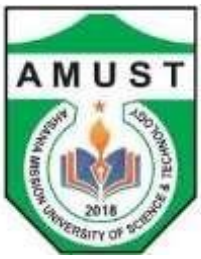

Ahsania Mission University of Science & Technology

Lab Report-01

Lab No: 01

Lab Title: Computer Algorithms

Course Code: CSE 2204

Course Title: Computer Algorithms Sessional.

Submitted By:

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1st Batch, 2nd Year, 2nd Semester

Department of Computer science and Engineering,
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Submitted To:

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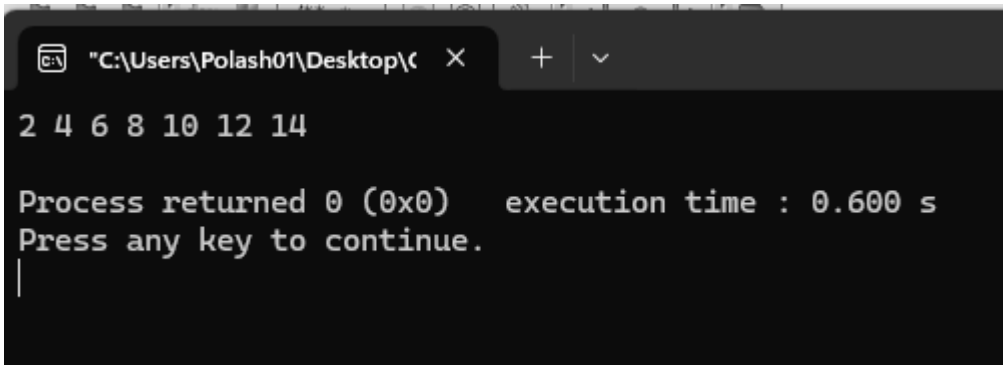
Ahsania Mission University of Science & Technology

Task 01: Marge Two Arrays….

Source Code

```
#include <bits/stdc++.h>
using namespace std;

int main() {
   int arr1[100] = {2, 4, 6};
   int size1 = 3;

   int arr2[100] = {8, 10, 12, 14};
   int size2 = 4;

   int merged[200];
   int mergedSize = size1 + size2;

   for(int i = 0; i < size1; i++)
      merged[i] = arr1[i];

   for(int i = 0; i < size2; i++)
      merged[size1 + i] = arr2[i];

   for(int i = 0; i < mergedSize; i++)
      cout << merged[i] << " ";
   cout << endl;
   return 0;
}
```

Output:

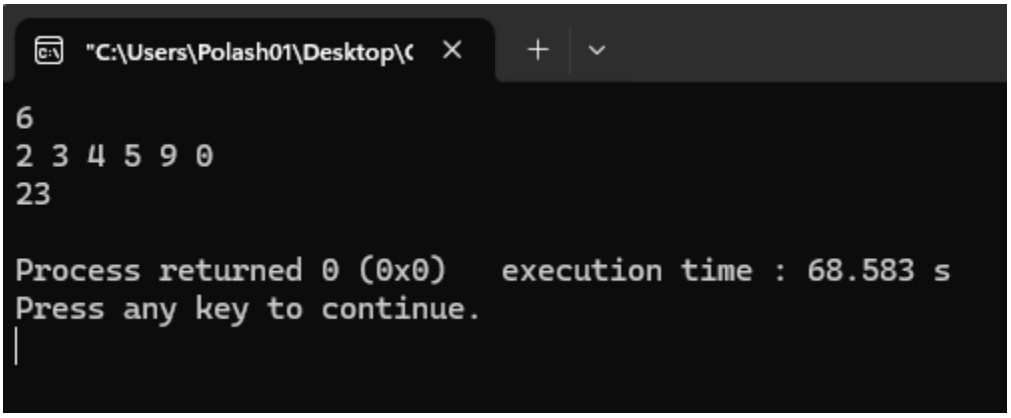


Task02: Sum of Array Elements

Source Code

```
#include <bits/stdc++.h>
using namespace std;

int main() {
   int n, sum = 0;
   cin >> n;
   int a[n];
   for(int i = 0; i < n; i++) {
      cin >> a[i];
      sum += a[i];
   }
   cout << sum << endl;
   return 0;
}
```

Output:



