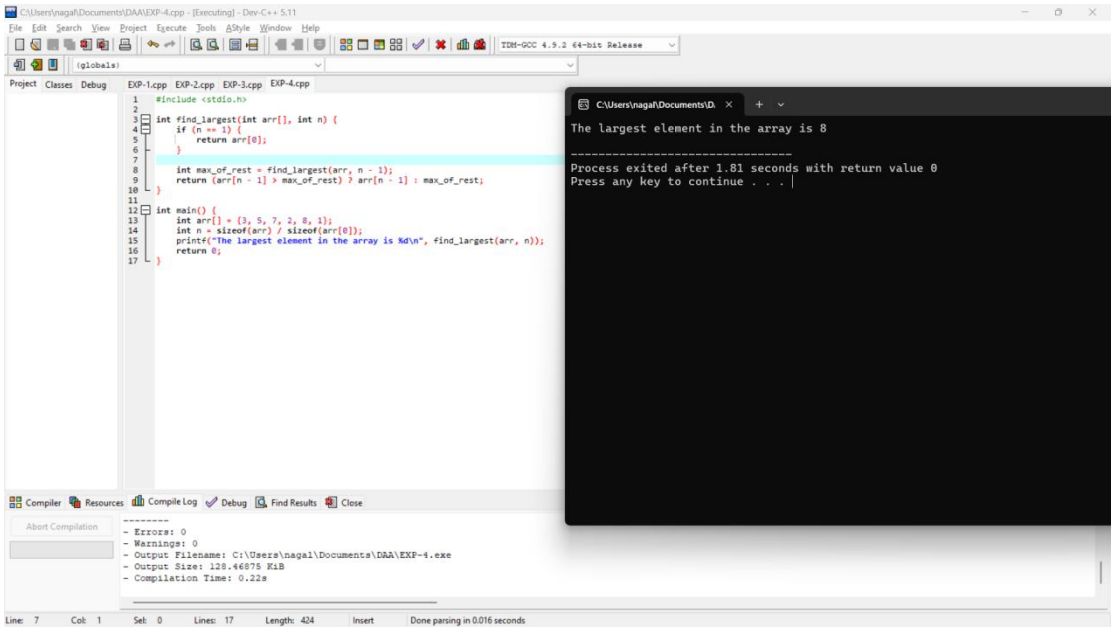
3.


C:\Users\nagal\Documents\DAA\EXP-3.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-1.cpp EXP-2.cpp EXP-3.cpp
#include<stdio.h>
int gcd(int a,int b)
{
if(b==0){
return a;
}
else{
return(b,a%b);
}
}
int main()
{
int num1=20;
int num2=40;
printf("GCD of %d & %d is %d",num1,num2,gcd(num1,num2));
return 0;
}
C:\Users\nagal\Documents\D.
GCD of 20 & 40 is 20

Process exited after 2.416 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-3.exe
- Output Size: 127.94921875 KiB
- Compilation Time: 0.19s
Line: 16 Col: 16 Sel: 0 Lines: 21 Length: 235 Insert Done parsing in 0 seconds

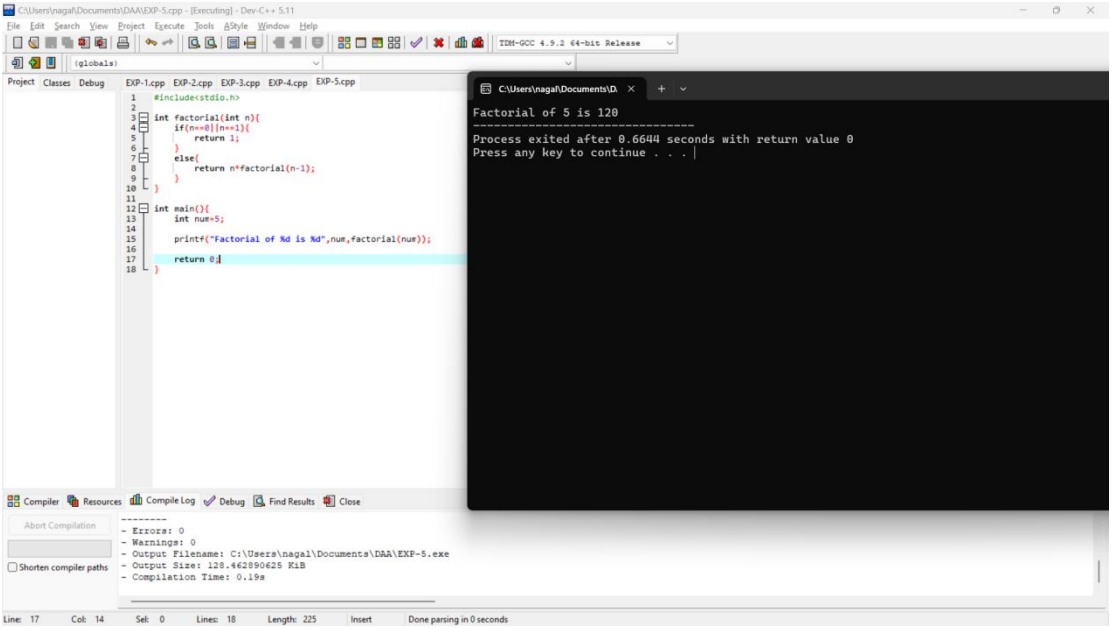
4.


C:\Users\nagal\Documents\DAA\EXP-4.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-1.cpp EXP-2.cpp EXP-3.cpp EXP-4.cpp
#include <stdio.h>
int find_largest(int arr[], int n) {
if (n == 1) {
return arr[0];
}
int max_of_rest = find_largest(arr, n - 1);
return (arr[n - 1] > max_of_rest) ? arr[n - 1] : max_of_rest;
}
int main() {
int arr[] = {3, 5, 7, 2, 8, 1};
int n = sizeof(arr) / sizeof(arr[0]);
printf("The largest element in the array is %d\n", find_largest(arr, n));
return 0;
}
C:\Users\nagal\Documents\D.
The largest element in the array is 8

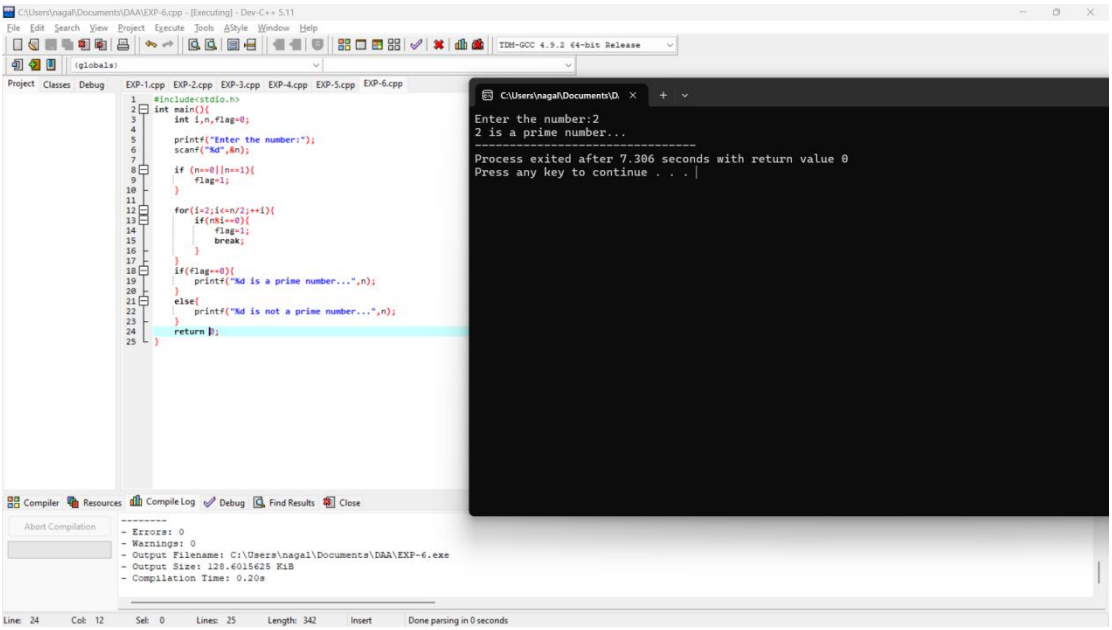
Process exited after 1.81 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-4.exe
- Output Size: 128.46875 KiB
- Compilation Time: 0.22s
Line: 7 Col: 1 Sel: 0 Lines: 17 Length: 424 Insert Done parsing in 0.016 seconds

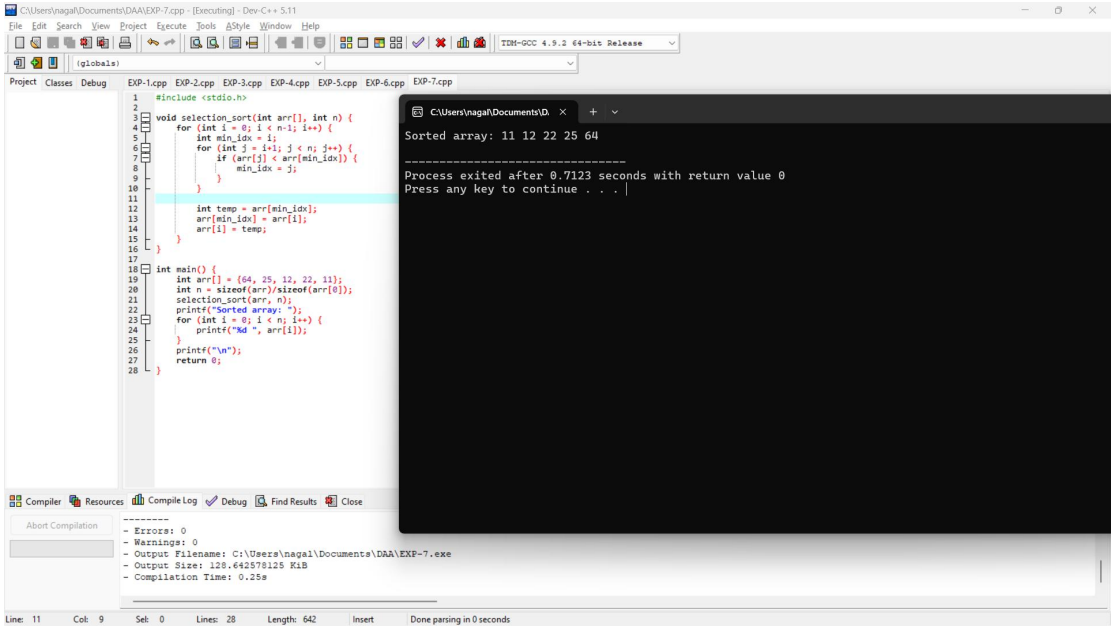
5.


C:\Users\nagal\Documents\DAA\EXP-5.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-1.cpp EXP-2.cpp EXP-3.cpp EXP-4.cpp EXP-5.cpp
#include<stdio.h>
int factorial(int n){
if(n==0||n==1){
return 1;
}
else{
return n*factorial(n-1);
}
}
int main(){
int num=5;
printf("Factorial of %d is %d",num,factorial(num));
return 0;
}
C:\Users\nagal\Documents\D
Factorial of 5 is 120
Process exited after 0.6644 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-5.exe
- Output Size: 128.462890625 KiB
- Compilation Time: 0.19s
Line: 17 Col: 14 Sel: 0 Lines: 18 Length: 225 Insert Done parsing in 0 seconds

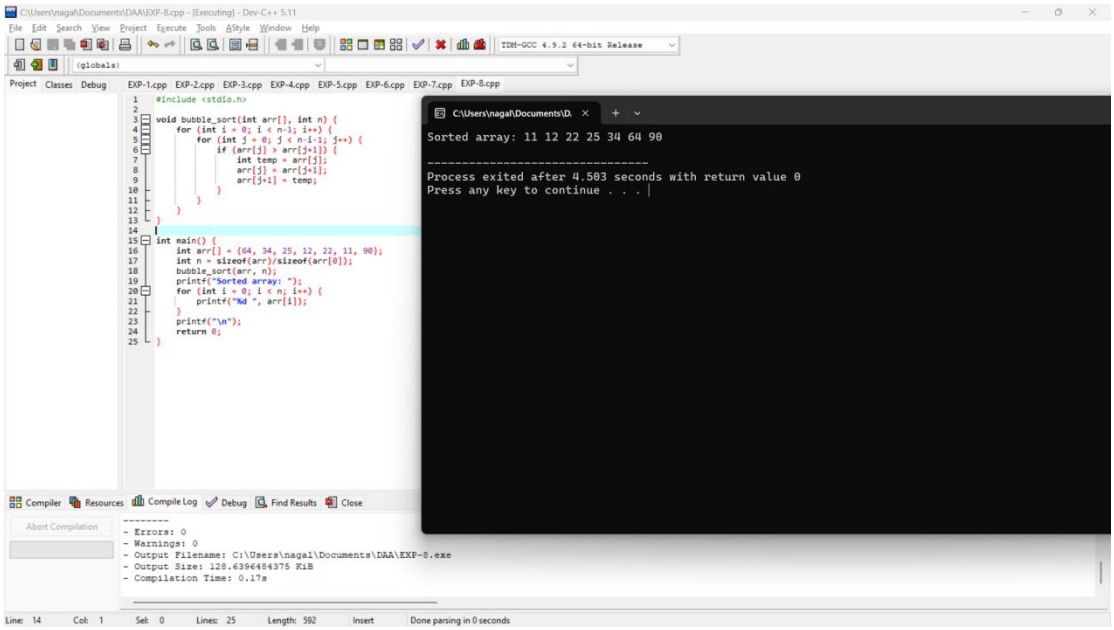
6.


