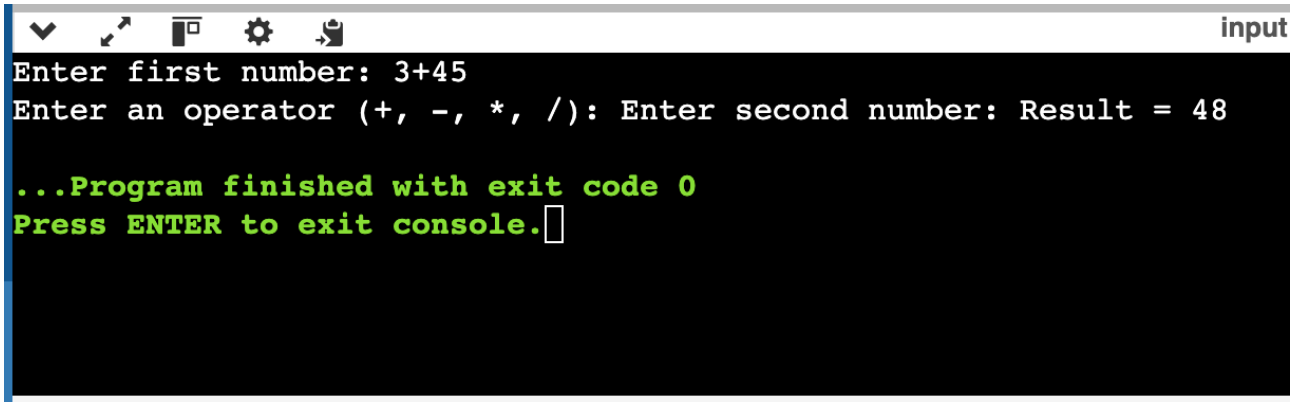
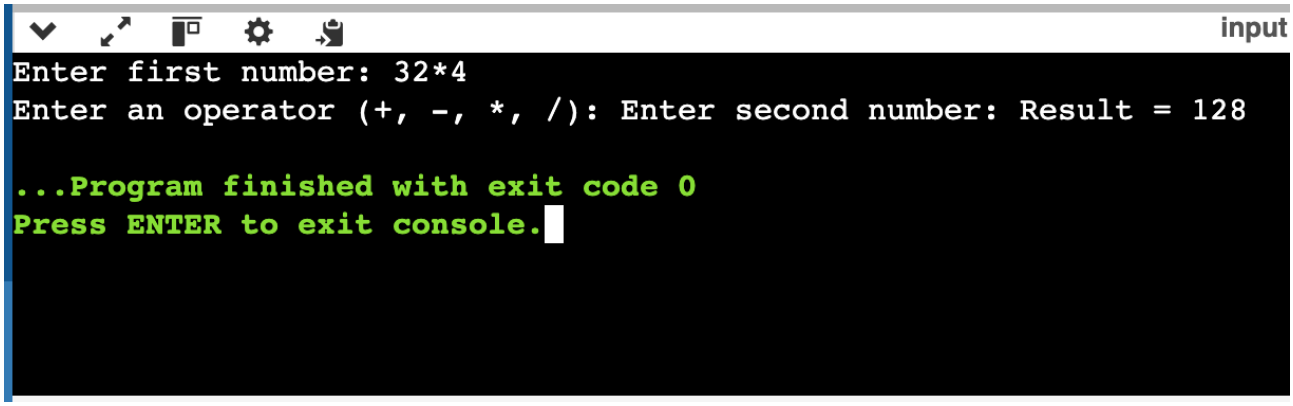
```
/*Name -Himanshu
Branch - E&TC (A-1)
Roll No. - 1124
Menu Driven Calculator*/

#include <iostream>
using namespace std;
int main() {
    char op;
    float num1, num2;
    cout << "Enter first number: ";
    cin >> num1;
    cout << "Enter an operator (+, -, *, /): ";
    cin >> op;
    cout << "Enter second number: ";
    cin >> num2;
    switch(op) {
        case '+':
            cout << "Result = " << num1 + num2;
            break;
        case '-':
            cout << "Result = " << num1 - num2;
            break;
        case '*':
            cout << "Result = " << num1 * num2;
            break;
        case '/':
            if(num2 != 0)
                cout << "Result = " << num1 / num2;
            else
                cout << "Division by zero is not allowed";
            break;
        default:
            cout << "Invalid operator";
    }
    return 0;
}
```





```
/*Name -Himanshu
Branch - E&TC (A-1)
Roll No. - 1124
Mathematical Expressions (Area / Volume of Shapes)*/

#include <iostream>
using namespace std;
int main() {
    int choice;
    float r, l, b, h, area, volume;
    cout << "1. Area of Circle\n";
    cout << "2. Area of Rectangle\n";
    cout << "3. Volume of Cube\n";
    cout << "4. Volume of Cylinder\n";
    cout << "Enter your choice: ";
    cin >> choice;
    switch(choice) {
        case 1:
            cout << "Enter radius: ";
            cin >> r;
            area = 3.14 * r * r;
            cout << "Area of Circle = " << area;
            break;
        case 2:
            cout << "Enter length and breadth: ";
            cin >> l >> b;
            area = l * b;
            cout << "Area of Rectangle = " << area;
            break;
        case 3:
            cout << "Enter side of cube: ";
            cin >> l;
            volume = l * l * l;
            cout << "Volume of Cube = " << volume;
            break;
        case 4:
            cout << "Enter radius and height: ";
            cin >> r >> h;
            volume = 3.14 * r * r * h;
            cout << "Volume of Cylinder = " << volume;
            break;
        default:
            cout << "Invalid Choice";
     }
    return 0;
}
```

