

AIM: Array and User defined functions Programs

1. Write a program to remove duplicate elements of an array.

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using static System.Net.Mime.MediaTypeNames;

namespace Practical_3
{
    internal class Practical_3_1_
    {
        static void Main(string[] args)
        {
            Console.WriteLine("By : 21012021003_AMIT GOS-  
WAMI\n");
            int i, j, k, n;
            Console.Write("Please enter size of array : ");
            n = Convert.ToInt32(Console.ReadLine());
            int[] arr = new int[n];
            Console.WriteLine("Enter the values you want to  
enter in array :");
            for (i = 0; i < n; i++)
            {
                arr[i] = Convert.ToInt32(Console.ReadLine());
            }
            for (i = 0; i < n; i++)
            {
                for (j = i + 1; j < n; j++)
                {
                    if (arr[i] == arr[j])
                    {
                        for (k = j; k < n - 1; k++)
                        {
                            arr[k] = arr[k + 1];
                        }
                        n--;
                    }
                }
            }
        }
    }
}
```

```
        }
        Console.WriteLine("Printing the array with unique
elements :");
        for (i = 0; i < n; i++)
        {
            Console.Write(arr[i] + " ");
        }
        Console.ReadKey();
    }
}
```

Output:

```
By : 21012021003_AMIT GOSWAMI

Please enter size of array : 4
Enter the values you want to enter in array :
2
3
9
4
Printing the array with unique elements :
2 3 9 4
```

2. Write a program for multiplication of two 2-dimensional matrices using 2-d array.

Program:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using static System.Net.Mime.MediaTypeNames;

namespace Practical_3
{
    internal class Practical_3_2_
    {
        static void Main(string[] args)
        {
            Console.WriteLine("By : 21012021003_AMIT GOSWAMI \n");
            int[,] a = new int[3, 3];
            int[,] b = new int[3, 3];
            int[,] c = new int[3, 3];
            int i, j, k;
```

```
Console.WriteLine("Enter values of matrix A :");
for (i = 0; i < 3; i++)
{
    for (j = 0; j < 3; j++)
    {
        a[i, j] = Convert.ToInt32(Console.ReadLine());
    }
}
Console.WriteLine("Enter values of matrix B :");
for (i = 0; i < 3; i++)
{
    for (j = 0; j < 3; j++)
    {
        b[i, j] = Convert.ToInt32(Console.ReadLine());
    }
}
for (i = 0; i < 3; i++)
{
    for (j = 0; j < 3; j++)
    {
        c[i, j] = 0;
        for (k = 0; k < 3; k++)
        {
            c[i, j] += a[i, k] * b[k, j];
        }
    }
}
Console.WriteLine("values of matrix C (by mul of A and
B):");
for (i = 0; i < 3; i++)
{
    for (j = 0; j < 3; j++)
    {
        Console.Write("{0}\t", c[i, j]);
    }
    Console.WriteLine("\n");
}
Console.ReadKey();
}
}
}
Output:
```

```
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Enter values of matrix A :
5
3
7
8
5
3
7
5
4
Enter values of matrix B :
8
9
2
3
4
5
6
7
1
values of matrix C (by mul of A and B):
91      106      32
97      113      44
95      111      43
```

3. Write a program to generate Pascal Triangle using jagged array.

Program:

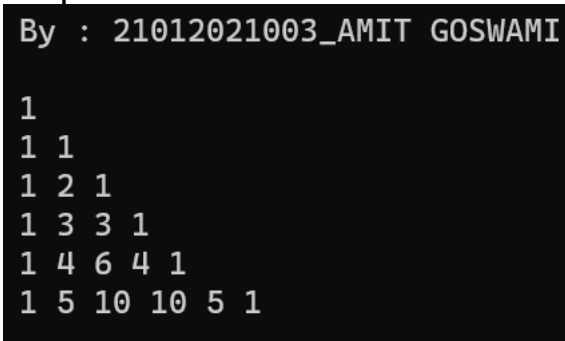
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using static System.Net.Mime.MediaTypeNames;

namespace Practical_3
{
    internal class Practical_3_3_
    {
        static void Main(string[] args)
        {
            Console.WriteLine("By : 21012021003_AMIT GOSWAMI \n");
        }
    }
}
```

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```
int[][] a = new int[6][];
    int i, j;
    for (i = 0; i<a.Length; i++)
    {
        a[i] = new int[i + 1];
    }
    for (i = 0; i<a.Length; i++)
    {
        for (j = 0; j<a[i].Length; j++)
        {
            if (j == 0 || i == j)
            {
                a[i][j] = 1;
            }
            else
            {
                a[i][j] = a[i - 1][j - 1] + a[i - 1][j];
            }
            Console.Write(a[i][j] + " ");
        }
        Console.WriteLine("\n");
    }
    Console.ReadKey();
}
```