C:\Users\nagal\Documents\DAA\EXP-6.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-1.cpp EXP-2.cpp EXP-3.cpp EXP-4.cpp EXP-5.cpp EXP-6.cpp
#include<stdio.h>
int main(){
int i,n,flag=0;
printf("Enter the number:");
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;
}
C:\Users\nagal\Documents\D
Enter the number:2
2 is a prime number...
Process exited after 7.306 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-6.exe
- Output Size: 128.6015625 KiB
- Compilation Time: 0.20s
Line: 24 Col: 12 Sel: 0 Lines: 25 Length: 342 Insert Done parsing in 0 seconds

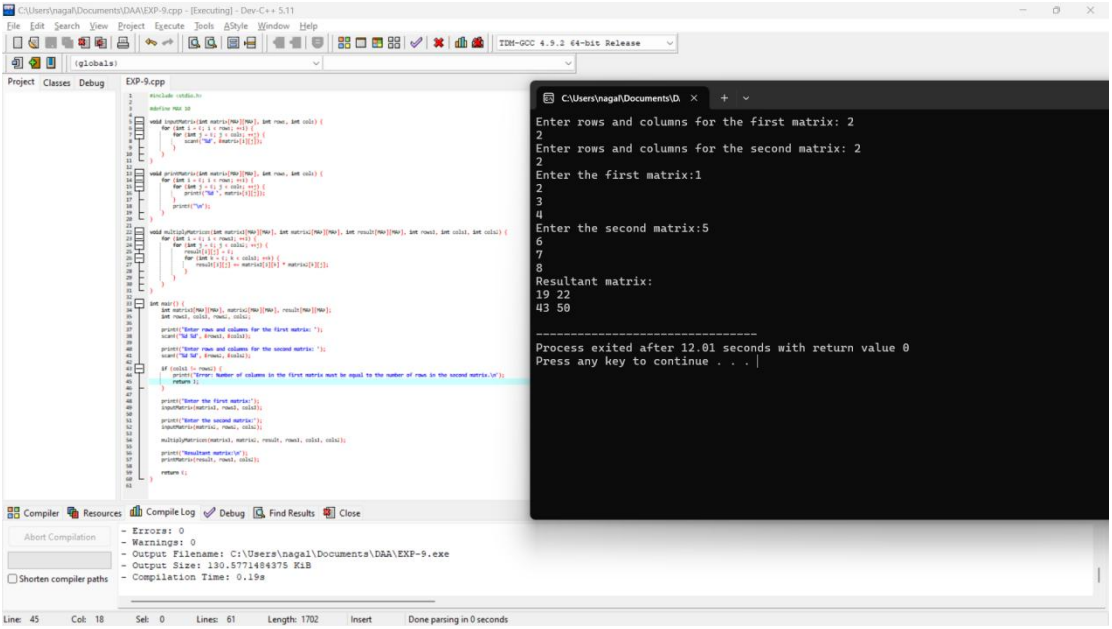
7.


C:\Users\nagal\Documents\DAA\EXP-7.cpp - [Executing] - Dev-C++ 5.11
#include <stdio.h>
void selection_sort(int arr[], int n) {
for (int i = 0; i < n-1; i++) {
int min_idx = i;
for (int j = i+1; j < n; j++) {
if (arr[j] < arr[min_idx]) {
min_idx = j;
}
}
int temp = arr[min_idx];
arr[min_idx] = arr[i];
arr[i] = temp;
}
}
int main() {
int arr[] = {64, 25, 12, 22, 11};
int n = sizeof(arr)/sizeof(arr[0]);
selection_sort(arr, n);
printf("Sorted array: ");
for (int i = 0; i < n; i++) {
printf("%d ", arr[i]);
}
printf("\n");
return 0;
}
C:\Users\nagal\Documents\D.
Sorted array: 11 12 22 25 64
Process exited after 0.7123 seconds with return value 0
Press any key to continue . . .
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-7.exe
- Output Size: 128.642578125 KiB
- Compilation Time: 0.25s

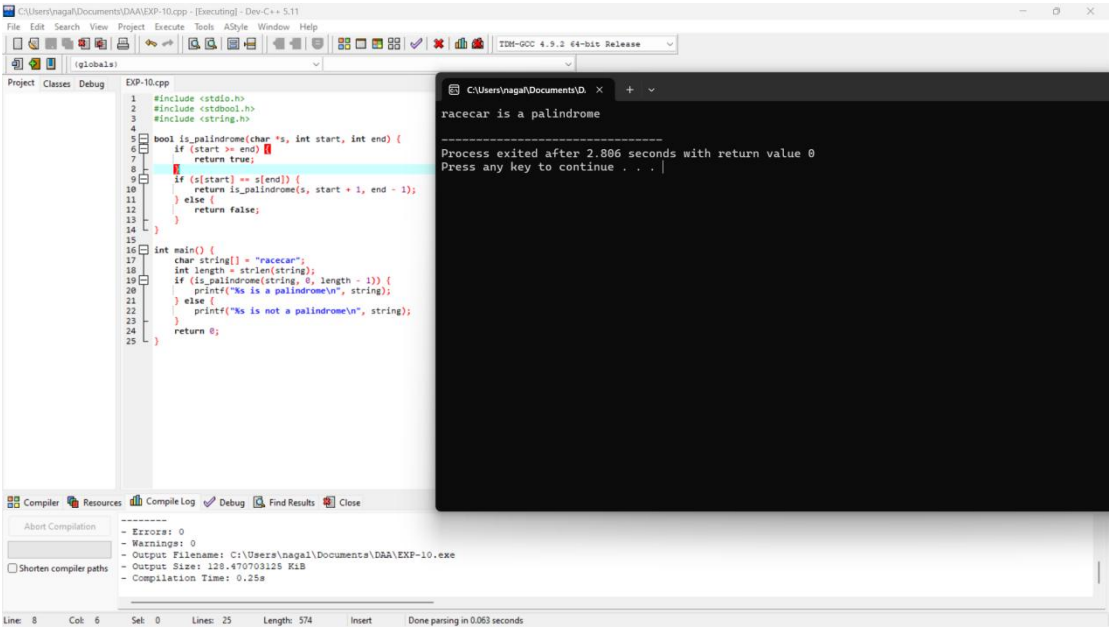
8.


C:\Users\nagal\Documents\DAA\EXP-8.cpp - [Executing] - Dev-C++ 5.11
#include <stdio.h>
void bubble_sort(int arr[], int n) {
for (int i = 0; i < n-1; i++) {
for (int j = 0; j < n-i-1; j++) {
if (arr[j] > arr[j+1]) {
int temp = arr[j];
arr[j] = arr[j+1];
arr[j+1] = temp;
}
}
}
}
int main() {
int arr[] = {64, 34, 25, 12, 22, 11, 90};
int n = sizeof(arr)/sizeof(arr[0]);
bubble_sort(arr, n);
printf("Sorted array: ");
for (int i = 0; i < n; i++) {
printf("%d ", arr[i]);
}
printf("\n");
return 0;
}
C:\Users\nagal\Documents\D.
Sorted array: 11 12 22 25 34 64 90
Process exited after 4.503 seconds with return value 0
Press any key to continue . . .
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-8.exe
- Output Size: 128.6396484375 KiB
- Compilation Time: 0.17s

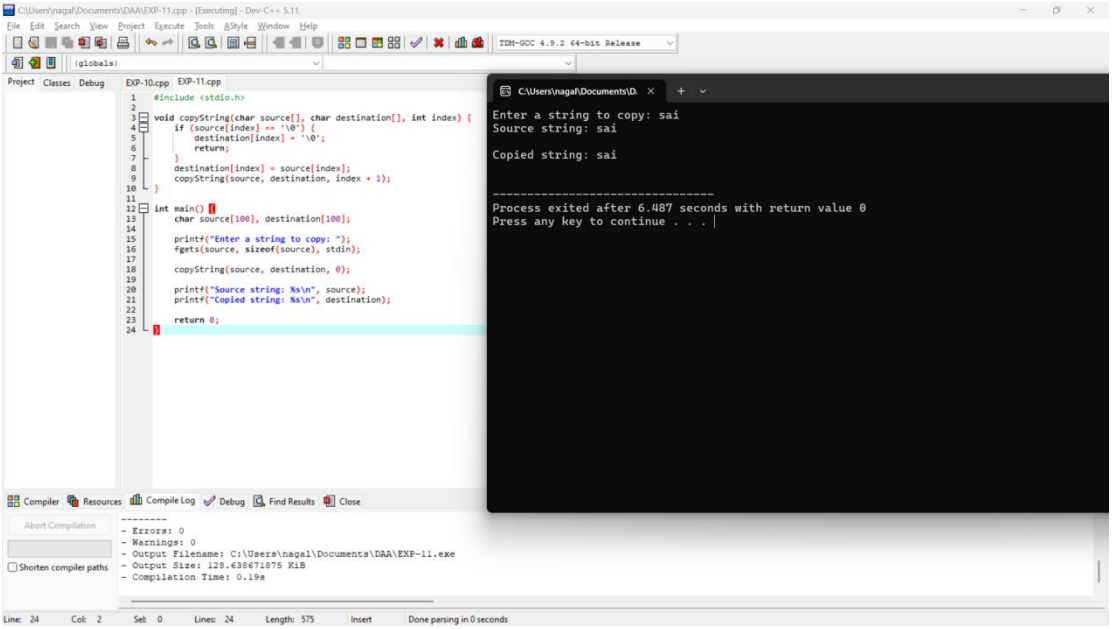
9.


C:\Users\nagal\Documents\DAA\EXP-9.cpp - [Executing] - Dev-C++ 5.11
EXP-9.cpp
C:\Users\nagal\Documents\D
Enter rows and columns for the first matrix: 2
2
Enter rows and columns for the second matrix: 2
2
Enter the first matrix:1
2
3
4
Enter the second matrix:5
6
7
8
Resultant matrix:
19 22
43 50
Process exited after 12.01 seconds with return value 0
Press any key to continue . . .
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-9.exe
- Output Size: 130.5771484375 KiB
- Compilation Time: 0.19s

10.


C:\Users\nagal\Documents\DAA\EXP-10.cpp - [Executing] - Dev-C++ 5.11
EXP-10.cpp
#include <stdio.h>
#include <stdbool.h>
#include <string.h>
bool is_palindrome(char *s, int start, int end) {
if (start >= end) {
return true;
}
if (s[start] == s[end]) {
return is_palindrome(s, start + 1, end - 1);
} else {
return false;
}
}
int main() {
char string[] = "racecar";
int length = strlen(string);
if (is_palindrome(string, 0, length - 1)) {
printf("%s is a palindrome\n", string);
} else {
printf("%s is not a palindrome\n", string);
}
return 0;
}
C:\Users\nagal\Documents\D
racecar is a palindrome
Process exited after 2.806 seconds with return value 0
Press any key to continue . . .
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-10.exe
- Output Size: 128.470703125 KiB
- Compilation Time: 0.25s

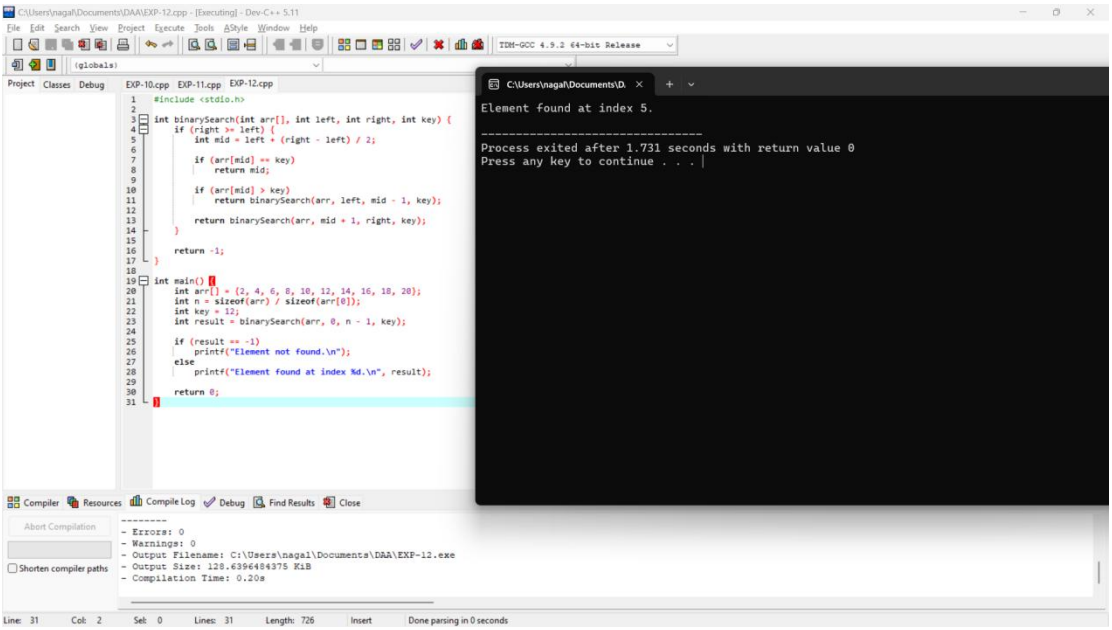
11.



```
#include <stdio.h>

void copyString(char source[], char destination[], int index) {
    if (source[index] == '\0') {
        destination[index] = '\0';
        return;
    }
    destination[index] = source[index];
    copyString(source, destination, index + 1);
}

int main() {
    char source[100], destination[100];

    printf("Enter a string to copy: ");
    fgets(source, sizeof(source), stdin);

    copyString(source, destination, 0);

    printf("Source string: %s\n", source);
    printf("Copied string: %s\n", destination);

    return 0;
}
```

```
Enter a string to copy: sai
Source string: sai

Copied string: sai


--------------------------------
Process exited after 6.487 seconds with return value 0
Press any key to continue . . .
```

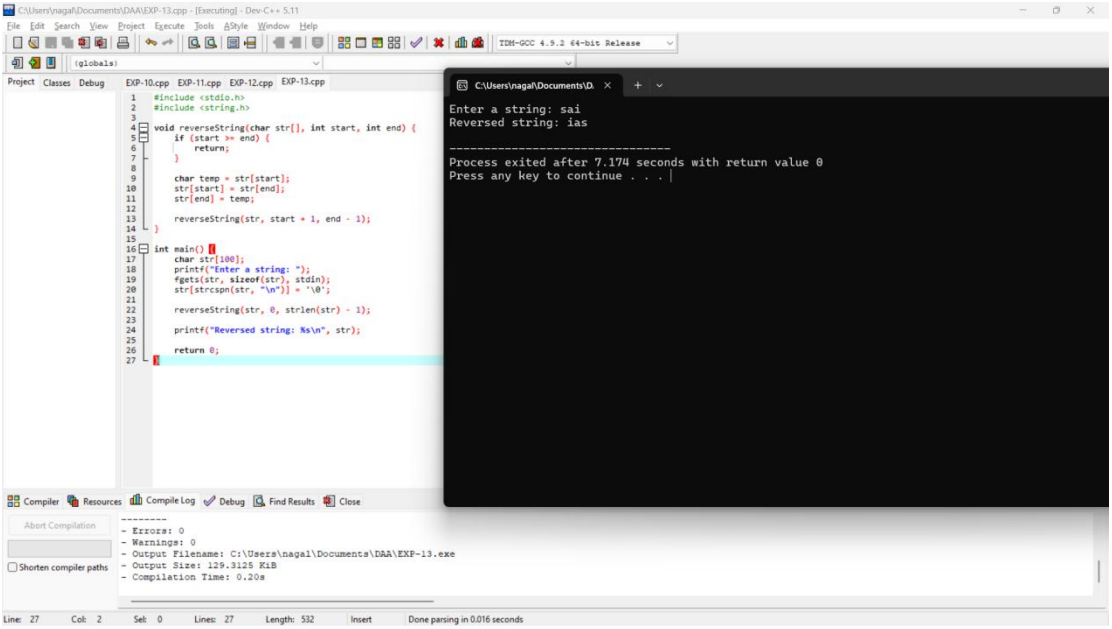
12.



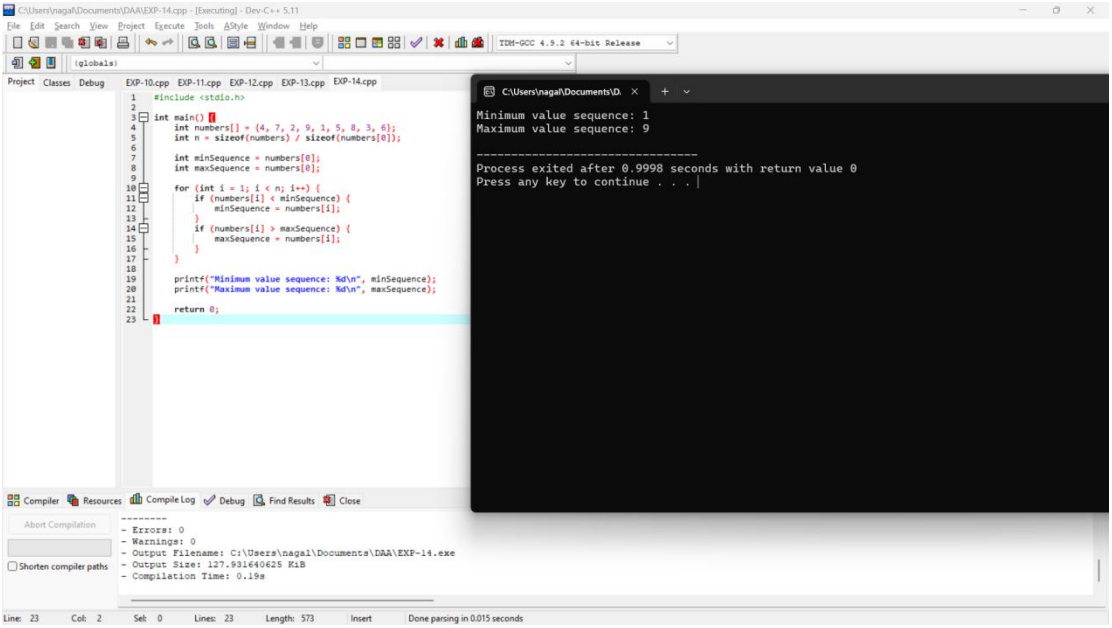
```
#include <stdio.h>

int binarySearch(int arr[], int left, int right, int key) {
    if (right >= left) {
        int mid = left + (right - left) / 2;

        if (arr[mid] == key)
            return mid;

        if (arr[mid] > key)
            return binarySearch(arr, left, mid - 1, key);

        return binarySearch(arr, mid + 1, right, key);
    }

    return -1;
}

int main() {
    int arr[] = {2, 4, 6, 8, 10, 12, 14, 16, 18, 20};
    int n = sizeof(arr) / sizeof(arr[0]);
    int key = 12;
    int result = binarySearch(arr, 0, n - 1, key);

    if (result == -1)
        printf("Element not found.\n");
    else
        printf("Element found at index %d.\n", result);

    return 0;
}
```

```
Element found at index 5.

--------------------------------
Process exited after 1.731 seconds with return value 0
Press any key to continue . . .
```

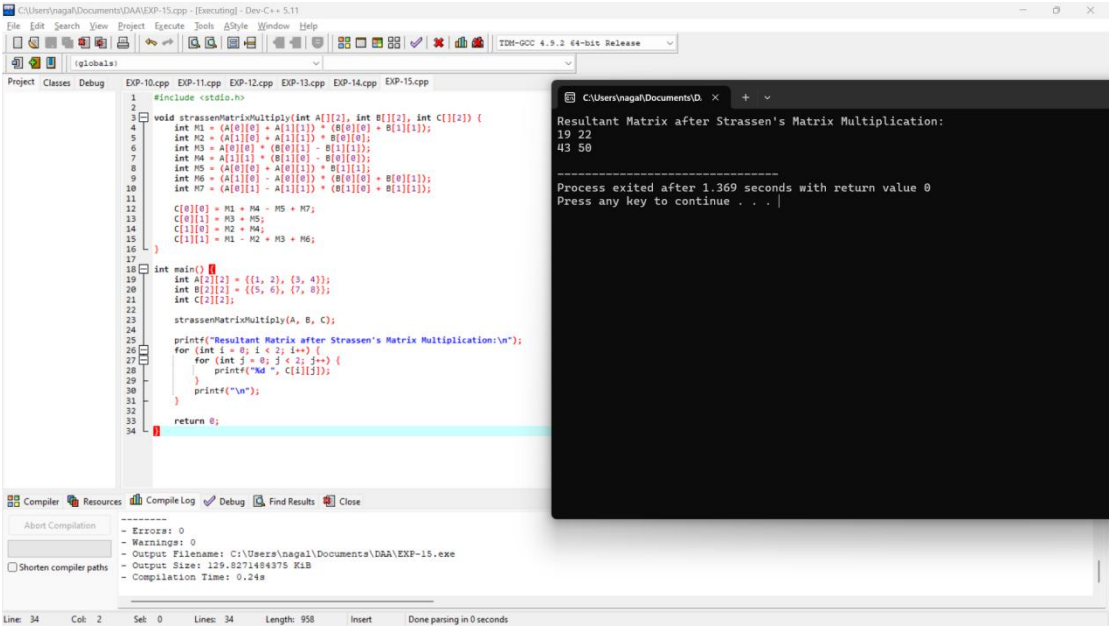
13.


C:\Users\nagal\Documents\DAA\EXP-13.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-10.cpp EXP-11.cpp EXP-12.cpp EXP-13.cpp
#include <stdio.h>
#include <string.h>
void reverseString(char str[], int start, int end) {
if (start >= end) {
return;
}
char temp = str[start];
str[start] = str[end];
str[end] = temp;
reverseString(str, start + 1, end - 1);
}
int main() {
char str[100];
printf("Enter a string: ");
fgets(str, sizeof(str), stdin);
str[strcspn(str, "\n")] = '\0';
reverseString(str, 0, strlen(str) - 1);
printf("Reversed string: %s\n", str);
return 0;
}
C:\Users\nagal\Documents\D
Enter a string: sai
Reversed string: ias
Process exited after 7.174 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-13.exe
- Output Size: 129.3125 KiB
- Compilation Time: 0.20s
Line: 27 Col: 2 Sel: 0 Lines: 27 Length: 532 Insert Done parsing in 0.016 seconds

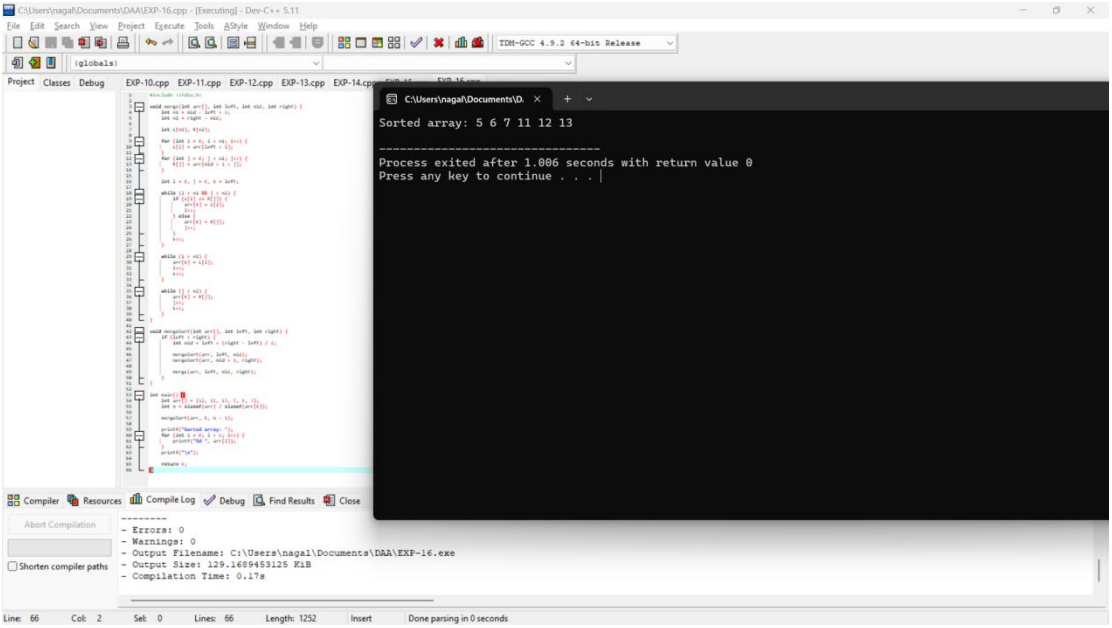
14.


C:\Users\nagal\Documents\DAA\EXP-14.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-10.cpp EXP-11.cpp EXP-12.cpp EXP-13.cpp EXP-14.cpp
#include <stdio.h>
int main() {
int numbers[] = {4, 7, 2, 9, 1, 5, 8, 3, 6};
int n = sizeof(numbers) / sizeof(numbers[0]);
int minSequence = numbers[0];
int maxSequence = numbers[0];
for (int i = 1; i < n; i++) {
if (numbers[i] < minSequence) {
minSequence = numbers[i];
}
if (numbers[i] > maxSequence) {
maxSequence = numbers[i];
}
}
printf("Minimum value sequence: %d\n", minSequence);
printf("Maximum value sequence: %d\n", maxSequence);
return 0;
}
C:\Users\nagal\Documents\D
Minimum value sequence: 1
Maximum value sequence: 9
Process exited after 0.9998 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-14.exe
- Output Size: 127.931640625 KiB
- Compilation Time: 0.19s
Line: 23 Col: 2 Sel: 0 Lines: 23 Length: 573 Insert Done parsing in 0.015 seconds

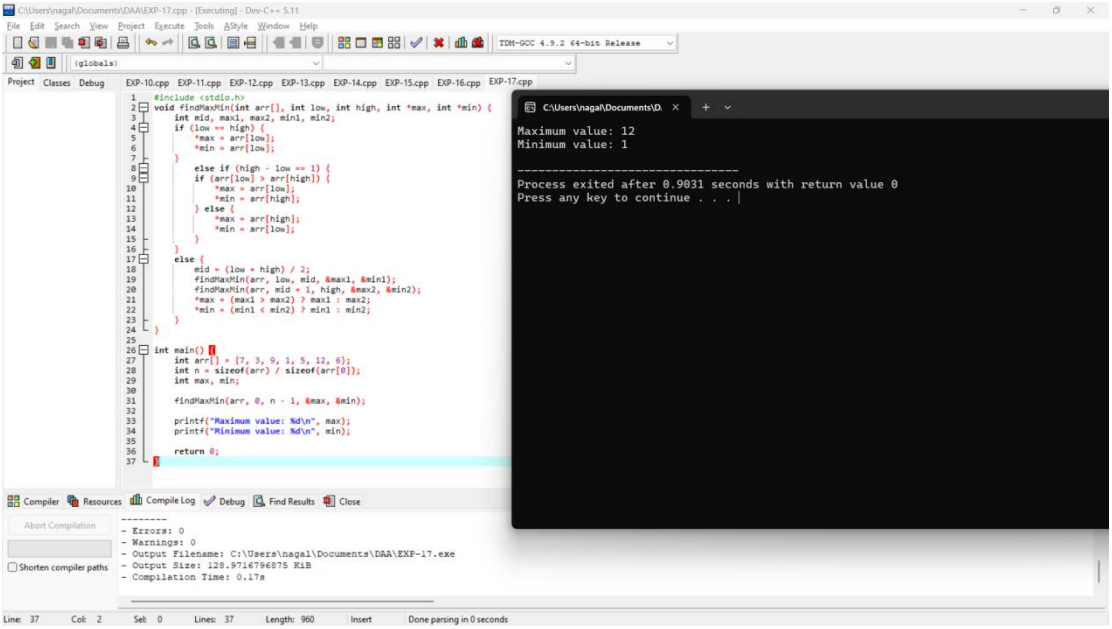
15.


C:\Users\nagal\Documents\DAA\EXP-15.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
Project Classes Debug
EXP-10.cpp EXP-11.cpp EXP-12.cpp EXP-13.cpp EXP-14.cpp EXP-15.cpp
#include <stdio.h>
void strassenMatrixMultiply(int A[][2], int B[][2], int C[][2]) {
int M1 = (A[0][0] + A[1][1]) * (B[0][0] + B[1][1]);
int M2 = (A[1][0] + A[1][1]) * B[0][0];
int M3 = A[0][0] * (B[0][1] - B[1][1]);
int M4 = A[1][1] * (B[1][0] - B[0][0]);
int M5 = (A[0][0] + A[0][1]) * B[1][1];
int M6 = (A[1][0] - A[0][0]) * (B[0][0] + B[0][1]);
int M7 = (A[0][1] - A[1][1]) * (B[1][0] + B[1][1]);
C[0][0] = M1 + M4 - M5 + M7;
C[0][1] = M3 + M5;
C[1][0] = M2 + M4;
C[1][1] = M1 - M2 + M3 + M6;
}
int main() {
int A[2][2] = {{1, 2}, {3, 4}};
int B[2][2] = {{5, 6}, {7, 8}};
int C[2][2];
strassenMatrixMultiply(A, B, C);
printf("Resultant Matrix after Strassen's Matrix Multiplication:\n");
for (int i = 0; i < 2; i++) {
for (int j = 0; j < 2; j++) {
printf("%d ", C[i][j]);
}
printf("\n");
}
return 0;
}
C:\Users\nagal\Documents\D
Resultant Matrix after Strassen's Matrix Multiplication:
19 22
43 50
Process exited after 1.369 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-15.exe
- Output Size: 129.8271484375 KiB
- Compilation Time: 0.24s
Line: 34 Col: 2 Sel: 0 Lines: 34 Length: 958 Insert Done parsing in 0 seconds

16.


