

File Edit Selection View Go Run ...

Daa-code

screenrec

EXPLORER

DAA-CODE

.vscode

daacode-java

a.exe

BF\_string\_matching.cpp

BinarySearch.cpp

BubbleSort.cpp

exhaustive\_search.cpp

HalfLinearSearch.cpp

InsertionSort.cpp

LinearSearch.cpp

LinearSearch.exe

MergeSort.cpp

SelectionSort.cpp

travelling\_salesman\_problem.cpp

OUTLINE

TIMELINE

JAVA PROJECTS

MergeSort.cpp

1 //Name: Maniyar Danish, Reg.No: 2020BIT028

2 // Merge Sort

3 #include<iostream>

4 using namespace std;

5 void merge(int arr[],int si,int ei){

6 if(si==ei){

7 return;

8 }

9 int a[ei-si+1];

10 int mid=(si+ei)/2;

11 int s=si,e=mid+1;

12 int i=0;

13 while(s<=mid&&e<=ei){

14 if(arr[s]<arr[e]){

15 a[i]=arr[s];

16 s++;

17 i++;

18 }

19 else{

20 a[i]=arr[e];

21 e++;

22 i++;

23 }

24 }

25 while(s<=mid){

26 a[i]=arr[s];

27 s++;

28 i++;

29 }

30 while(e<=ei){

31 a[i]=arr[e];

32 e++;

33 i++;

34 }

35 for(int i=0;i<sizeof(a)/sizeof(a[0]);i++){

36 arr[si+i]=a[i];

37 }

38 }

39 void mergeSort(int arr[],int si,int ei){

40 if(si>ei){

Ln 59, Col 53 Spaces: 4 UTF-8 CRLF C++ Win32

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MergeSort.cpp

MergeSort.cpp

main()

33 i++;

34 }

35 for(int i=0;i<sizeof(a)/sizeof(a[0]);i++){

36 arr[si+i]=a[i];

37 }

38 }

39 void mergeSort(int arr[],int si,int ei){

40 if(si>=ei){

41 return;

42 }

43 int mid=(si+ei)/2;

44 mergeSort(arr,si,mid);

45 mergeSort(arr,mid+1,ei);

46 merge(arr,si,ei);

47 }

48 int main(){

49 cout<<"Enter size of array:";

50 int n;

51 cin>>n;

52 int arr[n];

53 cout<<"Enter"<<" "<<n<<" "<<"elements of array:";

54 for(int i=0;i<n;i++){

55 cin>>arr[i];

56 }

57 mergeSort(arr,0,(sizeof(arr)/sizeof(arr[0]))-1);

58 cout<<"Sorted array using merge sort:";

59 for(int i=0;i<(sizeof(arr)/sizeof(arr[0]));i++){

60 cout<<arr[i]<<" ";

61 }

62 return 0;

63 }

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PS D:\DAA\Daa-code> g++ MergeSort.cpp

PS D:\DAA\Daa-code> .\a.exe

Enter size of array:9

Enter 9 elements of array:9 3 2 4 1 4 6 2 6

Sorted array using merge sort:1 2 2 3 4 4 6 6 9

PS D:\DAA\Daa-code>

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travelling\_salesman\_problem.cpp

QuickSort.cpp

QuickSort.cpp

main()

1#include <iostream>

2using namespace std;

3void swap(int\* a, int\* b){

4int t = \*a;

5\*a = \*b;

6\*b = t;

7}

8int partition (int arr[], int low, int high){

9int pivot = arr[high];

10int i = (low - 1);

11for (int j = low; j <= high- 1; j++) {

12if (arr[j] <= pivot) {

13i++;

14swap(&arr[i], &arr[j]);

15}

16}

17swap(&arr[i + 1], &arr[high]);

18return (i + 1);

19}

20void quickSort(int arr[], int low, int high) {

21if (low < high) {

22int pivot = partition(arr, low, high);

23quickSort(arr, low, pivot - 1);

24quickSort(arr, pivot + 1, high);

25}

26}

27void displayArray(int arr[], int size){

28int i;

29for (i=0; i < size; i++)

30cout<<arr[i]<<"\t"; }

31int main() {

32int arr[] = {12,23,3,43,51,35,19,45};

33int n = sizeof(arr)/sizeof(arr[0]);

34cout<<"Input array"<<endl;

35displayArray(arr,n);

36cout<<endl;

37quickSort(arr, 0, n-1);

38cout<<"Array sorted with quick sort"<<endl;

39displayArray(arr,n);

40return 0;}

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

Input array

122334351351945

Array sorted with quick sort

312192335434551

PS D:\DAA\Daa-code>

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travelling\_salesman\_problem.cpp

OUTLINE

TIMELINE

BinarySearchRecursive.cpp

BinarySearchRecursive.cpp > binarySearch(int [], int, int, int)

```
1 #include<iostream>
2 using namespace std;
3 int binarySearch(int arr[],int low, int end,int target){
4     int mid=(low+end)/2;
5     if(arr[mid]==target){
6         return mid;
7     }
8     if(arr[mid]>target){
9         end=mid-1;
10    }
11    else{
12        low=mid+1;
13    }
14    return binarySearch(arr,low,end,target);
15 }
16 int main(){
17     int arr[10]={1,2,3,4,5,6,7,8,9};
18     int low=0,end=(sizeof(arr)/sizeof(arr[0]))-1;
19     cout<<"enter number between 1 and 9:";
20     int target;
21     cin>>target;
22     cout<<"Index of your entered number is:";
23     cout<<binarySearch(arr,low,end,target);
24     cout<<endl;
25 }
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

```
enter number between 1 and 9:6
Index of your entered number is:5
PS D:\DAA\Daa-code>
```

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EXPLORER

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> daacode-java

≡ a.exe

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StrassenseMatrixMultiplication....

travelling\_salesman\_problem.cpp

> OUTLINE

> TIMELINE

MergeSort.cpp

QuickSort.cpp

BinarySearchRecursive.cpp

StrassenseMatrixMultiplication.cpp X

StrassenseMatrixMultiplication.cpp > main()

```
1  #include <bits/stdc++.h>
2  using namespace std;
3  #define ROW_1 4
4  #define COL_1 4
5  #define ROW_2 4
6  #define COL_2 4
7  void print(string display, vector<vector<int> > matrix,int start_row, int start_column, int end_row,int end_column){
8      cout << endl << display << " =>" << endl;
9      for (int i = start_row; i <= end_row; i++) {
10         for (int j = start_column; j <= end_column; j++) {
11             cout << setw(10);
12             cout << matrix[i][j];
13         }
14         cout << endl;
15     }
16     cout << endl;
17     return;
18 }
19 void add_matrix(vector<vector<int> > matrix_A,vector<vector<int> > matrix_B,vector<vector<int> > &matrix_C,int split
20     for (auto i = 0; i < split_index; i++)
21         for (auto j = 0; j < split_index; j++)
22             matrix_C[i][j]= matrix_A[i][j] + matrix_B[i][j];
23 }
24 vector<vector<int> >
25 multiply_matrix(vector<vector<int> > matrix_A,vector<vector<int> > matrix_B){
26     int col_1 = matrix_A[0].size();
27     int row_1 = matrix_A.size();
28     int col_2 = matrix_B[0].size();
29     int row_2 = matrix_B.size();
30     if (col_1 != row_2) {
31         cout << "\nError: The number of columns in Matrix "
32             "A must be equal to the number of rows in "
```

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Spaces: 4

UTF-8

CRLF

C++

Win32

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EXPLORER

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  - travelling\_salesman\_problem.cpp
- OUTLINE
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MergeSort.cpp QuickSort.cpp BinarySearchRecursive.cpp StrassenseMatrixMultiplication.cpp X

StrassenseMatrixMultiplication.cpp > main()

```
32         "A must be equal to the number of rows in "
33         "Matrix B\n";
34     return {};
35 }
36 vector<int> result_matrix_row(col_2, 0);
37 vector<vector<int> > result_matrix(row_1,result_matrix_row);
38 if (col_1 == 1)
39     result_matrix[0][0]= matrix_A[0][0] * matrix_B[0][0];
40 else {
41     int split_index = col_1 / 2;
42     vector<int> row_vector(split_index, 0);
43     vector<vector<int> > result_matrix_00(split_index,row_vector);
44     vector<vector<int> > result_matrix_01(split_index,row_vector);
45     vector<vector<int> > result_matrix_10(split_index,row_vector);
46     vector<vector<int> > result_matrix_11(split_index,row_vector);
47     vector<vector<int> > a00(split_index, row_vector);
48     vector<vector<int> > a01(split_index, row_vector);
49     vector<vector<int> > a10(split_index, row_vector);
50     vector<vector<int> > a11(split_index, row_vector);
51     vector<vector<int> > b00(split_index, row_vector);
52     vector<vector<int> > b01(split_index, row_vector);
53     vector<vector<int> > b10(split_index, row_vector);
54     vector<vector<int> > b11(split_index, row_vector);
55     for (auto i = 0; i < split_index; i++)
56         for (auto j = 0; j < split_index; j++) {
57             a00[i][j] = matrix_A[i][j];
58             a01[i][j] = matrix_A[i][j + split_index];
59             a10[i][j] = matrix_A[split_index + i][j];
60             a11[i][j] = matrix_A[i + split_index][j + split_index];
61             b00[i][j] = matrix_B[i][j];
62             b01[i][j] = matrix_B[i][j + split_index];
```

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EXPLORER

- DAACODE
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  - travelling\_salesman\_problem.cpp
- OUTLINE
- TIMELINE

MergeSort.cpp QuickSort.cpp BinarySearchRecursive.cpp StrassenseMatrixMultiplication.cpp X

StrassenseMatrixMultiplication.cpp > main()