/*Name -Himanshu
Branch - E&TC (A-1)
Roll No. - 1124
*/

input

```
1. Area of Circle
2. Area of Rectangle
3. Volume of Cube
4. Volume of Cylinder
Enter your choice: 1
Enter radius: 42
Area of Circle = 5538.96

...Program finished with exit code 0
```

input

```
1. Area of Circle
2. Area of Rectangle
3. Volume of Cube
4. Volume of Cylinder
Enter your choice: 2
Enter length and breadth: 43
56
Area of Rectangle = 2408
```

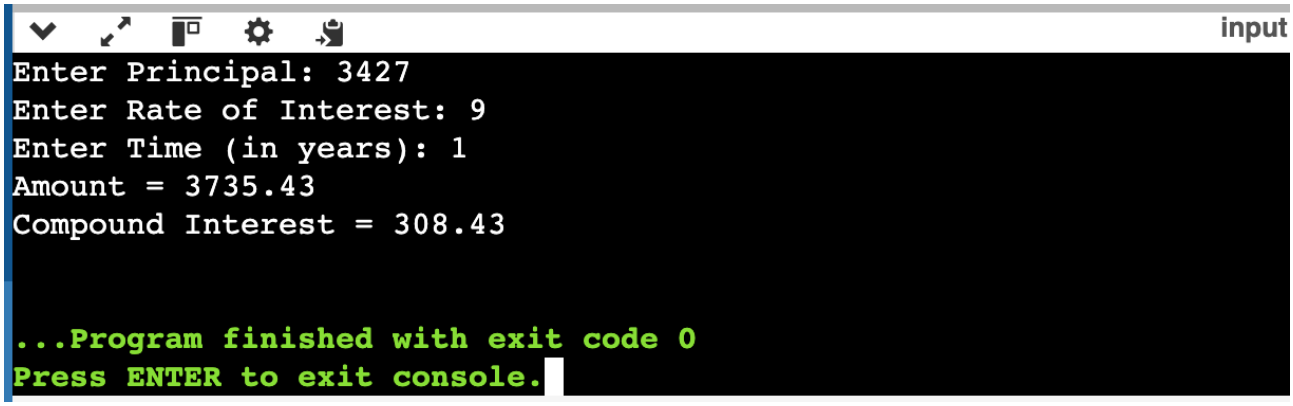
input

```
2. Area of Rectangle
3. Volume of Cube
4. Volume of Cylinder
Enter your choice: 3
Enter side of cube: 7
Volume of Cube = 343

...Program finished with exit code 0
Press ENTER to exit console.
```

