



C++ LAB FILE

ATHARV KAVEESHWAR

Subject: C++ Programming

BSc.IT (AIIT)

Enrollment No: A710014918003

Roll no: BSIT1803

Submitted To: Mr. Sukhvinder Singh

INDEX

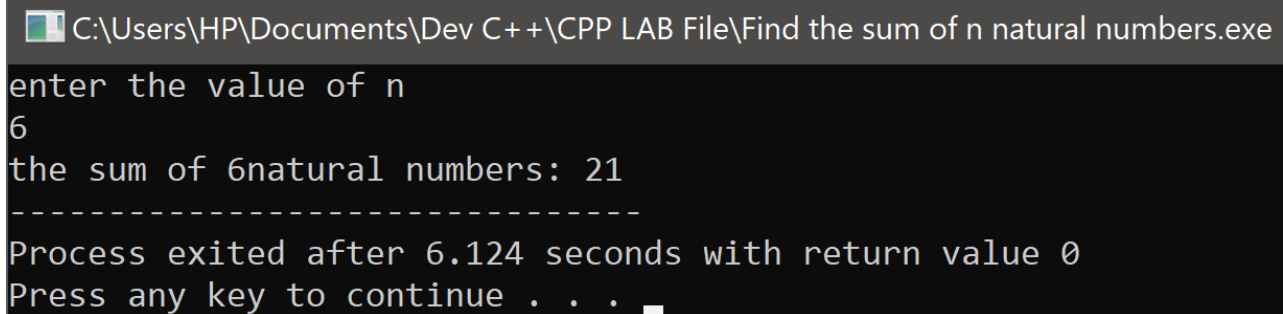
| S.no | Title | Date | Remarks |
|------|---|------|---------|
| 1. | WAP Using CPP Language <ul style="list-style-type: none">Find Sum of N natural numbersFind the average of N natural numbersFind Odd or EvenFind Largest of three numbersSwap the values | | |
| 2. | WAP using class, member data, member function and object. <ul style="list-style-type: none">Fibonacci Series | | |
| 3. | WAP using static variable to show its functionality. Show that static variable only access by the class and not belong to object. | | |
| 4. | WAP to return value by reference | | |
| 5. | WAP using inline function. Use any mathematical function to represent inline function. | | |
| 6. | WAP structures using pointers. Add five employees using structure using pointer. | | |
| 7. | WAP using constructor and destructor. | | |
| 8. | WAP to show constructor and destructor functionality in inheritance. | | |
| 9. | WAP using Inheritance. <ul style="list-style-type: none">Single InheritanceMultiple Inheritance | | |
| 10. | WAP using abstract class and pure virtual function. | | |
| 11. | WAP to show diamond problem (ambiguity) and its resolution using virtual abstract class. | | |
| 12. | WAP to write and read file using stream in C++. | | |
| 13. | WAP using command line arguments. | | |
| 14. | WAP on Exception Handling <ul style="list-style-type: none">Division by zero exceptionUsing Std::exception class to implement your own exception | | |
| 15. | Create your own program | | |

1. Write a program using C++ Program

a. Find Sum of N natural numbers

```
1. #include<iostream>
2. #include<conio.h>
3. using namespace std;
4. main(){
5. int n, sum=0;
6. std::cout<<"enter the value of n"<<endl;
7. cin>>n;
8. for(int i=1; i<=n; i++){
9. sum=sum+i;}
10. cout<<"the sum of "<< n <<" natural numbers: "<<sum;
11. getch();
12. }
```

Output:



C:\Users\HP\Documents\Dev C++\CPP LAB File\Find the sum of n natural numbers.exe

enter the value of n

6

the sum of 6natural numbers: 21

Process exited after 6.124 seconds with return value 0

Press any key to continue . . .

b. Find Average of N natural numbers

```
1. #include<iostream>
2. #include<conio.h>
3. using namespace std;
4. main(){
5. int n, sum=0;
6. std::cout<<"enter the value of n"<<endl;
7. cin>>n;
8. for(int i=1; i<=n; i++){
9. sum=sum+i;}
10. cout<<"the sum of "<< n <<" natural numbers: "<<sum;
11. getch();
12. }
```

Output:

```
C:\Users\HP\Documents\Dev C++\CPP LAB File\Calculate the average of n natural numbers.exe
enter the value of n
7
the average of 7 natural numbers: 4
-----
Process exited after 4.79 seconds with return value 0
Press any key to continue . . .
```

c. Find Odd or Even

```
1. #include<iostream>
2. #include<conio.h>
3. using namespace std;
4. main(){
5.     int n;
6.     cout<<"enter the number for odd and even"<<endl;
7.     cin>>n;
8.     if(n%2==0){
9.         cout<<n<<" is even"<<endl;
10.    } else {
11.        cout<<n<<" is odd"<<endl; }
12.    getch();
13. }
```

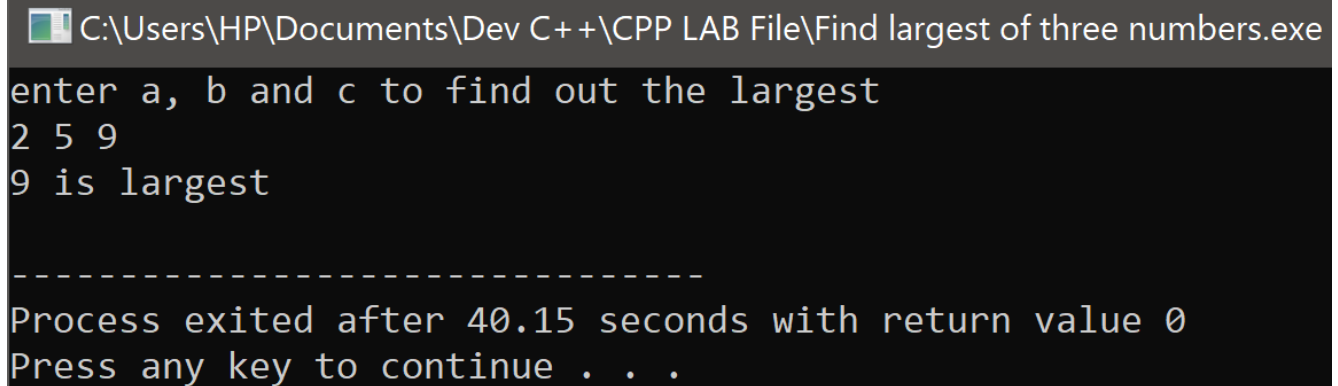
Output:

```
C:\Users\HP\Documents\Dev C++\CPP LAB File\Check whether the number is odd or even.exe
enter the number for odd and even
8
8 is even
-----
Process exited after 16.35 seconds with return value 0
Press any key to continue . . .
```

d. Find Largest of three numbers

```
1. #include<iostream>
2. #include<conio.h>
3. using namespace std;
4. main(){
5.     int a,b,c;
6.     cout<<"enter a, b and c to find out the largest"<<endl;
7.     cin>>a>>b>>c;
8.     if(a>b && a>c){
9.         cout<<a<<" is largest"<<endl;
10.    }
11.    else if(b>a && b>c){
12.        cout<<b<<" is largest"<<endl;
13.    } else {
14.        cout<<c<<" is largest"<<endl;
15.    }
16.    getch();
17. }
```

Output:



```
C:\Users\HP\Documents\Dev C++\CPP LAB File\Find largest of three numbers.exe
enter a, b and c to find out the largest
2 5 9
9 is largest

-----
Process exited after 40.15 seconds with return value 0
Press any key to continue . . .
```

e. Swap the values

```
1. #include<iostream>
2. #include<conio.h>
3. using namespace std;
4. main(){
5.     int a,b,c;
6.     cout<<"enter a and b to swap the values"<<endl;
7.     cin>>a>>b;
8.     c=a;
9.     a=b;
10.    b=c;
11.    cout<<"swapped values are:"<<endl;
12.    cout<<"a: "<<a<<endl;
13.    cout<<"b: "<<b;
14.    getch();
15. }
```

Output:

```
C:\Users\HP\Documents\Dev C++\CPP LAB File\Swap the values of two given variables.exe
enter a and b to swap the values
6
9
swapped values are:
a: 9
b: 6
-----
Process exited after 16.73 seconds with return value 0
Press any key to continue . . .
```