Output:



```
By : 21012021003_AMIT GOSWAMI

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
```

4. Write a user defined function to sort an array.

Program:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using static System.Net.Mime.MediaTypeNames;
```

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```
namespace Practical_3
{
    internal class Practical_3_4_
    {
        static void Main(string[] args)
        {
            Console.WriteLine("By : 21012021003_AMIT GOSWAMI \n");
            int n, i;
            Console.Write("Please enter size of array : ");
            n = Convert.ToInt32(Console.ReadLine());
            int[] arr = new int[n];
            Console.WriteLine("Enter the values you want to sort in
array :");
            for (i = 0; i < n; i++)
            {
                arr[i] = Convert.ToInt32(Console.ReadLine());
            }
            sort(arr, n);
        }
        public static void sort(int[] arr, int n)
        {
            int i, j, temp;
            for (i = 0; i <= n - 1; i++)
            {
                for (j = i + 1; j < n; j++)
                {
                    if (arr[i] > arr[j])
                    {
                        temp = arr[i];
                        arr[i] = arr[j];
                        arr[j] = temp;
                    }
                }
            }
            Console.WriteLine("Printing the sorted array :");
            for (i = 0; i < n; i++)
            {
                Console.Write(arr[i] + " ");
            }
            Console.ReadKey();
        }
    }
}
```

Output:

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```
By : 21012021003_AMIT GOSWAMI

Please enter size of array : 5
Enter the values you want to sort in array :
4
9
1
4
0
Printing the sorted array :
0 1 4 4 9
```

5. Demonstrate the use of params keyword with the help of a program.

Program:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using static System.Net.Mime.MediaTypeNames;

namespace Practical_3
{
    internal class Practical_3_5_
    {
        static void Main(string[] args)
        {
            Console.WriteLine("By : 21012021003_AMIT GOSWAMI \n");
            int m;
            m = Mul(5, 9, 10, 45, 2, 43);
            Console.WriteLine("Multiplication of each and every el-
            ement of array: " + m);
            Console.ReadKey();
        }
        public static int Mul(params int[] arr)
        {
            int mul = 1;
            foreach (int i in arr)
            {
                mul = i * mul;
            }
            return mul;
        }
    }
}
```

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```
    }  
}
```

Output:

```
By : 21012021003_AMIT GOSWAMI  
Multiplication of each and every element of array: 1741500
```

6. Discuss out and ref parameters with the help of programs.

Program:

```
using System;  
using System.Collections.Generic;  
using System.Linq;  
using System.Text;  
using System.Threading.Tasks;  
using static System.Net.Mime.MediaTypeNames;  
  
namespace Practical_3  
{  
    internal class Practical_3_6_  
    {  
        static void Main()  
        {  
            Console.WriteLine("By :21012021003_AMIT GOSWAMI \n");  
            int a, b, ans;  
            Mul(out a, out b, out ans);  
            Console.WriteLine("multiplication of two numbers is " +  
ans);  
        }  
        static void Mul(out int c, out int d, out int ans)  
        {  
            c = 23;  
  
            d = 12;  
            ans = c * d;  
            Console.ReadKey();  
        }  
    }  
}
```

Output:


```
By :21012021003_AMIT GOSWAMI  
multiplication of two numbers is 276
```

Program:

```
using System;  
using System.Collections.Generic;  
using System.Linq;  
using System.Text;  
using System.Threading.Tasks;  
using static System.Net.Mime.MediaTypeNames;  
  
namespace Practical_3  
{  
    internal class Practical_3_6  
    {  
        static void Main()  
        {  
            Console.WriteLine("By : 21012021003_AMIT GOSWAMI \n");  
            int a = 1, b = 2, ans = 1;  
            Mul(ref a, ref b, ref ans);  
            Console.WriteLine("multiplication of two numbers is " +  
ans);  
        }  
        static void Mul(ref int c, ref int d, ref int ans)  
        {  
            c = 25;  
            d = 34;  
  
            ans = c * d;  
            Console.ReadKey();  
        }  
    }  
}
```

Output:

```
By :21012021003_AMIT GOSWAMI  
multiplication of two numbers is 276
```