C:\Users\nagal\Documents\DAA\EXP-16.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
Project Classes Debug
EXP-10.cpp EXP-11.cpp EXP-12.cpp EXP-13.cpp EXP-14.cpp
C:\Users\nagal\Documents\D
Sorted array: 5 6 7 11 12 13
Process exited after 1.006 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-16.exe
- Output Size: 129.1689453125 KiB
- Compilation Time: 0.17s
Line: 66 Col: 2 Sel: 0 Lines: 66 Length: 1252 Insert Done parsing in 0 seconds

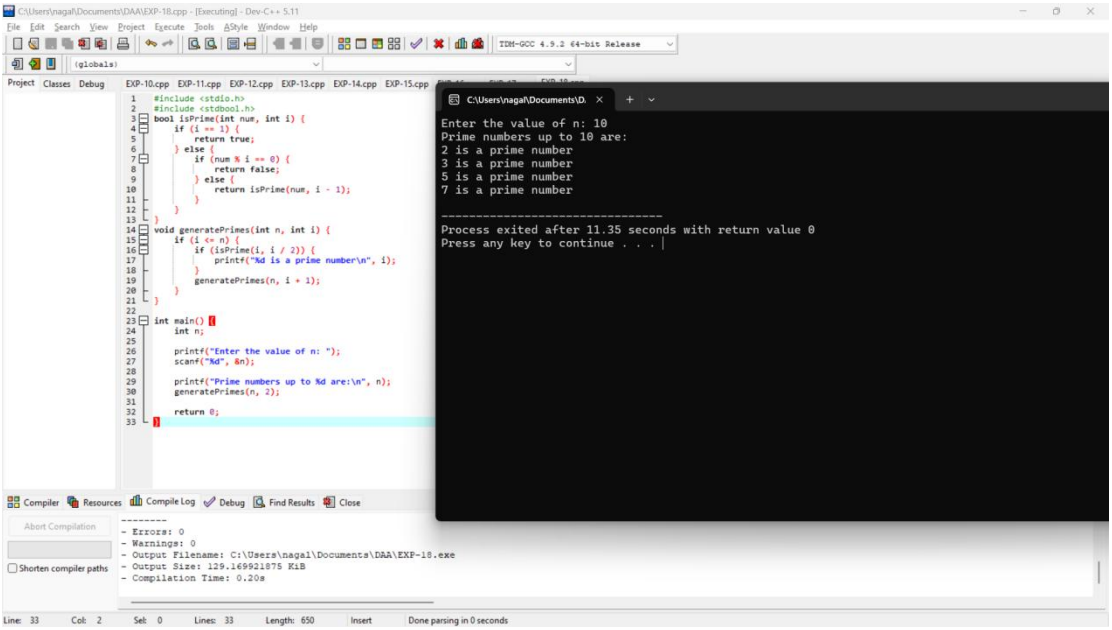
17.



```
#include <stdio.h>
void findMaxMin(int arr[], int low, int high, int *max, int *min) {
    int mid, max1, max2, min1, min2;
    if (low == high) {
        *max = arr[low];
        *min = arr[low];
    }
    else if (high - low == 1) {
        if (arr[low] > arr[high]) {
            *max = arr[low];
            *min = arr[high];
        } else {
            *max = arr[high];
            *min = arr[low];
        }
    }
    else {
        mid = (low + high) / 2;
        findMaxMin(arr, low, mid, &max1, &min1);
        findMaxMin(arr, mid + 1, high, &max2, &min2);
        *max = (max1 > max2) ? max1 : max2;
        *min = (min1 < min2) ? min1 : min2;
    }
}

int main() {
    int arr[] = {7, 3, 9, 1, 5, 12, 6};
    int n = sizeof(arr) / sizeof(arr[0]);
    int max, min;

    findMaxMin(arr, 0, n - 1, &max, &min);

    printf("Maximum value: %d\n", max);
    printf("Minimum value: %d\n", min);

    return 0;
}
```

```
Maximum value: 12
Minimum value: 1

--------------------------------
Process exited after 0.9031 seconds with return value 0
Press any key to continue . . .
```

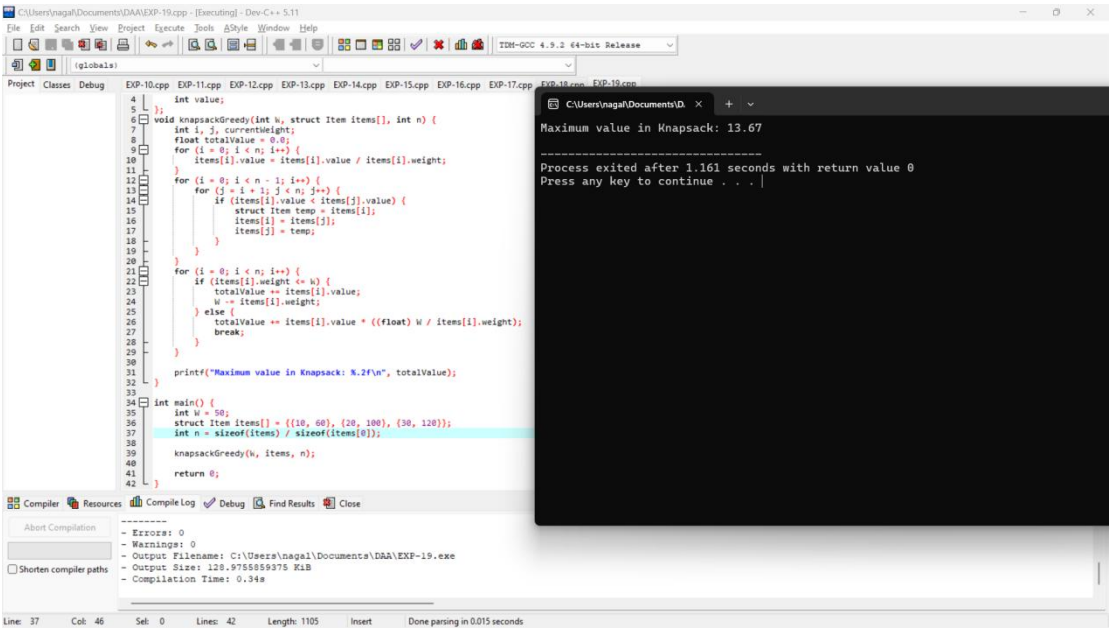
18.



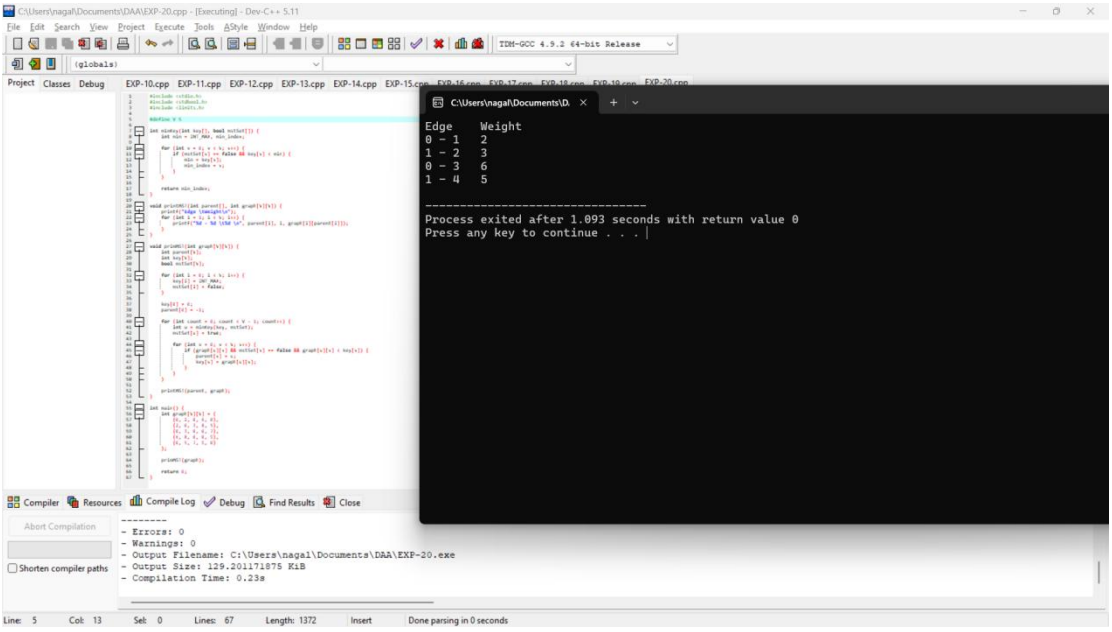
```
#include <stdio.h>
#include <stdbool.h>
bool isPrime(int num, int i) {
    if (i == 1) {
        return true;
    } else {
        if (num % i == 0) {
            return false;
        } else {
            return isPrime(num, i - 1);
        }
    }
}
void generatePrimes(int n, int i) {
    if (i <= n) {
        if (isPrime(i, i / 2)) {
            printf("%d is a prime number\n", i);
        }
        generatePrimes(n, i + 1);
    }
}

int main() {
    int n;

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

    printf("Prime numbers up to %d are:\n", n);
    generatePrimes(n, 2);

    return 0;
}
```

```
Enter the value of n: 10
Prime numbers up to 10 are:
2 is a prime number
3 is a prime number
5 is a prime number
7 is a prime number

--------------------------------
Process exited after 11.35 seconds with return value 0
Press any key to continue . . .
```

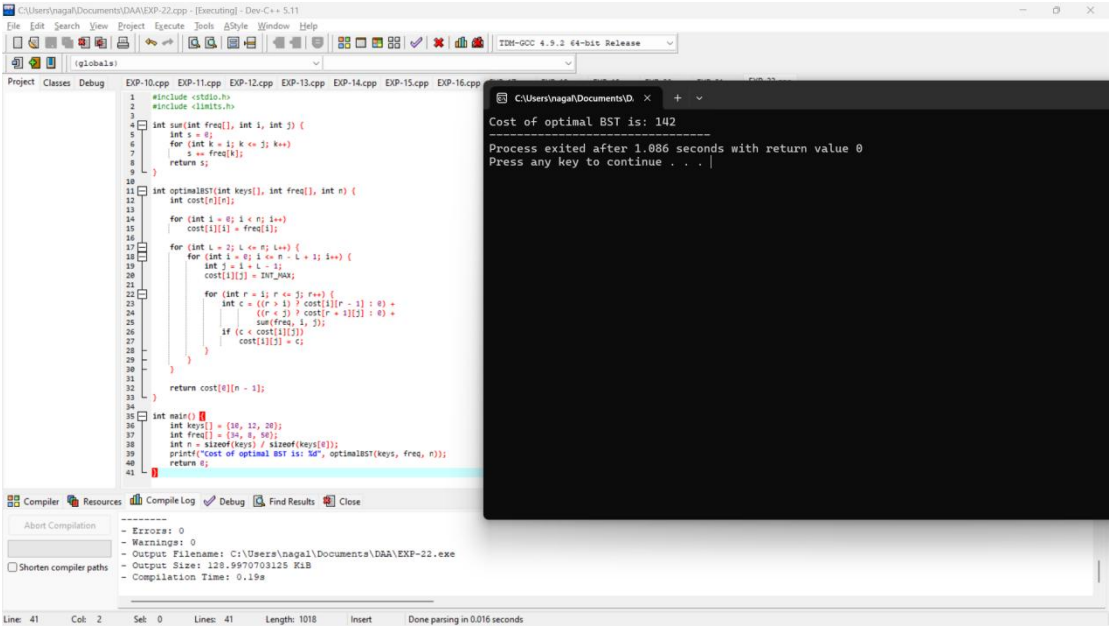
19.


C:\Users\nagal\Documents\DAA\EXP-19.cpp - [Executing] - Dev-C++ 5.11
Maximum value in Knapsack: 13.67
Process exited after 1.161 seconds with return value 0
Press any key to continue . . .
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-19.exe
- Output Size: 128.9755859375 KiB
- Compilation Time: 0.34s

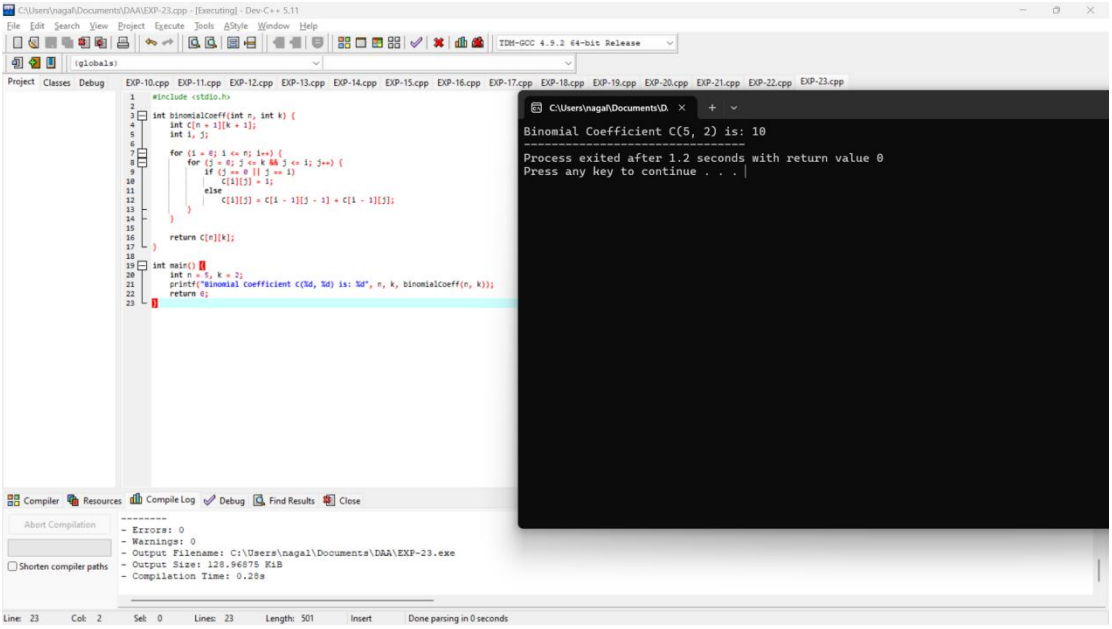
20.


C:\Users\nagal\Documents\DAA\EXP-20.cpp - [Executing] - Dev-C++ 5.11
Edge Weight
0 - 1 2
1 - 2 3
0 - 3 6
1 - 4 5
Process exited after 1.093 seconds with return value 0
Press any key to continue . . .
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-20.exe
- Output Size: 129.201171875 KiB
- Compilation Time: 0.23s

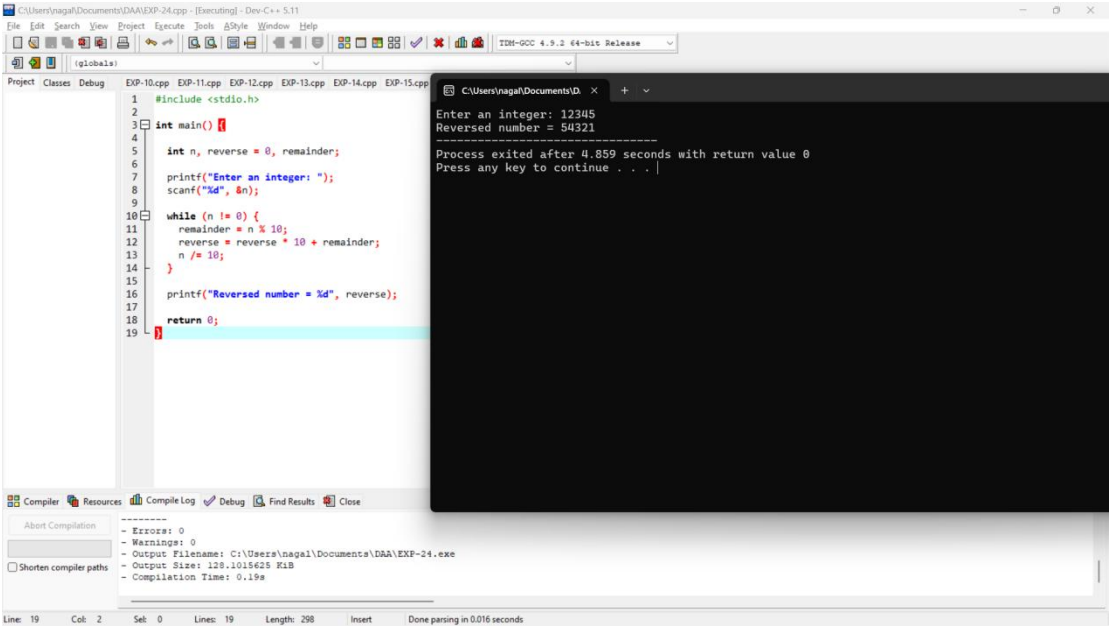
21.


#include <stdio.h>
#include <limits.h>
int sum(int freq[], int i, int j) {
int optimalBST(int keys[], int freq[], int n) {
int main() {
int keys[] = {10, 12, 20};
int freq[] = {34, 8, 50};
printf("Cost of optimal BST is: %d", optimalBST(keys, freq, n));
C:\Users\nagal\Documents\D.
Cost of optimal BST is: 142
Process exited after 1.086 seconds with return value 0
Press any key to continue . . .
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-22.exe
- Output Size: 128.9970703125 KiB
- Compilation Time: 0.19s

22.


#include <stdio.h>
int binomialCoeff(int n, int k) {
int main() {
int n = 5, k = 2;
printf("Binomial coefficient C(%d, %d) is: %d", n, k, binomialCoeff(n, k));
C:\Users\nagal\Documents\D.
Binomial Coefficient C(5, 2) is: 10
Process exited after 1.2 seconds with return value 0
Press any key to continue . . .
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-23.exe
- Output Size: 128.96875 KiB
- Compilation Time: 0.28s

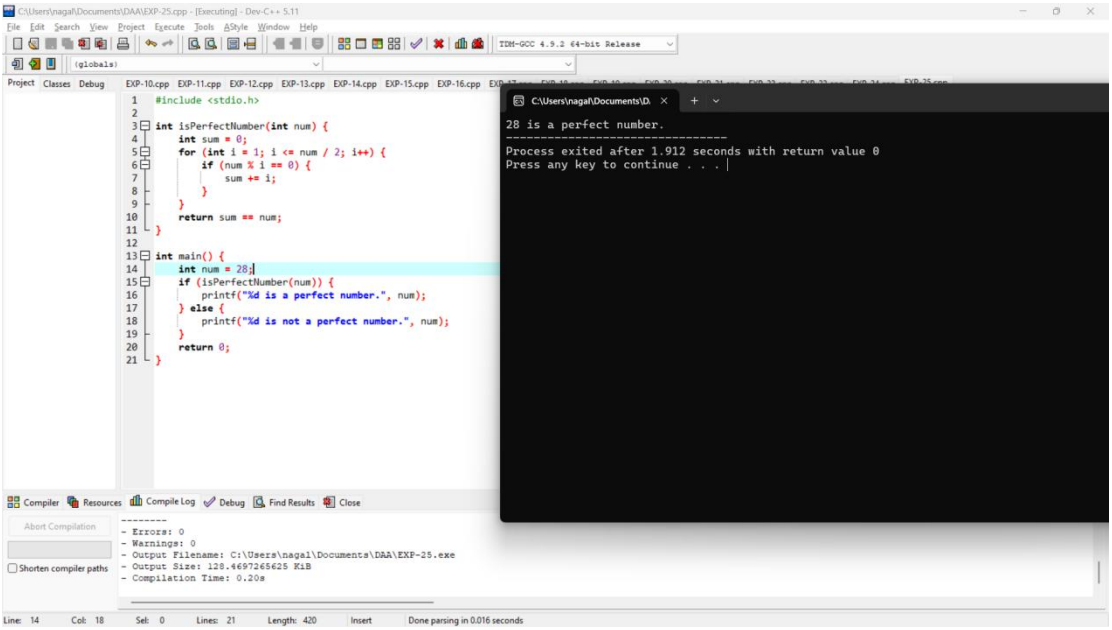
23.



```
#include <stdio.h>

int main() {

  int n, reverse = 0, remainder;

  printf("Enter an integer: ");
  scanf("%d", &n);

  while (n != 0) {
    remainder = n % 10;
    reverse = reverse * 10 + remainder;
    n /= 10;
  }

  printf("Reversed number = %d", reverse);

  return 0;
}
```

```
Enter an integer: 12345
Reversed number = 54321
--------------------------------
Process exited after 4.859 seconds with return value 0
Press any key to continue . . .
```

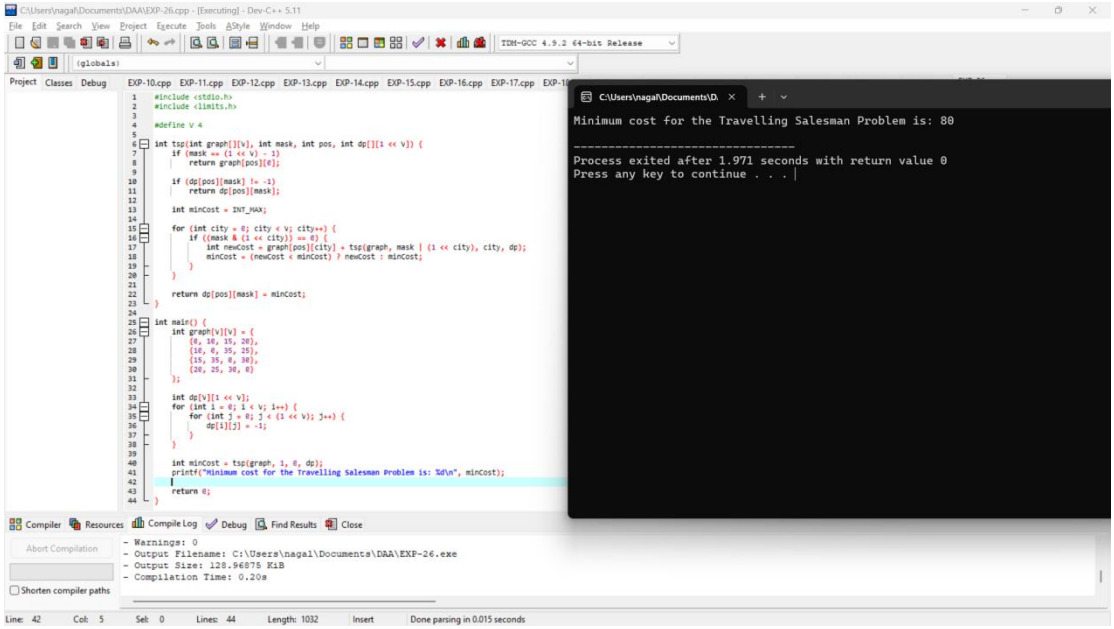
24.



```
#include <stdio.h>

int isPerfectNumber(int num) {
    int sum = 0;
    for (int i = 1; i <= num / 2; i++) {
        if (num % i == 0) {
            sum += i;
        }
    }
    return sum == num;
}

int main() {
    int num = 28;
    if (isPerfectNumber(num)) {
        printf("%d is a perfect number.", num);
    } else {
        printf("%d is not a perfect number.", num);
    }
    return 0;
}
```

```
28 is a perfect number.
--------------------------------
Process exited after 1.912 seconds with return value 0
Press any key to continue . . .
```

25.

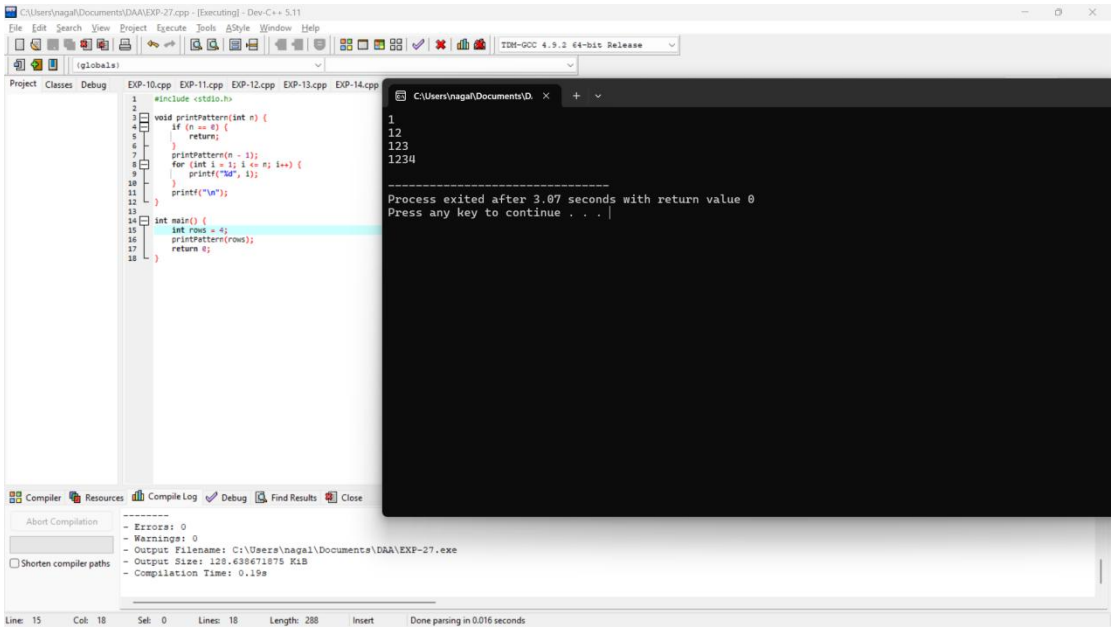


```
#include <stdio.h>
#include <limits.h>

#define V 4

int tsp(int graph[][V], int mask, int pos, int dp[][1 << V]) {
    if (mask == (1 << V) - 1)
        return graph[pos][0];

    if (dp[pos][mask] != -1)
        return dp[pos][mask];

    int minCost = INT_MAX;

    for (int city = 0; city < V; city++) {
        if ((mask & (1 << city)) == 0) {
            int newCost = graph[pos][city] + tsp(graph, mask | (1 << city), city, dp);
            minCost = (newCost < minCost) ? newCost : minCost;
        }
    }

    return dp[pos][mask] = minCost;
}

int main() {
    int graph[V][V] = {
        {0, 10, 15, 20},
        {10, 0, 35, 25},
        {15, 35, 0, 30},
        {20, 25, 30, 0}
    };

    int dp[V][1 << V];
    for (int i = 0; i < V; i++) {
        for (int j = 0; j < (1 << V); j++) {
            dp[i][j] = -1;
        }
    }

    int minCost = tsp(graph, 1, 0, dp);
    printf("Minimum cost for the Travelling Salesman Problem is: %d\n", minCost);

    return 0;
}
```

```
Minimum cost for the Travelling Salesman Problem is: 80

--------------------------------
Process exited after 1.971 seconds with return value 0
Press any key to continue . . .
```

```
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-26.exe
- Output Size: 128.96875 KiB
- Compilation Time: 0.20s
```

26.