2. Write a Program using class, member data, member function and object.

a. Fibonacci Series

```
1. #include<iostream>
2. #include<conio.h>
3. using namespace std;
4. class fib{
5.     int i, n,a,b,c;
6. public:
7.     series(){
8.         cout<<"enter the value of n: ";
9.         cin>>n;
10.        cout<<"Fibonacci series: ";
11.        a=0; b=1; c=1;
12.        cout<<a<<" ";
13.        for(i=0; i<n-2; i++){
14.            cout<<" "<<c<<" ";
15.            c=a+b;
16.            a=b;
17.            b=c;
18.        }
19.    }
20. };
21. main(){
22.     fib obj;
23.     obj.series();
24.     getch();
25. }
```

Output:

```
C:\Users\HP\Documents\Dev C++\CPP LAB File\Fibonacci series.exe
enter the value of n: 6
Fibonacci series: 0 1 1 2 3
-----
Process exited after 6.52 seconds with return value 0
Press any key to continue . . .
```

3. Write a program using static variable to show its functionality. Show that static variable only access by the class and not belong to object.

```
1. #include<iostream>
2. using namespace std;
3.
4. class StaticTest{
5.     private:
6.         static int s;
7.
8.     public:
9.         void setValue(int num){
10.             s = num;
11.         }
12.
13.         int getValue(){
14.             return s;
15.         }
16. };
17.
18. int StaticTest::s = 0;
19.
20. int main(){
21.     StaticTest obj1;
22.     obj1.setValue(20); // sets value of s to 20
23.
24.     StaticTest obj2;
25.     obj2.setValue(40); // sets value of s to 40
26.
27.     // value of s is changed for all objects
28.     cout << "Obj1: " << obj1.getValue() << endl;
29.     cout << "Obj2: " << obj2.getValue();
30. }
```

Output:

```
D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB3.exe
Obj1: 40
Obj2: 40
-----
Process exited after 0.006954 seconds with return value 0
Press any key to continue . . .
```

4. Write a program to return value by reference

```
1. #include<iostream>
2.
3. using namespace std;
4.
5. int arr[4], n = 4;
6.
7. int& setValue(int index){
8.     return arr[index];
9. }
10.
11. int main(){
12.     // taking user input values in array
13.     for(int i = 0; i < n; i++){
14.         cout << "Enter Number " << i + 1 << ": ";
15.         cin >> arr[i];
16.     }
17.     cout << endl;
18.
19.     // values entered by user
20.     cout << "Values before change:" << endl;
21.     for(int i = 0; i < n; i++){
22.         cout << "arr" << "[" << i << "] = " << arr[i] << endl;
23.     }
24.     cout << endl;
25.
26.     // changing values in array with return value by reference
27.     setValue(0) = 11;
28.     setValue(1) = 22;
29.     setValue(2) = 33;
30.     setValue(3) = 44;
31.
32.     // values after they are modified
33.     cout << "Values after change:" << endl;
34.     for(int i = 0; i < n; i++){
35.         cout << "arr" << "[" << i << "] = " << arr[i] << endl;
36.     }
37. }
38. };
```


Output:

```
D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB4.exe
Enter Number 1: 25
Enter Number 2: 29
Enter Number 3: 70
Enter Number 4: 90

Values before change:
arr[0] = 25
arr[1] = 29
arr[2] = 70
arr[3] = 90

Values after change:
arr[0] = 11
arr[1] = 22
arr[2] = 33
arr[3] = 44

-----
Process exited after 10.77 seconds with return value 0
Press any key to continue . . .
3
```

5. Write a program using inline function. Use any mathematical function to represent inline function.

```
1. #include<iostream>
2.
3. using namespace std;
4.
5. inline int max(int x, int y, int z){
6.     return (x > y) ? ((x > z) ? x : z) : ((y > z) ? y : z);
7. }
8.
9. inline int min(int x, int y, int z){
10.    return (x < y) ? ((x < z) ? x : z) : ((y < z) ? y : z);
11. }
12.
13. int main(){
14.     int a, b, c;
15.
16.     cout << "Enter a Number 1: ";
17.     cin >> a;
18.     cout << "Enter a Number 2: ";
19.     cin >> b;
20.     cout << "Enter a Number 3: ";
21.     cin >> c;
22.
23.     cout << endl;
24.
25.     cout << "Max: " << max(a, b, c) << endl;
26.     cout << "Min: " << min(a, b, c); }
```

Output:

```
D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB5.exe
Enter a Number 1: 23
Enter a Number 2: 45
Enter a Number 3: 32

Max: 45
Min: 23
-----
Process exited after 8.1 seconds with return value 0
Press any key to continue . . .
```

6. Write a Program using structures using pointers. Add five employees using structure using pointer.

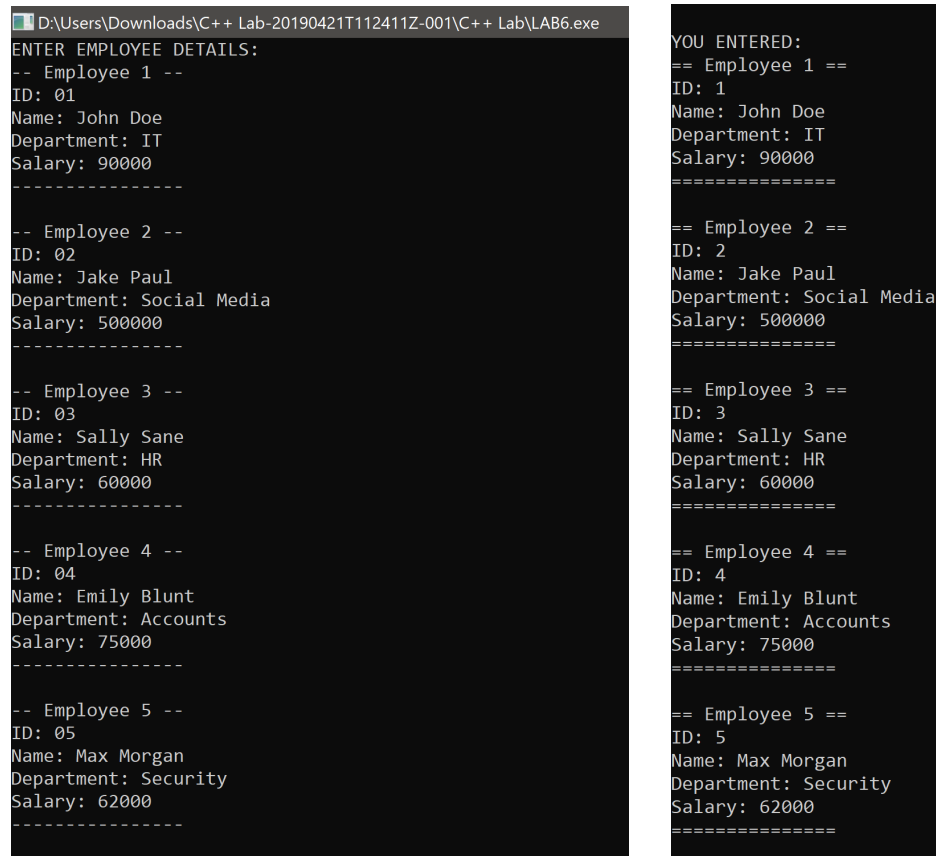
```
1. #include<iostream>
2. #include<string>
3. #include<sstream>
4.
5. using namespace std;
6.
7. struct Employee{
8.     int empId;
9.     string name;
10.    double salary;
11.    string dept;
12. };
13.
14. int main(){
15.     struct Employee emp[5];
16.     int n = 5;
17.     string s;
18.     struct Employee *ptr;
19.     ptr = emp;
20.
21.     cout << "ENTER EMPLOYEE DETAILS:" << endl;
22.     for(int i = 0; i < n; i++){
23.         cout << "-- Employee " << i + 1 << " --" << endl;
24.         cout << "ID: ";
25.         getline(cin, s);
26.         stringstream(s) >> emp[i].empId;
27.         cout << "Name: ";
28.         getline(cin, emp[i].name);
29.         cout << "Department: ";
30.         getline(cin, emp[i].dept);
31.         cout << "Salary: ";
32.         getline(cin, s);
33.         stringstream(s) >> emp[i].salary;
```

```

34.     cout << "-----" << endl << endl;
35. }
36.
37.     cout << endl << "YOU ENTERED:" << endl;
38.     for(int i = 0; i < n; i++){
39.         cout << "== Employee " << i + 1 << " ==" << endl;
40.         cout << "ID: " << (ptr+i)->empId << endl;
41.         cout << "Name: " << (ptr+i)->name << endl;
42.         cout << "Department: " << (ptr+i)->dept << endl;
43.         cout << "Salary: " << (ptr+i)->salary << endl;
44.         cout << "======" << endl << endl;
45.     }
46. }

