FAIZAN CHOUDHARY

20BCS021

DSA LAB

14th September 2021

CODE:

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

void fact ()
{
   cout<<"\nEnter the number whose factorial is to be found: ";
   cin>>n;
   int temp=n;
   long long f=1;
   while (n>0)
   {
      f*=n;
      n--;
   }
   cout<<temp<<"! = "<<f<<endl;
}

void sum ()
{
   long sum=0;
   cout<<"\nEnter the number upto which sum is to be found (natural number): ";
```

```
    cin>>n;
    /*  OR
    sum=((n)*(n+1))/2;
    */
    if (n>0)
    {
       for (int i=0; i<=n; i++)
        sum+=i;
    }
    cout<<"\nSum of natural numbers upto "<<n<<" are: "<<sum;
}

void fibonacci ()
{
    int f=0, f1=1, f2=1, j=1;
    cout<<"\nEnter the limit upto which Fibonacci series is to be printed: ";
    cin>>n;
    cout<<"Fibonacci series: "<<endl;
    do
    {
       j++;
       cout<<f<<" ";
       f1=f2;
       f2=f;
       f=f1+f2;
    } while(j<=n);
}

void power()
{
    long a,b, res=1;
```

```
    cout<<"\nEnter the values of a and b: ";
    cin>>a>>b;
    int temp=b;
    while (b>0)
    {
        res*=a;
        b--;
    }
    cout<<"\n"<<a<<" ^ "<<temp<<" = "<<res;
}

int main()
{
    int ch;
    while (1)
    {
        A:
        cout<<"\n\nMENU:\n1. Factorial of a given number. \n2. Sum of series of natural numbers. \n3. Fibonacci Series. \n4. Power of a raised to b.\n5. Exit. ";
        cout<<"\nEnter your choice: ";
        cin>>ch;
        switch (ch)
        {
            case 1: fact();
                    break;
            case 2: sum();
                    break;
            case 3: fibonacci();
                    break;
            case 4: power();
                    break;
```

```
        case 5: exit(0);
        default: cout<<"\nWrong choice, enter again! ";
                goto A;
      }
   }

   cout<<"\n\nFAIZAN CHOUDHARY\n20BCS021";
   return 0;
}
```

OUTPUT:

```
FAIZAN CHOUDHARY
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MENU:
1. Factorial of a given number.
2. Sum of series of natural numbers.
3. Fibonacci Series.
4. Power of a raised to b.
5. Exit.
Enter your choice: 1

Enter the number whose factorial is to be found: 10
10! = 3628800
```

```
MENU:
1. Factorial of a given number.
2. Sum of series of natural numbers.
3. Fibonacci Series.
4. Power of a raised to b.
5. Exit.
Enter your choice: 2

Enter the number upto which sum is to be found (natural number): 100

Sum of natural numbers upto 100 are: 5050
```

```
MENU:
1. Factorial of a given number.
2. Sum of series of natural numbers.
3. Fibonacci Series.
4. Power of a raised to b.
5. Exit.
Enter your choice: 3

Enter the limit upto which Fibonacci series is to be printed: 10
Fibonacci series:
0 1 1 2 3 5 8 13 21 34
```

```
MENU:
1. Factorial of a given number.
2. Sum of series of natural numbers.
3. Fibonacci Series.
4. Power of a raised to b.
5. Exit.
Enter your choice: 4

Enter the values of a and b: 6
6

6 ^ 6 = 46656

MENU:
1. Factorial of a given number.
2. Sum of series of natural numbers.
3. Fibonacci Series.
4. Power of a raised to b.
5. Exit.
Enter your choice: 5
```