



DRY RUNS:

D: >  src.cpp >  main()

```
1  #include<iostream>
2  using namespace std;
3  int main(){
4      int a[5] = {2,3,4,5};
5      cout<<a[2]<<endl<<a[4];
6      return 0;
7  }
8
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL



```
● PS C:\Users\saadg> cd "d:\" ; if ($?) { g++ src.cpp -o src } ; if ($?) { .\src }
○ 4
  0
PS D:\>
```

D: >  src.cpp > ...

```
1  #include<iostream>
2  using namespace std;
3  int main() {
4      char a[5] = {'A','B'};
5      cout<<a[1]<<endl<<a[4];
6      return 0;
7  }
8
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
● PS C:\Users\saadg> cd "d:\" ; if ($?) { g++ src.cpp -o src } ; if ($?) { .\src }
○ B
PS D:\>
```

D: >  src.cpp >  main()

```
1  #include<iostream>
2  using namespace std;
3  int main() {
4      char ch[10];
5      cin>>ch; //Input is "Pakistan"
6      cout << ch[4];
7      return 0;
8  }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
● PS C:\Users\saadg> cd "d:\" ; if ($?) { g++ src.cpp -o src } ; if ($?) { .\src }
Pakistan
○ s
PS D:\> █
```

```
D: > src.cpp > ...
1  #include<iostream>
2  using namespace std;
3  int main() {
4  int a[] = {1,2,3};
5  int b[4] = {7};
6  cout <<a[2]<<b[2];
7  return 0;
8  }
9  |

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

● PS C:\Users\saadg> cd "d:\\" ; if ($?) { g++ src.cpp -o src } ; if ($?) { .\src }
30
○ PS D:\>
```

SOURCE CODE:

```
#include<iostream>
#include <ctime>
#include <cstdlib>
#include <string>
using namespace std;

// TASK 1:
void Task_1(){
    cout<<endl;
    int table[5];
    cout<<" ** TABLE GENERATOR ** \n";
    cout<<"-----\n";
    for(int i=0; i<5;i++){
        cout<<"Enter "<<i+1<<"th element: ";
        cin>>table[i];
        cout<<endl;
        cout<<"The table for "<<i+1<<"th element is: \n\n";
        for(int j = 1; j<=10;j++){
            cout<<"\t"<<table[i]<<" * "<<j<<" = "<<table[i]*j<<endl;
        }
        cout<<"\n-----\n";
    }
}

// TASK 2:
void Task_2(){
    cout<<endl;
    int random[200];
    srand(time(0));
    for(int i=0; i<200;i++){
        random[i] = (rand()%100);
    }
    for(int i=0; i<20;i++){
        for(int j = 0;j<10;j++){
            cout<<random[i * 10 + j]<<" ";
        }
        cout<<endl;
    }
}
```

```

}

// TASK 3:
void Task_3(){
    cout<<endl;
    int arr[10];
    int count = 0;
    cout<<"Enter array entries: \n";
    for(int i=0; i<10;i++){
        cin>>arr[i];
        for(int j=0; j<i; j++){
            if(arr[i]==arr[j]){
                count += 1;
                if(count>0){
                    cout<<"Duplicate Values Found, Please enter again: ";
                    cin>>arr[i];
                }
            }
        }
    }
    cout<<"Array values are: \n";
    for(int i=0; i<10;i++){
        cout<<arr[i]<< " , ";
    }
}

// TASK 4:
void Task_4(){
    cout<<endl;
    int missing, index;
    int arr[10];
    cout<<"Enter 9 elements in array: ";
    for(int i=0; i<9; i++){
        cin>>arr[i];
        if(i==8){
            cout<<"Your array has values: [";
            for(int i=0;i<9;i++){
                cout<<arr[i]<<" , ";
            }
            cout<<"]";
        }
    }
    cout<<"\nEnter your tenth element: ";
    cin>>missing;
    cout<<"Enter Index: ";
    cin>>index;
    cout<<"your final array is: [";
    for(int i=9; i>index; i--){
        arr[i] = arr[i-1];
    }
    arr[index] = missing;
    for(int i=0; i<10; i++){
        cout<<arr[i]<<" , ";
    }
    cout<<"]";
}

// TASK 5:

```

```

void Task_5(){
    cout<<endl;
    int arr[10];
    cout<<"Enter 10 numbers:(10 - 100): \n";
    for(int i = 0; i<10 ; i++){
        cin>>arr[i];
        if(arr[i]<10 || arr[i]>100){
            cout<<"Your input is not 10 - 100 inclusive, Enter again: \n";
            cin>>arr[i];
        }
        for(int j=0; j<i; j++){
            if(arr[i]==arr[j]){
                cout<<"Duplicate Found, Enter again: \n";
                cin>>arr[i];
            }
        }
    }
    cout<<"Your entered array is: [ ";
    for(int i = 0; i<10 ; i++){
        cout<<arr[i]<<" , ";
    }
    cout<<" ]\n";
    cout<<"WORST CASE!";
}

```

// TASK 6:

```

void Task_6(){
    cout<<endl;
    char sentence[30];
    char result[30];
    cout<<"Enter 30 characters (No Space to be entered): ";
    for(int i=0; i<30; i++){
        cout<<"Enter "<<i+1<<"th Character: ";
        cin>>sentence[i];
        if(sentence[i]>=65 && sentence[i]<=90){
            result[i] = sentence[i] + 32;
        }
        else if(sentence[i]>=97 && sentence[i]<=122){
            result[i] = sentence[i] - 32;
        }
    }
    cout<<"Original: ";
    for(int i=0;i<30;i++){
        cout<<sentence[i];
    }
    cout<<"\nResult: ";
    for(int i=0;i<30;i++){
        cout<<result[i];
    }
}

```

// TASK 7:

```

void Task_7(){
    cout<<endl;
    int dice_counts[11] = {0};
    int dice1, dice2, sum;
    for (int i = 0; i < 1000; i++) {
        dice1 = rand() % 6 + 1;

```

```

        dice2 = rand() % 6 + 1;
        sum = dice1 + dice2;
        dice_counts[sum - 2]++;
    }
    cout << "Sum | Count" << endl;
    for (int i = 2; i < 12; i++) {
        cout << i << " | " << dice_counts[i - 2] << endl;
    }
}

// Main:
int main(){

    cout << "\033[1;31m\t-> Task 1\033[0m" << std::endl;
    Task_1();
    cout<<endl;

    cout << "\033[1;32m\t-> Task 2\033[0m" << std::endl;
    Task_2();
    cout<<endl;

    cout << "\033[1;33m\t-> Task 3\033[0m" << std::endl;
    Task_3();
    cout<<endl;

    cout << "\033[1;34m\t-> Task 4\033[0m" << std::endl;
    Task_4();
    cout<<endl;

    cout << "\033[1;35m\t-> Task 5\033[0m" << std::endl;
    Task_5();
    cout<<endl;

    cout << "\033[1;36m\t-> Task 6\033[0m" << std::endl;
    Task_6();
    cout<<endl;

    cout << "\033[1;37m\t-> Task 7\033[0m" << std::endl;
    Task_7();
    cout<<endl;

    return 0;
}

```

OUTPUT:

-> Task 1

**** TABLE GENERATOR ****

Enter 1th element: 1

The table for 1th element is:

```
1 * 1 = 1
1 * 2 = 2
1 * 3 = 3
1 * 4 = 4
1 * 5 = 5
1 * 6 = 6
1 * 7 = 7
1 * 8 = 8
1 * 9 = 9
1 * 10 = 10
```

Enter 2th element: 2

The table for 2th element is:

```
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
2 * 4 = 8
2 * 5 = 10
2 * 6 = 12
2 * 7 = 14
2 * 8 = 16
2 * 9 = 18
2 * 10 = 20
```

Enter 3th element: 3

The table for 3th element is:

```
3 * 1 = 3
3 * 2 = 6
3 * 3 = 9
3 * 4 = 12
3 * 5 = 15
3 * 6 = 18
3 * 7 = 21
3 * 8 = 24
3 * 9 = 27
3 * 10 = 30
```

Enter 4th element: 4

The table for 4th element is:

```
4 * 1 = 4
4 * 2 = 8
4 * 3 = 12
4 * 4 = 16
4 * 5 = 20
4 * 6 = 24
4 * 7 = 28
4 * 8 = 32
4 * 9 = 36
4 * 10 = 40
```

Enter 5th element: 5

The table for 5th element is:

```
5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50
```

-> Task 2

```
95 77 11 27 2 10 54 31 31 6
63 48 88 24 47 2 34 44 91 27
49 44 83 88 22 29 42 41 91 14
44 24 47 11 60 79 88 84 42 84
33 3 56 81 44 71 35 60 56 2
60 48 26 97 11 88 77 31 40 63
59 12 97 54 14 87 56 38 83 17
60 45 1 39 97 14 97 86 79 47
81 66 95 75 87 81 38 24 56 52
58 70 89 22 23 96 12 12 37 15
73 10 38 93 55 12 50 84 69 74
29 47 90 52 44 60 41 92 92 3
97 82 52 50 37 66 86 81 22 8
92 99 88 93 70 97 41 68 30 67
88 72 35 29 95 88 43 93 7 98
5 26 60 92 29 66 39 27 57 23
14 82 64 50 40 64 89 21 37 5
7 10 28 46 50 93 62 89 76 71
18 27 8 80 35 1 55 54 8 25
9 30 59 86 19 34 47 53 31 80
```

-> Task 3

Enter array entries:

1

1

Duplicate Values Found, Please enter again: 2

3

4

5

6

7

8

9

10

Array values are:

1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 ,

-> Task 4

Enter 9 elements in array: 1

2

3

4

5

6

7

8

10

Your array has values: [1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 ,]

Enter your tenth element: 9

Enter Index: 9

your final array is: [1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 10 , 9 ,]

-> Task 5

Enter 10 numbers:(10 - 100):

1

Your input is not 10 - 100 inclusive, Enter again:

43

43

Duplicate Found, Enter again:

54

13

23

98

64

11

10

78

35

Your entered array is: [43 , 54 , 13 , 23 , 98 , 64 , 11 , 10 , 78 , 35 ,]

WORST CASE!

-> Task 6

```
Enter 30 characters (No Space to be entered): Enter 1th Character: m
Enter 2th Character: Y
Enter 3th Character: n
Enter 4th Character: A
Enter 5th Character: M
Enter 6th Character: E
Enter 7th Character: i
Enter 8th Character:
S
Enter 9th Character: s
Enter 10th Character: A
Enter 11th Character: A
Enter 12th Character: D
Enter 13th Character: a
Enter 14th Character: N
Enter 15th Character: D
Enter 16th Character: i
Enter 17th Character: a
Enter 18th Character: M
Enter 19th Character: i
Enter 20th Character: N
Enter 21th Character: m
Enter 22th Character: Y
Enter 23th Character: s
Enter 24th Character: E
Enter 25th Character: V
Enter 26th Character: E
Enter 27th Character: N
Enter 28th Character: T
Enter 29th Character: H
Enter 30th Character: s
Original: mYnAMEiSsAADaNDiaMiNmYsEVENTHs
Result: MyNameIsSaadAndIAMInMySeventhS
```

-> Task 7

Sum	Count
2	23
3	55
4	90
5	121
6	144
7	182
8	134
9	104
10	71
11	47