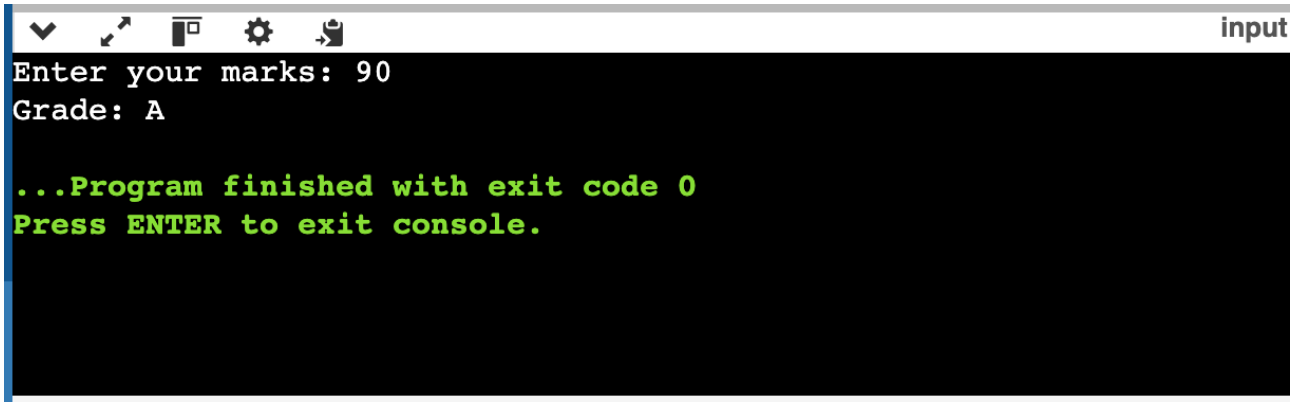
input

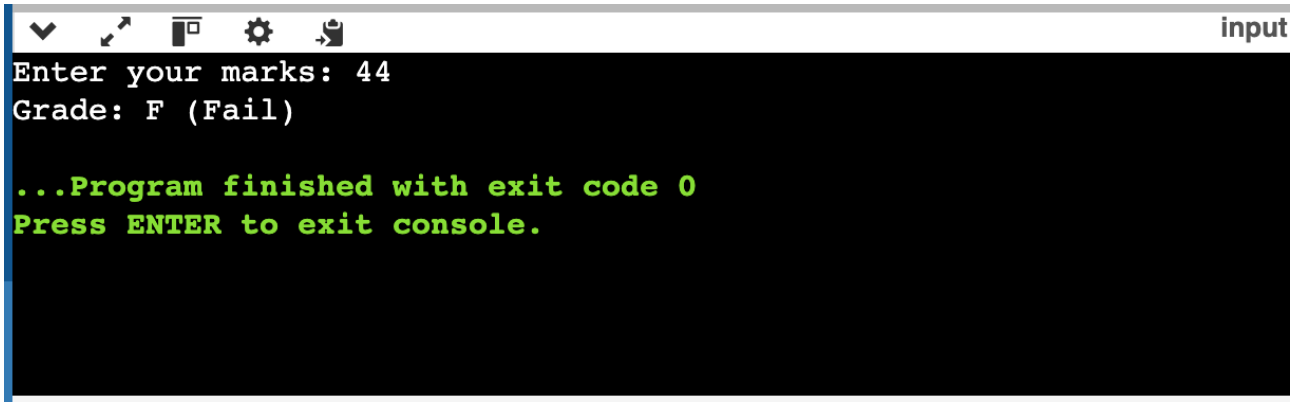
```
1. Area of Circle
2. Area of Rectangle
3. Volume of Cube
4. Volume of Cylinder
Enter your choice: 4
Enter radius and height: 4
6
Volume of Cylinder = 301.44
```

```
/*Name -Himanshu
Branch - E&TC (A-1)
Roll No. - 1124
Compound Interest Calculation*/

#include <iostream>
#include <cmath>
using namespace std;
int main() {
    float p, r, t, ci, amount;
    cout << "Enter Principal: ";
    cin >> p;
    cout << "Enter Rate of Interest: ";
    cin >> r;
    cout << "Enter Time (in years): ";
    cin >> t;
    amount = p * pow((1 + r / 100), t);
    ci = amount - p;
    cout << "Amount = " << amount << endl;
    cout << "Compound Interest = " << ci << endl;
    return 0;
}
```



```
/*Name -Himanshu
Branch - E&TC (A-1)
Roll No. - 1124
Grade Letter Based on Marks*/

#include <iostream>
using namespace std;
int main() {
    int marks;
    cout << "Enter your marks: ";
    cin >> marks;
    if (marks >= 90)
        cout << "Grade: A";
    else if (marks >= 75)
        cout << "Grade: B";
    else if (marks >= 60)
        cout << "Grade: C";
    else if (marks >= 45)
        cout << "Grade: D";
    else
        cout << "Grade: F (Fail)";
    return 0;
}
```





```
/*Name -Himanshu
Branch - E&TC (A-1)
Roll No. - 1124
Roots of Quadratic Equation*/

#include <iostream>
#include <cmath>
using namespace std;
int main() {
    float a, b, c, d, root1, root2;
    cout << "Enter coefficients a, b and c: ";
    cin >> a >> b >> c;
    d = b*b - 4*a*c;
    if (d > 0) {
        root1 = (-b + sqrt(d)) / (2*a);
        root2 = (-b - sqrt(d)) / (2*a);
        cout << "Roots are real and different." << endl;
        cout << "Root1 = " << root1 << endl;
        cout << "Root2 = " << root2 << endl;
    }
    else if (d == 0) {
        root1 = -b / (2*a);
        cout << "Roots are real and same." << endl;
        cout << "Root = " << root1 << endl;
    }
    else {
        cout << "Roots are imaginary (no real roots)." << endl;
    }
    return 0;
}
```