```
61         [j + split_index];
62         b00[i][j] = matrix_B[i][j];
63         b01[i][j] = matrix_B[i][j + split_index];
64         b10[i][j] = matrix_B[split_index + i][j];
65         b11[i][j] = matrix_B[i + split_index]
66         [j + split_index];
67     }
68     add_matrix(multiply_matrix(a00, b00),
69               multiply_matrix(a01, b10),
70               result_matrix_00, split_index);
71     add_matrix(multiply_matrix(a00, b01),
72               multiply_matrix(a01, b11),
73               result_matrix_01, split_index);
74     add_matrix(multiply_matrix(a10, b00),
75               multiply_matrix(a11, b10),
76               result_matrix_10, split_index);
77     add_matrix(multiply_matrix(a10, b01),
78               multiply_matrix(a11, b11),
79               result_matrix_11, split_index);
80     for (auto i = 0; i < split_index; i++)
81         for (auto j = 0; j < split_index; j++) {
82             result_matrix[i][j]
83                 = result_matrix_00[i][j];
84             result_matrix[i][j + split_index]
85                 = result_matrix_01[i][j];
86             result_matrix[split_index + i][j]
87                 = result_matrix_10[i][j];
88             result_matrix[i + split_index]
89                 [j + split_index]
90                 = result_matrix_11[i][j];
91         }
92     result_matrix_00.clear();
```

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  - travelling\_salesman\_problem.cpp
- OUTLINE
- TIMELINE

StrassenseMatrixMultiplication.cpp > main()

```
91     }
92     result_matrix_00.clear();
93     result_matrix_01.clear();
94     result_matrix_10.clear();
95     result_matrix_11.clear();
96     a00.clear();
97     a01.clear();
98     a10.clear();
99     a11.clear();
100    b00.clear();
101    b01.clear();
102    b10.clear();
103    b11.clear();
104    }
105    return result_matrix;
106    }
107    int main(){
108        vector<vector<int> > matrix_A = { { 1, 1, 1, 1 }, { 2, 2, 2, 2 }, { 3, 3, 3, 3 }, { 2, 2, 2, 2 } };
109        print("Array A", matrix_A, 0, 0, ROW_1 - 1, COL_1 - 1);
110        vector<vector<int> > matrix_B = { { 1, 1, 1, 1 }, { 2, 2, 2, 2 }, { 3, 3, 3, 3 }, { 2, 2, 2, 2 } };
111        print("Array B", matrix_B, 0, 0, ROW_2 - 1, COL_2 - 1);
112        vector<vector<int> > result_matrix(
113            multiply_matrix(matrix_A, matrix_B));
114        print("Result Array", result_matrix, 0, 0, ROW_1 - 1,
115            COL_2 - 1);
116    }
```

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StrassenseMatrixMultiplication....

travelling\_salesman\_problem.cpp

OUTLINE

TIMELINE

MergeSort.cpp

QuickSort.cpp

BinarySearchRecursive.cpp

StrassenseMatrixMultiplication.cpp X

StrassenseMatrixMultiplication.cpp > main()

100        b00.clear();

101        b01.clear();

102        b10.clear();

103        b11.clear();

104        }

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PS D:\DAA\Daa-code> g++ StrassenseMatrixMultiplication.cpp

PS D:\DAA\Daa-code> .\a.exe

Array A =>

1	1	1	1
2	2	2	2
3	3	3	3
2	2	2	2

Array B =>

1	1	1	1
2	2	2	2
3	3	3	3
2	2	2	2

Result Array =>

8	8	8	8
16	16	16	16
24	24	24	24
16	16	16	16

PS D:\DAA\Daa-code>

0 0 0

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