```

Output:



The image shows two side-by-side screenshots of a C++ program execution. The left screenshot shows the input being entered by the user, and the right screenshot shows the output generated by the program.

Left Screenshot (Input):

```

D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB6.exe
ENTER EMPLOYEE DETAILS:
-- Employee 1 --
ID: 01
Name: John Doe
Department: IT
Salary: 90000
-----
-- Employee 2 --
ID: 02
Name: Jake Paul
Department: Social Media
Salary: 500000
-----
-- Employee 3 --
ID: 03
Name: Sally Sane
Department: HR
Salary: 60000
-----
-- Employee 4 --
ID: 04
Name: Emily Blunt
Department: Accounts
Salary: 75000
-----
-- Employee 5 --
ID: 05
Name: Max Morgan
Department: Security
Salary: 62000
-----

```

Right Screenshot (Output):

```

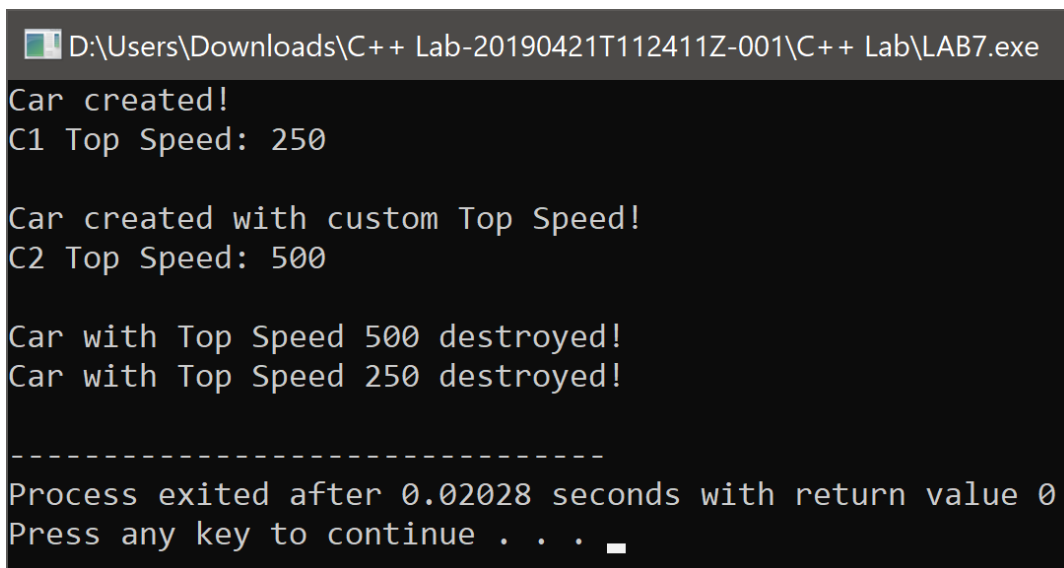
YOU ENTERED:
== Employee 1 ==
ID: 1
Name: John Doe
Department: IT
Salary: 90000
=====
== Employee 2 ==
ID: 2
Name: Jake Paul
Department: Social Media
Salary: 500000
=====
== Employee 3 ==
ID: 3
Name: Sally Sane
Department: HR
Salary: 60000
=====
== Employee 4 ==
ID: 4
Name: Emily Blunt
Department: Accounts
Salary: 75000
=====
== Employee 5 ==
ID: 5
Name: Max Morgan
Department: Security
Salary: 62000
=====