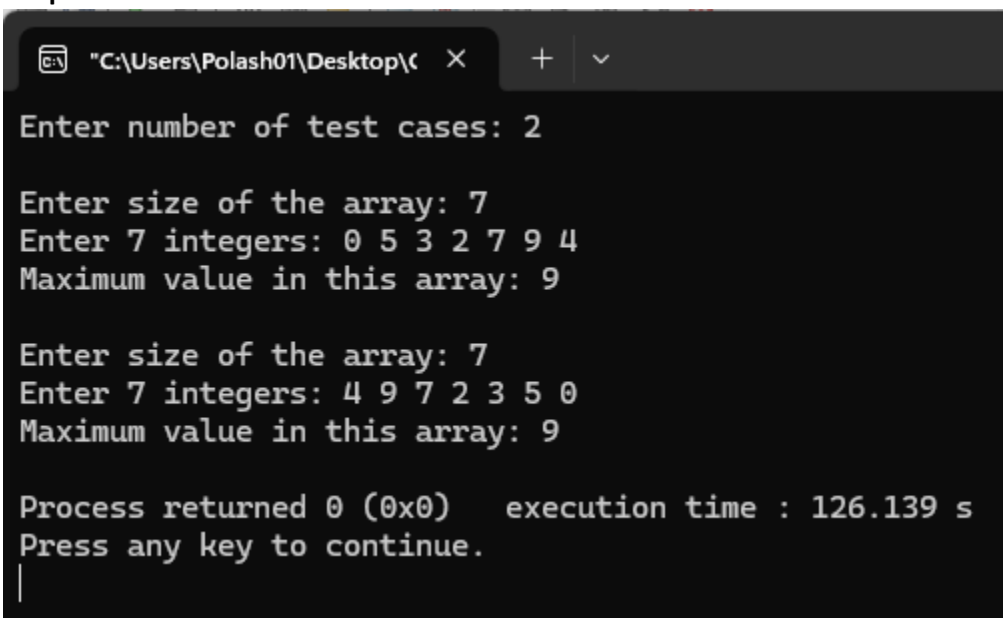
Task03:Find Maximum in an Array

Source Code

```
#include <bits/stdc++.h>
using namespace std;

int main() {
   int t;
```

```
    printf("Enter number of test cases: ");
    cin >> t;

    while(t--) {
        int n, maxVal = 0;
        printf("\nEnter size of the array: ");
        cin >> n;

        int a[n];
        printf("Enter %d integers: ", n);
        for(int i = 0; i < n; i++) {
            cin >> a[i];
            maxVal = max(maxVal, a[i]);
        }

        cout << "Maximum value in this array: " << maxVal << endl;
    }

    return 0;
}
```

Output :



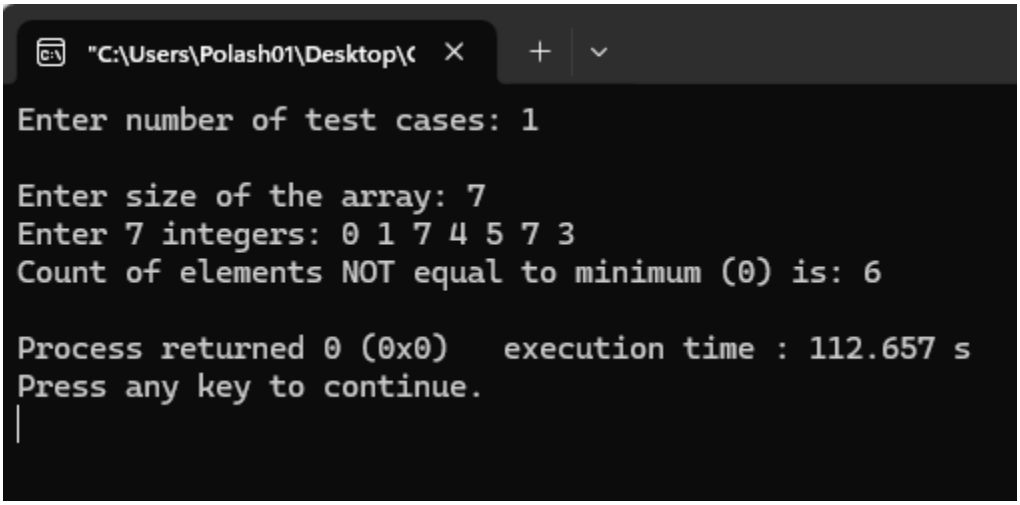
Task04: Min to Max Problem

Source Code

```
#include <bits/stdc++.h>
```

```
using namespace std;

int main() {
   int t;
   cout << "Enter number of test cases: ";
   cin >> t;
   while(t--) {
      int n;
      cout << "\nEnter size of the array: ";
      cin >> n;
      int a[n], minVal = 101, count = 0;
      cout << "Enter " << n << " integers: ";
      for(int i = 0; i < n; i++) {
         cin >> a[i];
         minVal = min(minVal, a[i]);
      }
      for(int i = 0; i < n; i++) {
         if(a[i] != minVal) count++;
      }
      cout << "Count of elements NOT equal to minimum (" << minVal << ") is: " << count << endl;
   }
   return 0;
}
```

Output:



Task05: Grade-School multiplication with big integer

Source Code

```
#include <iostream>
#include <cstring>
using namespace std;
```

```
#define MAX 200

class BigIntMultiplication {
private:
   int numA[MAX], numB[MAX], result[MAX];
   int lenA, lenB;

public:
   BigIntMultiplication() {
      memset(numA, 0, sizeof(numA));
      memset(numB, 0, sizeof(numB));
      memset(result, 0, sizeof(result));
      lenA = lenB = 0;
   }

   void storeNumber(int num, int arr[], int &length) {
      while (num > 0) {
         arr[length++] = num % 10;
         num /= 10;
      }
   }

   void multiply(int A, int B) {
      if (A == 0 || B == 0) {
         cout << "0" << endl;
         return;
      }

      storeNumber(A, numA, lenA);
      storeNumber(B, numB, lenB);

      for (int i = 0; i < lenB; i++) {
         for (int j = 0; j < lenA; j++) {
            result[i + j] += numB[i] * numA[j];
            result[i + j + 1] += result[i + j] / 10;
            result[i + j] %= 10;
         }
      }

      printResult();
   }

   void printResult() {
```

```
        int lenResult = lenA + lenB;
        while (lenResult > 1 && result[lenResult - 1] == 0) lenResult--;
        for (int i = lenResult - 1; i >= 0; i--) cout << result[i];
        cout << endl;
    }
};

int main() {
    int A, B;
    cout << "Enter two integers: ";
    cin >> A >> B;
    BigIntMultiplication multiplier;
    cout << "Product: ";
    multiplier.multiply(A, B);
    return 0;
}
```

Output: