CAUC201 – Data Structures and Algorithms

Assignment Submission

Assignment - 1

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1	Write a program to print five elements of an array.
2	Write a program to accept five elements and print them.
3	Write a program to accept five elements and print them in reverse order

Problem 1 Code

```cpp
print_5_ele_of_array.cpp > main()
1    #include <iostream>
2    using namespace std;
3
4    int main() {
5        int arr[5] = {1, 2, 3, 4, 5};
6        for (int i = 0; i < 5; i++) {
7            cout << arr[i] << " ";
8        }
9        return 0;
10   }
```

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   SQL HISTORY   TASK MONITOR

PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> g++ print_5_ele_of_array.cpp
PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> .\a.exe
 1 2 3 4 5
PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1>
```

Problem 2 Code

```cpp
accept_n_print_5_ele.cpp > main()
1    #include <iostream>
2    using namespace std;
3
4    int main() {
5        int arr[5];
6        cout << "Enter 5 integers: ";
7        for (int i = 0; i < 5; i++) {
8            cin >> arr[i];
9        }
10       for (int i = 0; i < 5; i++) {
11           cout << arr[i] << " ";
12       }
13       return 0;
14   }
```

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   SQL HISTORY   TASK MONITOR

PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> g++ accept_n_print_5_ele.cpp
PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> .\a.exe
Enter 5 integers: 10
20
30
40
50
10 20 30 40 50
```

```cpp
G accept_five_print_rev.cpp > ۞ main()
4     int main () {
5         int a[5],i;
6         cout<<"Enter five Elements : ";
7         for(i=0 ; i<5 ; i++) {
8             cin>>a[i];
9         }
10        cout<<endl;
11        for(i=4 ; i>=0 ; i--) {
12            cout<<a[i]<<endl;
13        }
14    }
15
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   SQL HISTORY   TASK MONITOR

```
● PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> g++ accept_five_print_rev.cpp
● PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> .\a.exe
  Enter five Elements : 10
  20
  30
  40
  50

● 50
  40
● 30
  20
  10
```

4	Write a program to accept n elements and find their summation and average.

```cpp
G accept_n_find_sum_avg.cpp > ۞ main()
1     #include<iostream>
2     using namespace std;
3     int main() {
4         int n, sum = 0;
5         cout << "Enter the number of elements: ";
6         cin >> n;
7         int a[n];
8         cout << "Enter " << n << " elements: ";
9         for(int i = 0; i < n; i++) {
10            cin >> a[i];
11            sum += a[i];
12        }
13        cout << "Sum: " << sum << endl;
14        cout << "Average: " << sum / n << endl;
15        return 0;
16    }
17
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   SQL

```
● PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> .\a.exe
  Enter the number of elements: 5
  Enter 5 elements: 10
  20
  30
  40
● 50
● Sum: 150
  Average: 30
```

5	Write a program to accept n elements, print all odd elements, and count the number of odd elements.

```
C+ accept_n_print_and_count_odd.cpp > ⊘ main()
 1    #include <iostream>
 2    using namespace std;
 3    int main()
 4    {
 5        int n, count = 0;
 6        cout << "Enter the number of elements: ";
 7        cin >> n;
 8        int a[n];
 9        cout << "Enter " << n << " elements: ";
10        for (int i = 0; i < n; i++)
11            cin >> a[i];
12        cout << "Odd elements: ";
13        for (int i = 0; i < n; i++)
14        {
15            if (a[i] % 2 != 0)
16            {
17                cout << a[i] << " ";
18                count++;
19            }
20        }
21        cout << "\nNumber of odd elements: " << count << endl;
22        return 0;
23    }
24
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS   SQL HISTORY   TASK MONITOR

```
PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> g++ accept_n_print_and_count_odd.cpp
PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> .\a.exe
Enter the number of elements: 4
Enter 4 elements: 1
 2
 3
 4
Odd elements: 1 3
Number of odd elements: 2
```

| 6 | Write a program to accept n elements and find the maximum and minimum element among them. |

```cpp
accept_n_print_and_count_odd.cpp > main()
1   #include <iostream>
2   using namespace std;
3   int main()
4   {
5       int n, count = 0;
6       cout << "Enter the number of elements: ";
7       cin >> n;
8       int a[n];
9       cout << "Enter " << n << " elements: ";
10      for (int i = 0; i < n; i++)
11          cin >> a[i];
12      cout << "Odd elements: ";
13      for (int i = 0; i < n; i++)
14      {
15          if (a[i] % 2 != 0)
16          {
17              cout << a[i] << " ";
18              count++;
19          }
20      }
21      cout << "\nNumber of odd elements: " << count << endl;
22      return 0;
23  }
24
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**   PORTS   SQL HISTORY   TASK MONITOR

```
PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> g++ accept_n_print_and_count_odd.cpp
PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> .\a.exe
Enter the number of elements: 4
Enter 4 elements: 1
2
3
4
Odd elements: 1 3
Number of odd elements: 2
```

| 7 | Write a program to accept n elements and check whether a particular element is present or not. |

```cpp
accept_n_present_or_not.cpp > ...
1    #include<iostream>
2    using namespace std;
3    int main() {
4        int n, search, found = 0;
5        cout << "Enter the number of elements: ";
6        cin >> n;
7        int a[n];
8        cout << "Enter " << n << " elements: ";
9        for(int i = 0; i < n; i++)
10           cin >> a[i];
11       cout << "Enter the element to search: ";
12       cin >> search;
13       for(int i = 0; i < n; i++) {
14           if(a[i] == search) {
15               found = 1;
16               break;
17           }
18       }
19       if(found)
20           cout << "Element " << search << " is present in the array." << endl;
21       else
22           cout << "Element " << search << " is not present in the array." << endl;
23       return 0;
24   }
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    SQL HISTORY    TASK MONITOR

PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> g++ accept_n_present_or_not.cpp
PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> .\a.exe
Enter the number of elements: 5
Enter 5 elements: 1
2
3
4
5
Enter the element to search: 3
Element 3 is present in the array.
```

8	Write a program to find the factorial of a given number (Function with no arguments and no return value).

```cpp
find_fact_no_args_no_return_value.cpp > main()
1    #include<iostream>
2    using namespace std;
3    void findFactorial() {
4        int num, factorial = 1;
5        cout << "Enter a number to find its factorial: ";
6        cin >> num;
7        for(int i = 1; i <= num; i++)
8            factorial *= i;
9        cout << "Factorial of " << num << " is: " << factorial << endl;
10   }
11   int main() {
12       findFactorial();
13       return 0;
14   }
15
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    SQL HISTORY    TASK MONITOR

PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> g++ find_fact_no_args_no_return_value.cpp
PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> .\a.exe
Enter a number to find its factorial: 4
Factorial of 4 is: 24
```

9	Write a program to find factorial of a given number (Function with arguments and no return value).

```cpp
find_fact_with_args_no_return_value.cpp > main()
1   #include<iostream>
2   using namespace std;
3   void findFactorial(int num) {
4       int factorial = 1;
5       for(int i = 1; i <= num; i++)
6           factorial *= i;
7       cout << "Factorial of " << num << " is: " << factorial << endl;
8   }
9   int main() {
10      int num;
11      cout << "Enter a number to find its factorial: ";
12      cin >> num;
13      findFactorial(num);
14      return 0;
15  }
```

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   SQL HISTORY   TASK MONITOR

PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> g++ find_fact_with_args_no_return_value.cpp
PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> .\a.exe
Enter a number to find its factorial: 4
Factorial of 4 is: 24
```

10	Write a program to find factorial of a given number (Function with arguments and with return value).

```cpp
find_fact_with_args_with_return_value.cpp > ...
1   #include<iostream>
2   using namespace std;
3   int findFactorial(int num) {
4       int factorial = 1;
5       for(int i = 1; i <= num; i++)
6           factorial *= i;
7       return factorial;
8   }
9   int main() {
10      int num;
11      cout << "Enter a number to find its factorial: ";
12      cin >> num;
13      int result = findFactorial(num);
14      cout << "Factorial of " << num << " is: " << result << endl;
15      return 0;
16  }
17
```

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   SQL HISTORY   TASK MONITOR

PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> g++ find_fact_with_args_with_return_value.cpp
PS D:\JEET\COLLEGE\24BCA095\DSA\New folder\1> .\a.exe
Enter a number to find its factorial: 4
Factorial of 4 is: 24
```