```

7. Write a Program using constructor and destructor.

```
1. #include<iostream>
2.
3. using namespace std;
4.
5. class Car{
6.     private:
7.         int topSpeed;
8.
9.     public:
10.        Car(){
11.            cout << "Car created!" << endl;
12.            topSpeed = 250;
13.        }
14.
15.        Car(int ts){
16.            cout << "Car created with custom Top Speed!" << endl;
17.            topSpeed = ts;
18.        }
19.
20.        ~Car(){
21.            cout << "Car with Top Speed " << topSpeed << " destroyed!" << endl;
22.        }
23.
24.        int getTopSpeed(){
25.            return topSpeed;
26.        }
27. };
28.
29. int main(){
30.     Car C1;
31.     cout << "C1 Top Speed: " << C1.getTopSpeed() << endl << endl;
32.
33.     Car C2(500);
34.     cout << "C2 Top Speed: " << C2.getTopSpeed() << endl << endl;
35. }
```

Output:



```
D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB7.exe
Car created!
C1 Top Speed: 250

Car created with custom Top Speed!
C2 Top Speed: 500

Car with Top Speed 500 destroyed!
Car with Top Speed 250 destroyed!

-----
Process exited after 0.02028 seconds with return value 0
Press any key to continue . . .
```

8. Write a Program to show constructor and destructor functionality in inheritance.

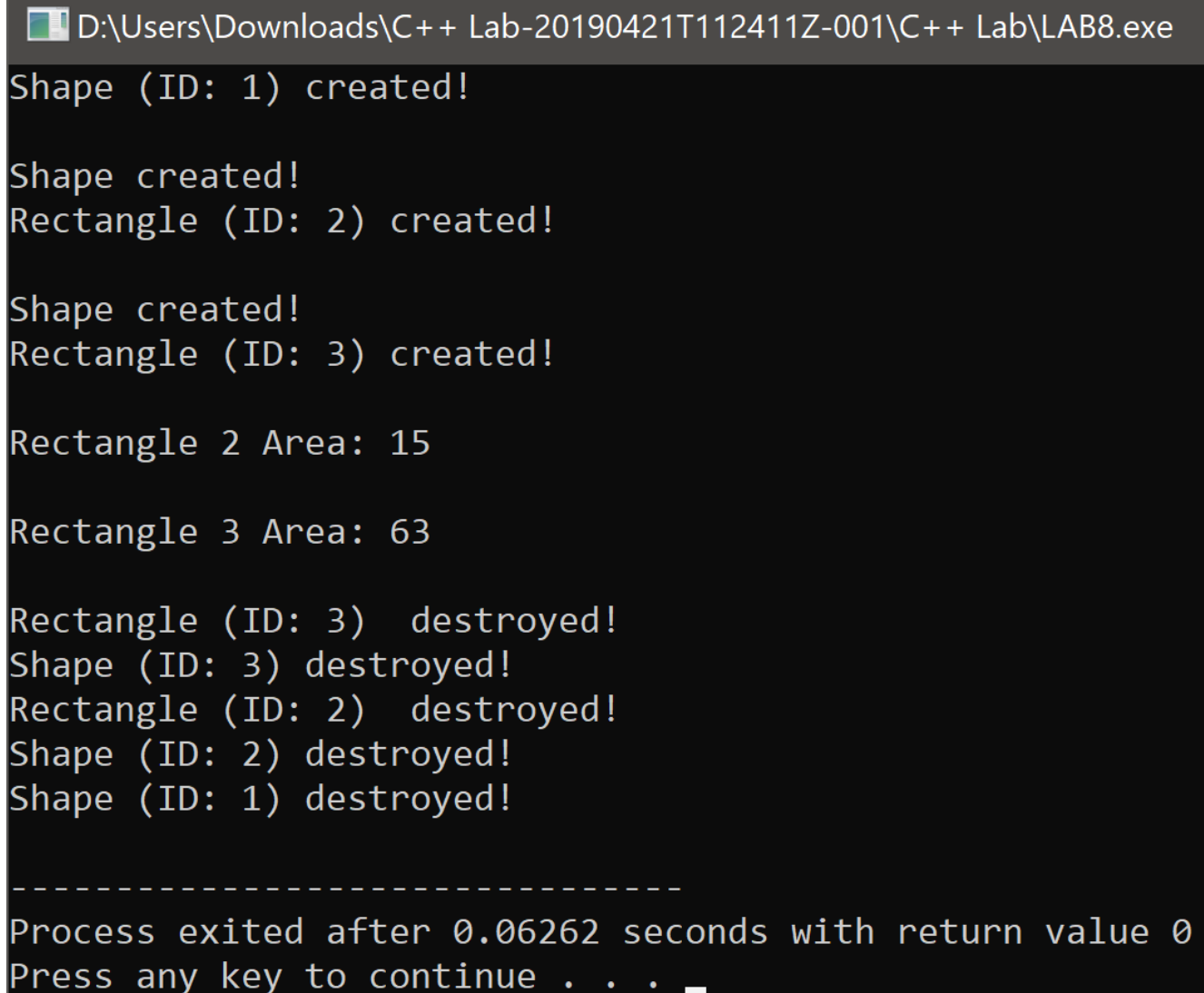
```
1. #include<iostream>
2.
3. using namespace std;
4.
5. // base class
6. class Shape{
7.     protected:
8.         int id;
9.         int length;
10.        int height;
11.
12.    public:
13.        Shape(){
14.            cout << "Shape created!" << endl;
15.        }
16.
17.        Shape(int n){
18.            id = n;
19.            cout << "Shape (ID: " << id << ") created!" << endl;
20.        }
21.
22.        ~Shape(){
23.            cout << "Shape (ID: " << id << ") destroyed!" << endl;
24.        }
25.
26.        void setLength(int l){
27.            length = l;
28.        }
29.
30.        void setHeight(int h){
31.            height = h;
32.        }
33. };
34.
35. // derived class
36. class Rectangle: public Shape{
37.     public:
38.        Rectangle(int n){
39.            id = n;
40.            cout << "Rectangle (ID: " << id << ") created!" << endl;
41.        }
42.
43.        ~Rectangle(){
44.            cout << "Rectangle (ID: " << id << ") destroyed!" << endl;
45.        }
46.
47.        int getArea(){
48.            return length * height;
49.        }
50. };
51.
52. int main(){
53.     Shape s1(1);
54.     cout << endl;
55.
56.     Rectangle r2(2);    // created rectangle with id 1
57.     r2.setLength(5);
```

```

58.     r2.setHeight(3);
59.     cout << endl;
60.
61.     Rectangle r3(3);    // created rectangle with id 2
62.     r3.setLength(9);
63.     r3.setHeight(7);
64.     cout << endl;
65.
66.     cout << "Rectangle 2 Area: " << r2.getArea() << endl << endl;
67.     cout << "Rectangle 3 Area: " << r3.getArea() << endl << endl;
68. }

