
Data Structure Lab

CEN-391

Program 1

Code :-

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

void Factorial()
{
    cout << endl
        << "Factorial Is Selected" << endl;
    int n, fact = 1;
    cout << "Enter A Number : ";
    cin >> n;
    for (int i = 1; i <= n; i++)
    {
        fact *= i;
    }
    cout << "Factorial Of " << n << " : " << fact << endl
        << endl;
}

void Sum_Series()
{
    cout << endl
        << "Sum Series Is Selected" << endl;
    int n;
    cout << "Enter A Number : ";
```

```

    cin >> n;
    int sum = 0;
    cout << "Sum Series : ";
    for (int i = 1; i <= n; i++)
    {
        sum += i;
        cout << sum << " ";
    }
    cout << endl
        << endl;
}

void Fibonacci()
{
    cout << endl
        << "Fibonacci Is Selected" << endl;
    int n;
    cout << "Enter A Number : ";
    cin >> n;
    int num1 = -1, num2 = 1;
    cout << "Fibonacci Series : ";
    for (int i = 0; i < n; i++)
    {
        int num3 = num1 + num2;
        num1 = num2;
        num2 = num3;
        cout << num3 << " ";
    }
    cout << endl
        << endl;
}

void Power()
{
    cout << endl
        << "Power Of A And B Is Selected" << endl;
    int a, b;
    cout << "Enter Two Numbers : ";
    cin >> a >> b;
    int p = 1;
    for (int i = 0; i < b; i++)
    {
        p *= a;
    }
    cout << "Power Of " << a << " And " << b << " : " << p << endl
        << endl;
}

void Menu()

```

```

{
    cout<<"20BCS070 Vicky Gupta"<<endl;
    cout << "____Operations____" << endl;
    cout << "1.Factorial" << endl;
    cout << "2.Sum Of Series" << endl;
    cout << "3.Fibonacci Series" << endl;
    cout << "4.Power Of A And B" << endl;
    cout << "5.Exit" << endl;
    cout << "Enter Your Choice : ";
}

bool Operation()
{
    int n;
    cin >> n;
    switch (n)
    {
        case 1:
            Factorial();
            break;
        case 2:
            Sum_Series();
            break;
        case 3:
            Fibonacci();
            break;
        case 4:
            Power();
            break;
        case 5:
            return false;
        default:
            cout <<endl<< "Invalid Input Try Again!" << endl<<endl;

    }
    return true;
}

int main()
{
    system("cls");
    while (1)
    {
        Menu();
        if (!Operation())
            break;
    }
    return 0;
}

```

Output :-

```
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____Operations____
```

- 1.Factorial
- 2.Sum Of Series
- 3.Fibonacci Series
- 4.Power Of A And B
- 5.Exit

```
Enter Your Choice : 1
```

```
Factorial Is Selected
```

```
Enter A Number : 6
```

```
Factorial Of 6 : 720
```

```
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____Operations____
```

- 1.Factorial
- 2.Sum Of Series
- 3.Fibonacci Series
- 4.Power Of A And B
- 5.Exit

```
Enter Your Choice : 2
```

```
Sum Series Is Selected
```

```
Enter A Number : 10
```

```
Sum Series : 1 3 6 10 15 21 28 36 45 55
```

```
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____Operations____
```

- 1.Factorial
- 2.Sum Of Series
- 3.Fibonacci Series
- 4.Power Of A And B
- 5.Exit

```
Enter Your Choice : 3
```

```
Fibonacci Is Selected
```

```
Enter A Number : 10
```

```
Fibonacci Series : 0 1 1 2 3 5 8 13 21 34
```

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____Operations____

1.Factorial

2.Sum Of Series

3.Fibonacci Series

4.Power Of A And B

5.Exit

Enter Your Choice : 4

Power Of A And B Is Selected

Enter Two Numbers : 2 10

Power Of 2 And 10 : 1024

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____Operations____

1.Factorial

2.Sum Of Series

3.Fibonacci Series

4.Power Of A And B

5.Exit

Enter Your Choice : 5

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