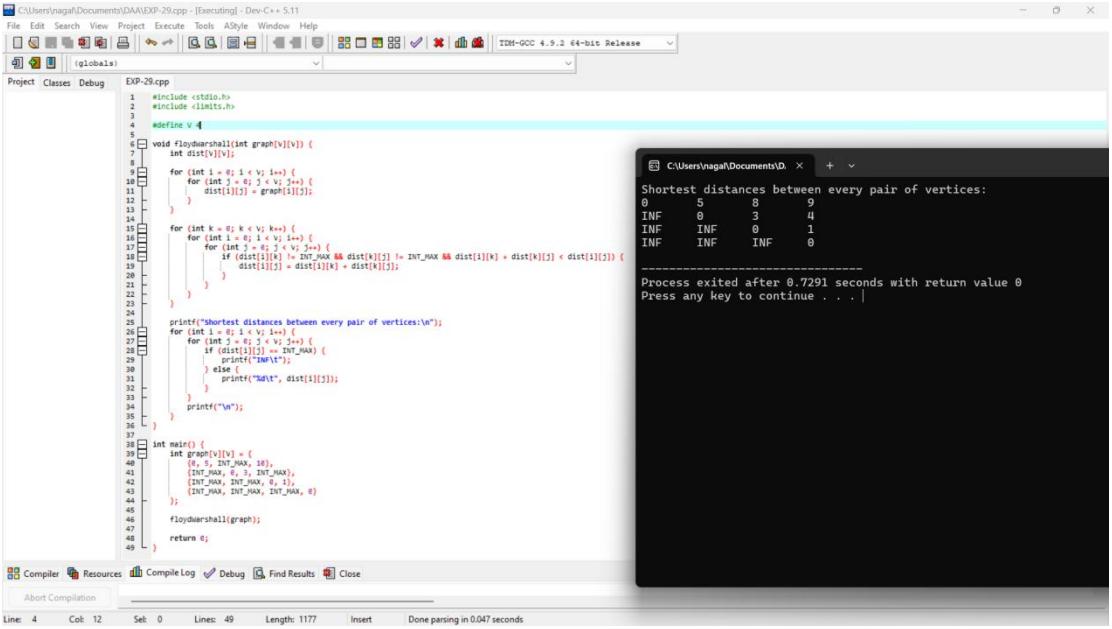


```
#include <stdio.h>

void printPattern(int n) {
    if (n == 0) {
        return;
    }
    printPattern(n - 1);
    for (int i = 1; i <= n; i++) {
        printf("%d", i);
    }
    printf("\n");
}

int main() {
    int rows = 4;
    printPattern(rows);
    return 0;
}
```

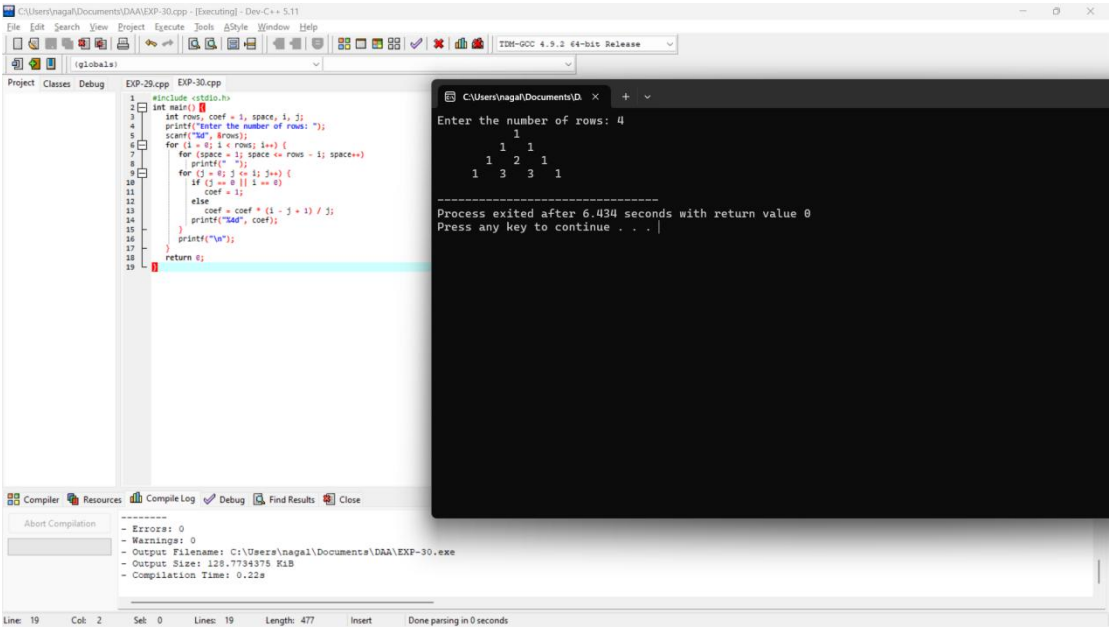
```
1
12
123
1234

--------------------------------
Process exited after 3.07 seconds with return value 0
Press any key to continue . . .
```

```
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-27.exe
- Output Size: 128.638671875 KiB
- Compilation Time: 0.19s
```

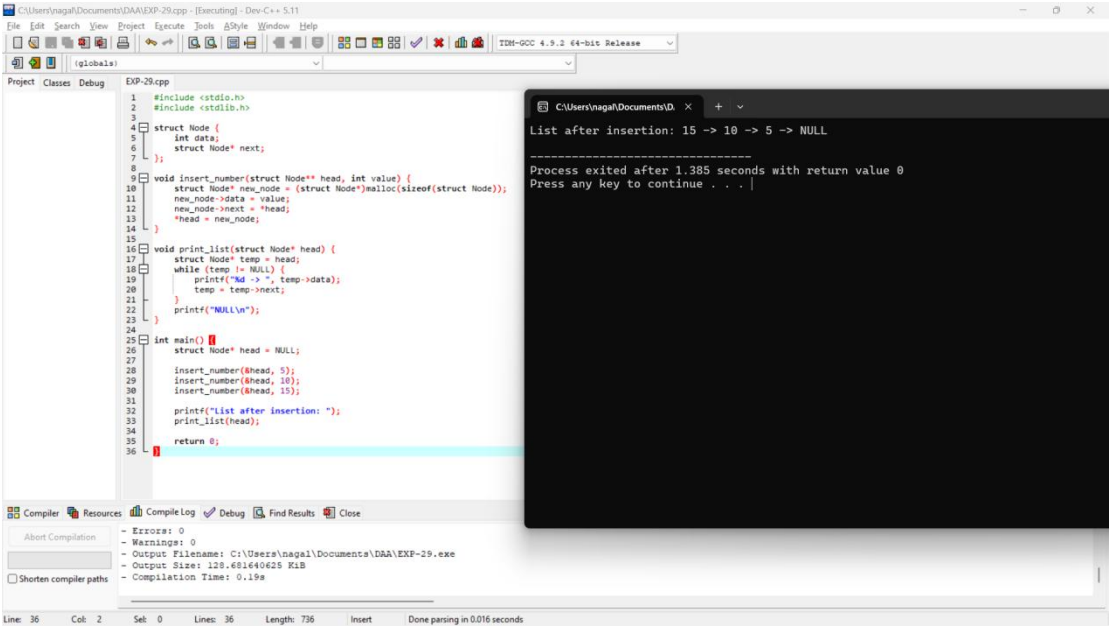
27.


C:\Users\nagal\Documents\DAA\EXP-29.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-29.cpp
#include <stdio.h>
#include <limits.h>
#define V 4
void floydWarshall(int graph[V][V]) {
int dist[V][V];
for (int i = 0; i < V; i++) {
for (int j = 0; j < V; j++) {
dist[i][j] = graph[i][j];
}
}
for (int k = 0; k < V; k++) {
for (int i = 0; i < V; i++) {
for (int j = 0; j < V; j++) {
if (dist[i][k] != INT_MAX && dist[k][j] != INT_MAX && dist[i][k] + dist[k][j] < dist[i][j]) {
dist[i][j] = dist[i][k] + dist[k][j];
}
}
}
}
printf("Shortest distances between every pair of vertices:\n");
for (int i = 0; i < V; i++) {
for (int j = 0; j < V; j++) {
if (dist[i][j] == INT_MAX) {
printf("INF\t");
} else {
printf("%d\t", dist[i][j]);
}
}
printf("\n");
}
}
int main() {
int graph[V][V] = {
{0, 5, INT_MAX, 10},
{INT_MAX, 0, 3, INT_MAX},
{INT_MAX, INT_MAX, 0, 1},
{INT_MAX, INT_MAX, INT_MAX, 0}
};
floydWarshall(graph);
return 0;
}
C:\Users\nagal\Documents\D
Shortest distances between every pair of vertices:
0 5 8 9
INF 0 3 4
INF INF 0 1
INF INF INF 0
Process exited after 0.7291 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Line: 4 Col: 12 Sel: 0 Lines: 49 Length: 1177 Insert Done parsing in 0.047 seconds

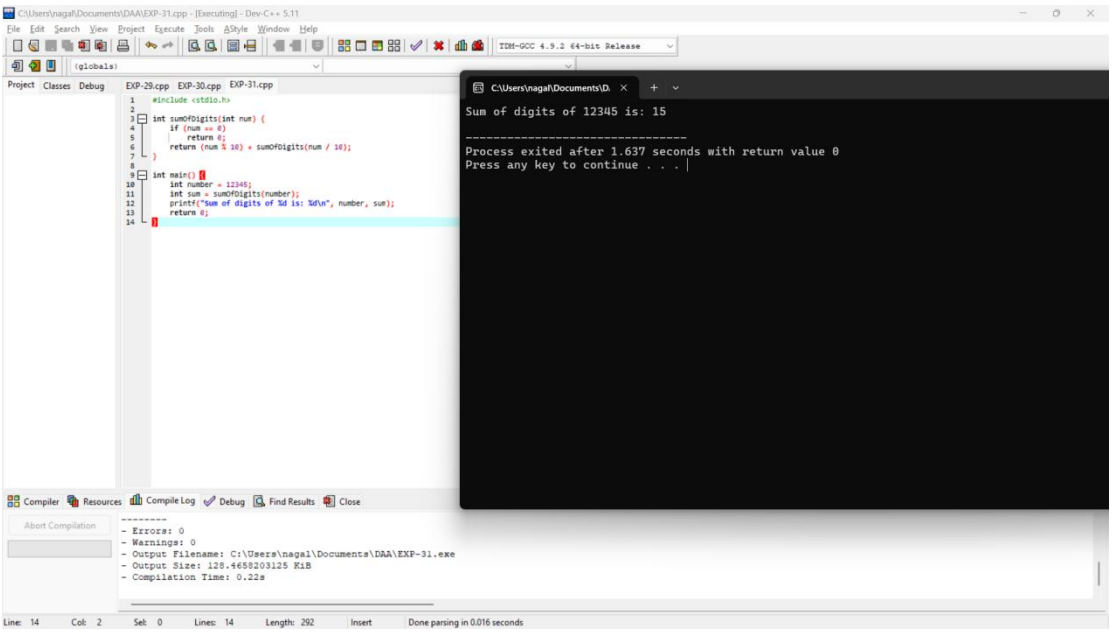
28.


C:\Users\nagal\Documents\DAA\EXP-30.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-29.cpp EXP-30.cpp
#include <stdio.h>
int main() {
int rows, coef = 1, space, i, j;
printf("Enter the number of rows: ");
scanf("%d", &rows);
for (i = 0; i < rows; i++) {
for (space = 1; space <= rows - i; space++)
printf(" ");
for (j = 0; j <= i; j++) {
if (j == 0 || i == 0)
coef = 1;
else
coef = coef * (i - j + 1) / j;
printf("%4d", coef);
}
printf("\n");
}
return 0;
}
C:\Users\nagal\Documents\D
Enter the number of rows: 4
1
1 1
1 2 1
1 3 3 1
Process exited after 6.434 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-30.exe
- Output Size: 128.7734375 KiB
- Compilation Time: 0.22s
Line: 19 Col: 2 Sel: 0 Lines: 19 Length: 477 Insert Done parsing in 0 seconds

29.

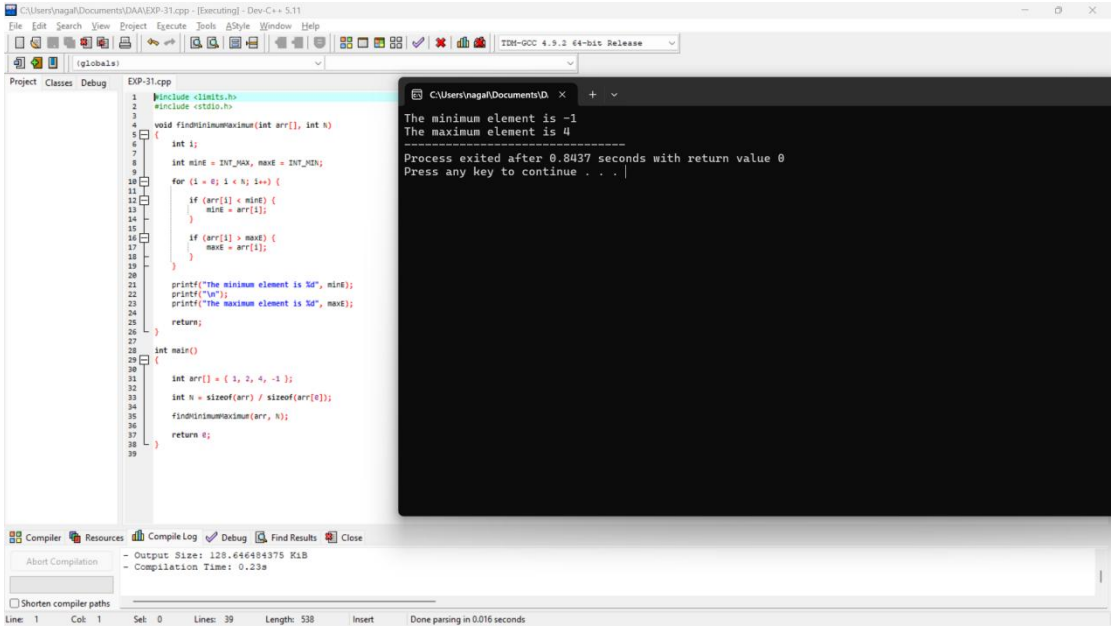

C:\Users\nagal\Documents\DAA\EXP-29.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-29.cpp
#include <stdio.h>
#include <stdlib.h>
struct Node {
int data;
struct Node* next;
};
void insert_number(struct Node** head, int value) {
struct Node* new_node = (struct Node*)malloc(sizeof(struct Node));
new_node->data = value;
new_node->next = *head;
*head = new_node;
}
void print_list(struct Node* head) {
struct Node* temp = head;
while (temp != NULL) {
printf("%d -> ", temp->data);
temp = temp->next;
}
printf("NULL\n");
}
int main() {
struct Node* head = NULL;
insert_number(&head, 5);
insert_number(&head, 10);
insert_number(&head, 15);
printf("List after insertion: ");
print_list(head);
return 0;
}
C:\Users\nagal\Documents\D
List after insertion: 15 -> 10 -> 5 -> NULL
Process exited after 1.385 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-29.exe
- Output Size: 128.681640625 KiB
- Compilation Time: 0.19s
Line: 36 Col: 2 Sel: 0 Lines: 36 Length: 736 Insert Done parsing in 0.016 seconds

30.

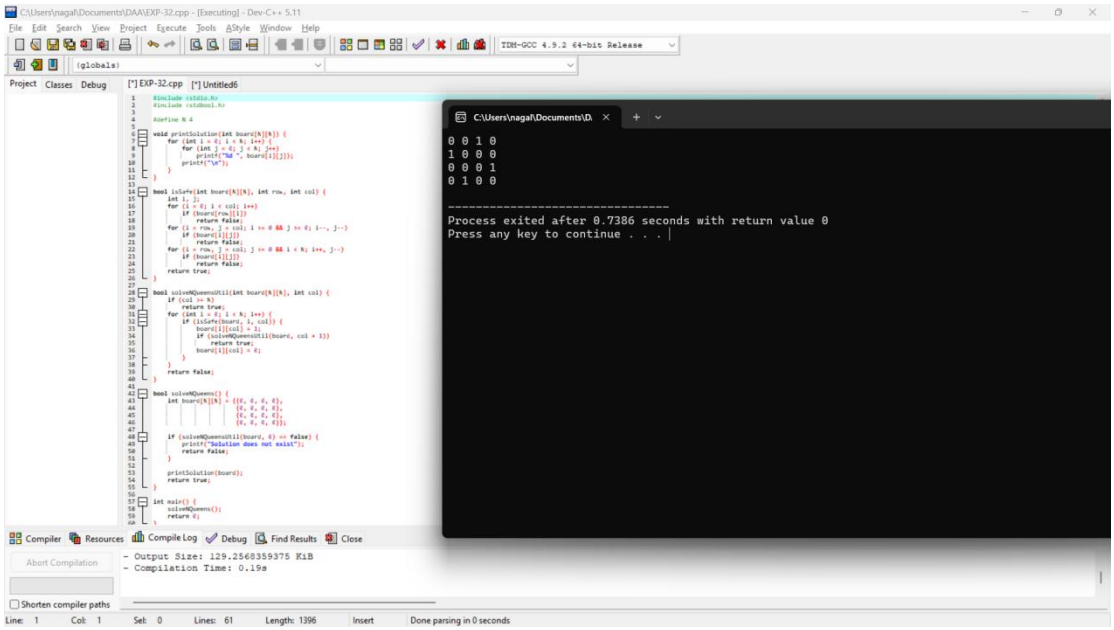

C:\Users\nagal\Documents\DAA\EXP-31.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-29.cpp EXP-30.cpp EXP-31.cpp
#include <stdio.h>
int sumOfDigits(int num) {
if (num == 0)
return 0;
return (num % 10) + sumOfDigits(num / 10);
}
int main() {
int number = 12345;
int sum = sumOfDigits(number);
printf("Sum of digits of %d is: %d\n", number, sum);
return 0;
}
C:\Users\nagal\Documents\D
Sum of digits of 12345 is: 15
Process exited after 1.637 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-31.exe
- Output Size: 128.4658203125 KiB
- Compilation Time: 0.22s
Line: 14 Col: 2 Sel: 0 Lines: 14 Length: 292 Insert Done parsing in 0.016 seconds

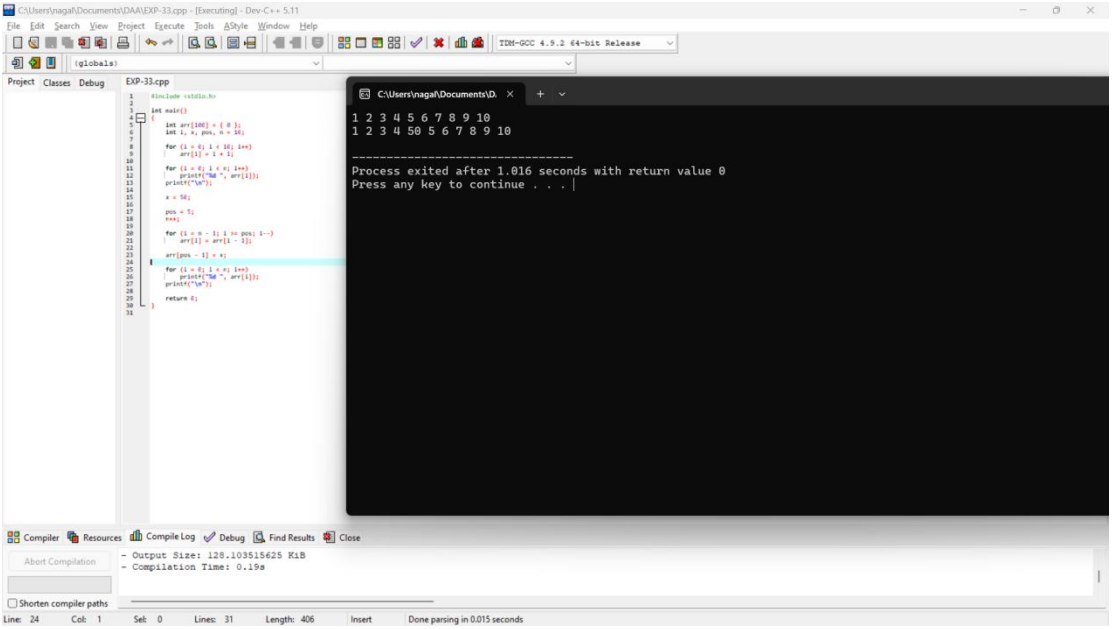
31.


C:\Users\nagal\Documents\DAA\EXP-31.cpp - [Executing] - Dev-C++ 5.11
EXP-31.cpp
#include <limits.h>
#include <stdio.h>
void findMinimumMaximum(int arr[], int n)
int main()
int arr[] = { 1, 2, 4, -1 };
findMinimumMaximum(arr, n);
C:\Users\nagal\Documents\D
The minimum element is -1
The maximum element is 4
Process exited after 0.8437 seconds with return value 0
Press any key to continue . . .
Compiler
Resources
Compile Log
Debug
Find Results
Close
- Output Size: 128.646484375 KiB
- Compilation Time: 0.23s
Done parsing in 0.016 seconds

32.

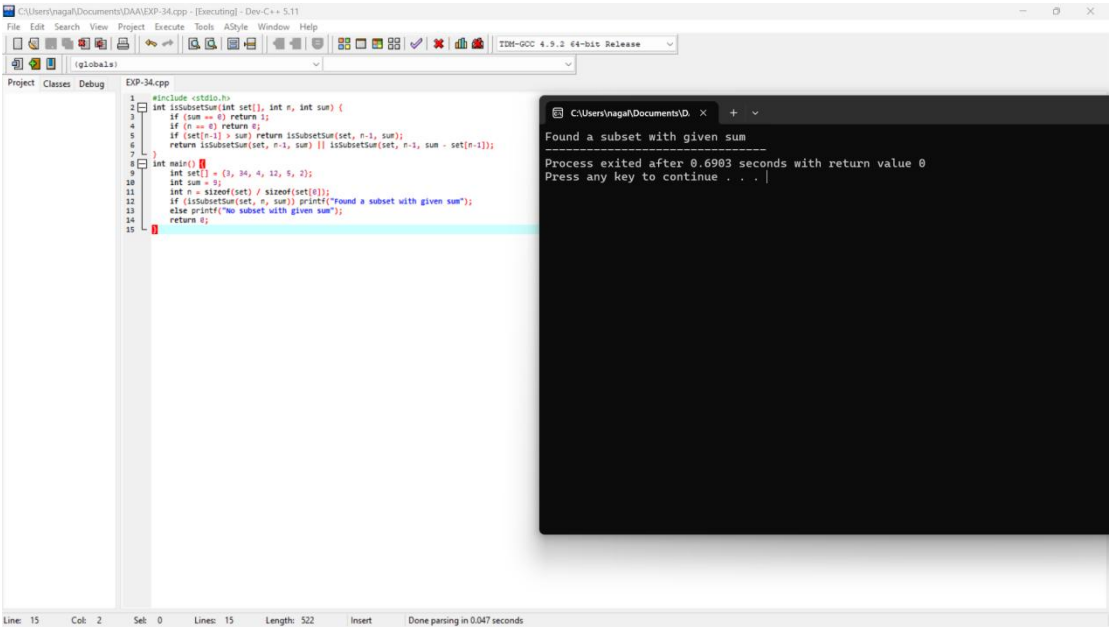

C:\Users\nagal\Documents\DAA\EXP-32.cpp - [Executing] - Dev-C++ 5.11
[*] EXP-32.cpp
[*] Untitled6
C:\Users\nagal\Documents\D
0 0 1 0
1 0 0 0
0 0 0 1
0 1 0 0
Process exited after 0.7386 seconds with return value 0
Press any key to continue . . .
Compiler
Resources
Compile Log
Debug
Find Results
Close
- Output Size: 129.2568359375 KiB
- Compilation Time: 0.19s
Done parsing in 0 seconds

33.


C:\Users\nagal\Documents\DAA\EXP-33.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-33.cpp
#include <stdio.h>
int main()
{
int arr[100] = { 0 };
int i, x, pos, n = 10;
for (i = 0; i < 10; i++)
arr[i] = i + 1;
for (i = 0; i < n; i++)
printf("%d ", arr[i]);
printf("\n");
x = 50;
pos = 5;
n++;
for (i = n - 1; i >= pos; i--)
arr[i] = arr[i - 1];
arr[pos - 1] = x;
for (i = 0; i < n; i++)
printf("%d ", arr[i]);
printf("\n");
return 0;
}
C:\Users\nagal\Documents\D.
1 2 3 4 5 6 7 8 9 10
1 2 3 4 50 5 6 7 8 9 10

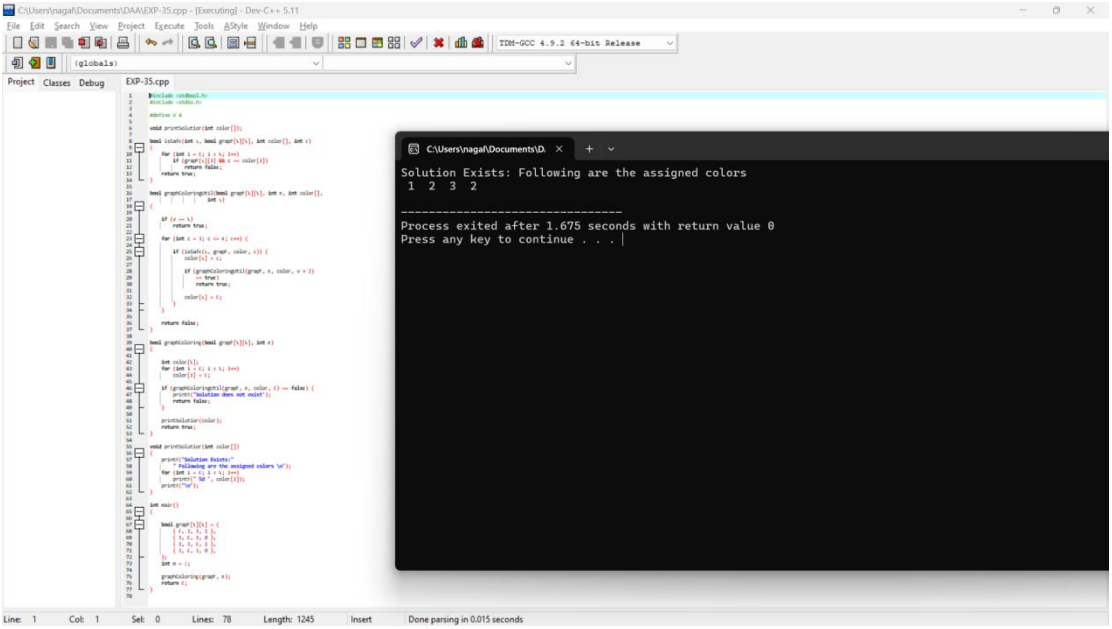
Process exited after 1.016 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
- Output Size: 128.103515625 KiB
- Compilation Time: 0.19s
Shorten compiler paths
Line: 24 Col: 1 Sel: 0 Lines: 31 Length: 406 Insert Done parsing in 0.015 seconds

34.

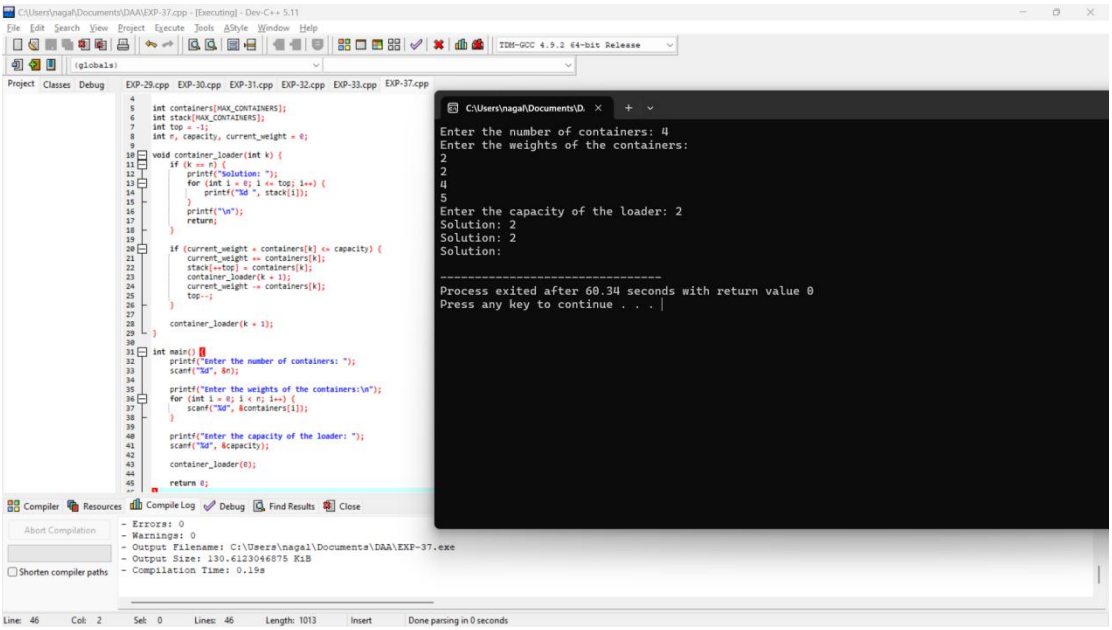

C:\Users\nagal\Documents\DAA\EXP-34.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-34.cpp
#include <stdio.h>
int isSubsetSum(int set[], int n, int sum) {
if (sum == 0) return 1;
if (n == 0) return 0;
if (set[n-1] > sum) return isSubsetSum(set, n-1, sum);
return isSubsetSum(set, n-1, sum) || isSubsetSum(set, n-1, sum - set[n-1]);
}
int main() {
int set[] = {3, 34, 4, 12, 5, 2};
int sum = 9;
int n = sizeof(set) / sizeof(set[0]);
if (isSubsetSum(set, n, sum)) printf("Found a subset with given sum");
else printf("No subset with given sum");
return 0;
}
C:\Users\nagal\Documents\D.
Found a subset with given sum

Process exited after 0.6903 seconds with return value 0
Press any key to continue . . .
Line: 15 Col: 2 Sel: 0 Lines: 15 Length: 522 Insert Done parsing in 0.047 seconds

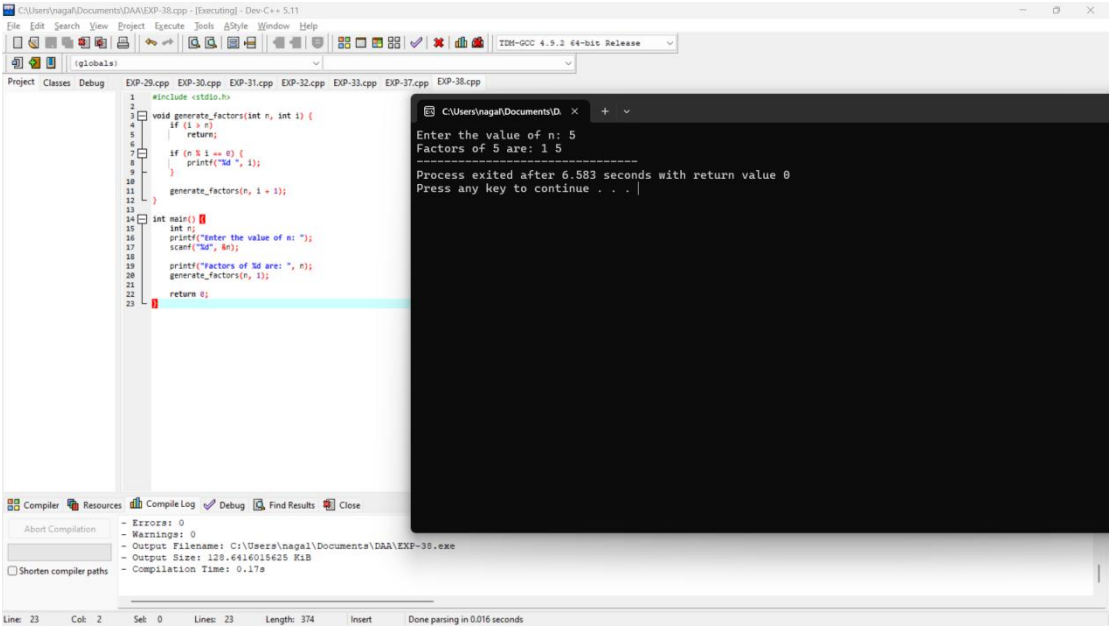
35.


C:\Users\nagal\Documents\DAA\EXP-35.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
Project Classes Debug
EXP-35.cpp
C:\Users\nagal\Documents\D.
Solution Exists: Following are the assigned colors
1 2 3 2
Process exited after 1.675 seconds with return value 0
Press any key to continue . . .
Line: 1 Col: 1 Sel: 0 Lines: 78 Length: 1245 Insert Done parsing in 0.015 seconds

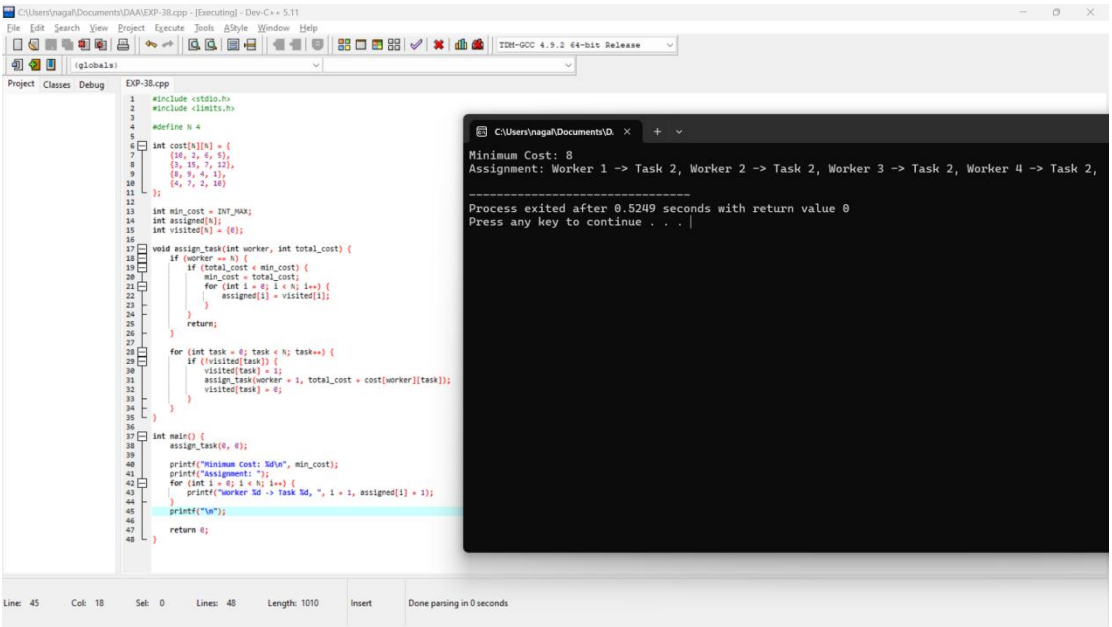
36.


C:\Users\nagal\Documents\DAA\EXP-37.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
Project Classes Debug
EXP-29.cpp EXP-30.cpp EXP-31.cpp EXP-32.cpp EXP-33.cpp EXP-37.cpp
C:\Users\nagal\Documents\D.
Enter the number of containers: 4
Enter the weights of the containers:
2
2
4
5
Enter the capacity of the loader: 2
Solution: 2
Solution: 2
Solution:
Process exited after 60.34 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-37.exe
- Output Size: 130.6123046875 KiB
- Compilation Time: 0.19s
Line: 46 Col: 2 Sel: 0 Lines: 46 Length: 1013 Insert Done parsing in 0 seconds

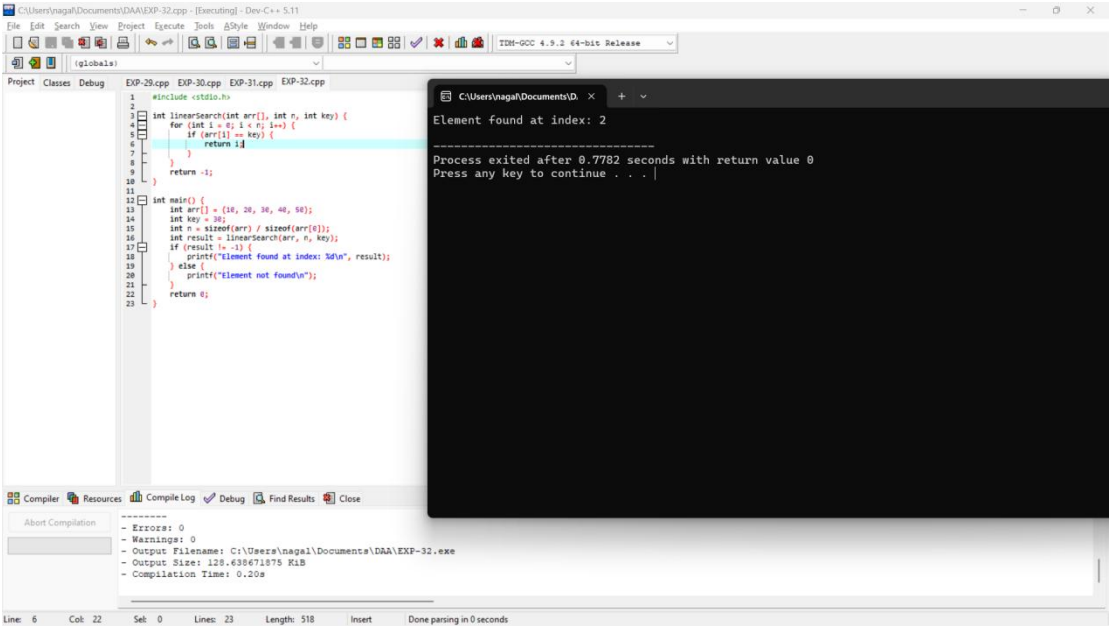
37.


C:\Users\nagal\Documents\DAA\EXP-38.cpp - [Executing] - Dev-C++ 5.11
#include <stdio.h>
void generate_factors(int n, int i) {
if (i > n)
return;
if (n % i == 0) {
printf("%d ", i);
}
generate_factors(n, i + 1);
}
int main() {
int n;
printf("Enter the value of n: ");
scanf("%d", &n);
printf("Factors of %d are: ", n);
generate_factors(n, 1);
return 0;
}
C:\Users\nagal\Documents\D.
Enter the value of n: 5
Factors of 5 are: 1 5
Process exited after 6.583 seconds with return value 0
Press any key to continue . . .
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-38.exe
- Output Size: 128.6416015625 KiB
- Compilation Time: 0.17s

38.

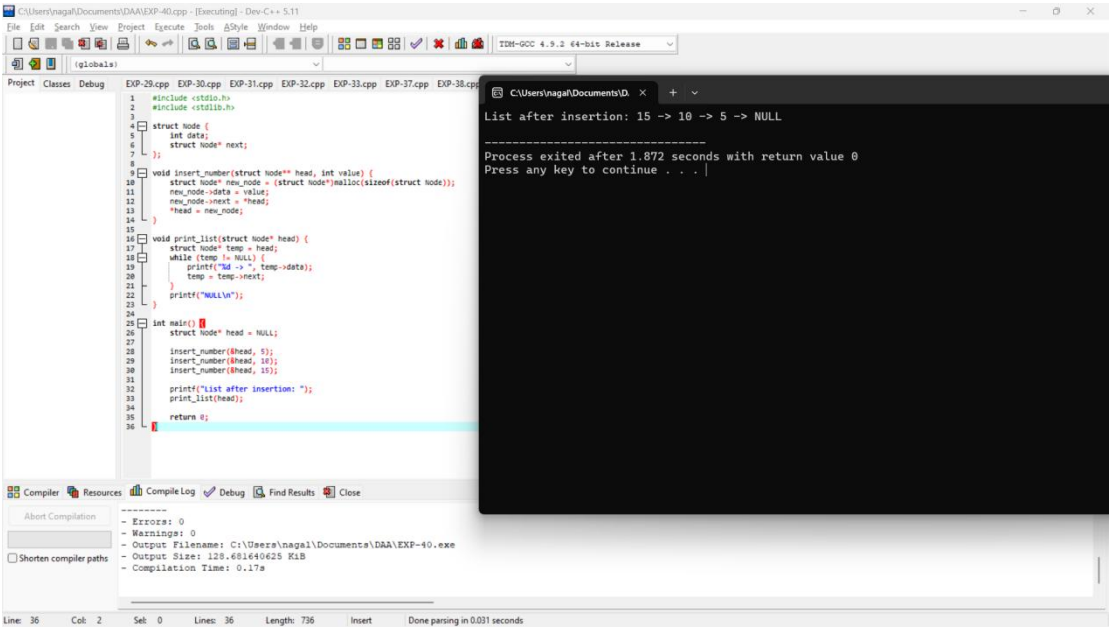

C:\Users\nagal\Documents\DAA\EXP-38.cpp - [Executing] - Dev-C++ 5.11
#include <stdio.h>
#include <limits.h>
#define N 4
int cost[N][N] = {
{10, 2, 6, 5},
{3, 15, 7, 12},
{8, 9, 4, 11},
{4, 7, 2, 10}
};
int min_cost = INT_MAX;
int assigned[N];
int visited[N] = {0};
void assign_task(int worker, int total_cost) {
if (worker == N) {
if (total_cost < min_cost) {
min_cost = total_cost;
for (int i = 0; i < N; i++) {
assigned[i] = visited[i];
}
}
return;
}
for (int task = 0; task < N; task++) {
if (!visited[task]) {
visited[task] = 1;
assign_task(worker + 1, total_cost + cost[worker][task]);
visited[task] = 0;
}
}
}
int main() {
assign_task(0, 0);
printf("Minimum Cost: %d\n", min_cost);
printf("Assignment: ");
for (int i = 0; i < N; i++) {
printf("Worker %d -> Task %d, ", i + 1, assigned[i] + 1);
}
printf("\n");
return 0;
}
C:\Users\nagal\Documents\D.
Minimum Cost: 8
Assignment: Worker 1 -> Task 2, Worker 2 -> Task 2, Worker 3 -> Task 2, Worker 4 -> Task 2,
Process exited after 0.5249 seconds with return value 0
Press any key to continue . . .

39.


C:\Users\nagal\Documents\DAA\EXP-32.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-29.cpp EXP-30.cpp EXP-31.cpp EXP-32.cpp
#include <stdio.h>
int linearSearch(int arr[], int n, int key) {
for (int i = 0; i < n; i++) {
if (arr[i] == key) {
return i;
}
}
return -1;
}
int main() {
int arr[] = {10, 20, 30, 40, 50};
int key = 30;
int n = sizeof(arr) / sizeof(arr[0]);
int result = linearSearch(arr, n, key);
if (result != -1) {
printf("Element found at index: %d\n", result);
} else {
printf("Element not found\n");
}
return 0;
}
C:\Users\nagal\Documents\D.
Element found at index: 2
Process exited after 0.7782 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-32.exe
- Output Size: 128.638671875 KiB
- Compilation Time: 0.20s
Line: 6 Col: 22 Sel: 0 Lines: 23 Length: 518 Insert Done parsing in 0 seconds

40.


C:\Users\nagal\Documents\DAA\EXP-40.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
EXP-29.cpp EXP-30.cpp EXP-31.cpp EXP-32.cpp EXP-33.cpp EXP-37.cpp EXP-38.cpp
#include <stdio.h>
#include <stdlib.h>
struct Node {
int data;
struct Node* next;
};
void insert_number(struct Node** head, int value) {
struct Node* new_node = (struct Node*)malloc(sizeof(struct Node));
new_node->data = value;
new_node->next = *head;
*head = new_node;
}
void print_list(struct Node* head) {
struct Node* temp = head;
while (temp != NULL) {
printf("%d -> ", temp->data);
temp = temp->next;
}
printf("NULL\n");
}
int main() {
struct Node* head = NULL;
insert_number(&head, 5);
insert_number(&head, 10);
insert_number(&head, 15);
printf("List after insertion: ");
print_list(head);
return 0;
}
C:\Users\nagal\Documents\D.
List after insertion: 15 -> 10 -> 5 -> NULL
Process exited after 1.872 seconds with return value 0
Press any key to continue . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\nagal\Documents\DAA\EXP-40.exe
- Output Size: 128.681640625 KiB
- Compilation Time: 0.17s
Line: 36 Col: 2 Sel: 0 Lines: 36 Length: 736 Insert Done parsing in 0.031 seconds