```

Output:



```

D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB8.exe
Shape (ID: 1) created!

Shape created!
Rectangle (ID: 2) created!

Shape created!
Rectangle (ID: 3) created!

Rectangle 2 Area: 15

Rectangle 3 Area: 63

Rectangle (ID: 3) destroyed!
Shape (ID: 3) destroyed!
Rectangle (ID: 2) destroyed!
Shape (ID: 2) destroyed!
Shape (ID: 1) destroyed!

-----
Process exited after 0.06262 seconds with return value 0
Press any key to continue . . .

```

9. Write a Program using Inheritance.

- Single Inheritance

```
1. #include<iostream>
2. #include<string>
3.
4. using namespace std;
5.
6. class Animal{
7.     protected:
8.         string name;
9.         int height;
10.
11.     public:
12.         Animal(){
13.             name = "Animal";
14.         }
15.
16.         void setHeight(int h){
17.             height = h;
18.         }
19.
20.         void printHeight(){
21.             cout << "Height is " << height << endl;
22.         }
23.
24.         void run(){
25.             cout << name << " is running..." << endl;
26.         }
27.
28.         void speak(){
29.             cout << name << " is speaking..." << endl;
30.         }
31. };
32.
33. class Dog: public Animal{
34.     public:
35.         Dog(string t){
36.             name = t;
37.             height = 50;
38.         }
39.
40.         void speak(){
41.             cout << "woof-woof!" << endl;
42.         }
43. };
44.
45. int main(){
46.     Animal a;
47.     a.run();
48.     a.speak();
49.     a.setHeight(30);
50.     a.printHeight();
51.     cout << endl;
52.
53.     Dog d("Peter");
54.     d.run();
55.     d.speak();
56.     d.printHeight();
57.     cout << endl; }
```

Output:

 D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB9a.exe

Animal is running...

Animal is speaking...

Height is 30

Peter is running...

woof-woof!

Height is 50

Process exited after 0.07898 seconds with return value 0
Press any key to continue . . .

- Multiple Inheritance

```
1. #include<iostream>
2. #include<string>
3.
4. using namespace std;
5.
6. // base class
7. class Father{
8.     public:
9.         void boxing(){
10.             cout << "Boxing..." << endl;
11.         }
12. };
13.
14. // base class
15. class Mother{
16.     public:
17.         void dance(){
18.             cout << "Dancing..." << endl;
19.         }
20. };
21.
22. // derived class
23. class Child: public Father, public Mother{
24.     public:
25.         Child(){
26.             cout << "Child created!" << endl;
27.         }
28. };
29.
30. int main(){
```



```

31.     Father f;
32.     f.boxing();
33.
34.     cout << endl;
35.
36.     Mother m;
37.     m.dance();
38.
39.     cout << endl;
40.
41.     // child inherits functions of both parents
42.     Child c;
43.     c.boxing();
44.     c.dance();
45. }

```

Output:

```

Select D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB9b.exe
Boxing...
Dancing...
Child created!
Boxing...
Dancing...
-----
Process exited after 0.0895 seconds with return value 0
Press any key to continue . . .

```

10. Write a program using abstract class and pure virtual function

```

1. #include<iostream>
2.
3. using namespace std;
4.
5. // base class
6. class Shape{
7.     protected:
8.         int width;
9.         int height;
10.    public:
11.        // pure virtual function providing interface framework.
12.        virtual int getArea() = 0;
13.
14.        void setWidth(int w){
15.            width = w;
16.        }
17.

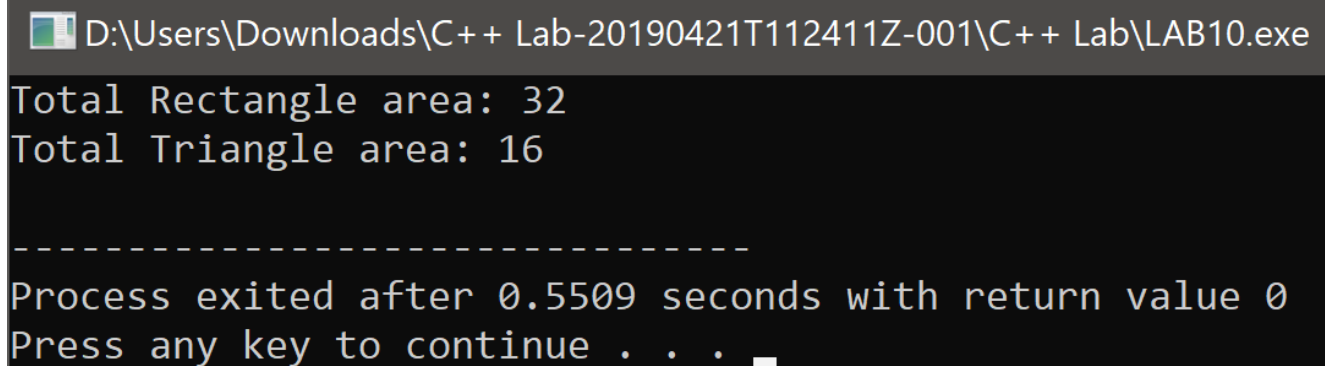
```

```

18.     void setHeight(int h){
19.         height = h;
20.     }
21. };
22.
23. class Rectangle: public Shape{
24.     public:
25.         int getArea(){
26.             return width * height;
27.         }
28. };
29.
30. class Triangle: public Shape{
31.     public:
32.         int getArea(){
33.             return (width * height) / 2;
34.         }
35. };
36.
37. int main(){
38.     Rectangle rect;
39.     Triangle tri;
40.
41.     rect.setWidth(4);
42.     rect.setHeight(8);
43.
44.     // Prints area of the rectangle.
45.     cout << "Total Rectangle area: " << rect.getArea() << endl;
46.
47.     tri.setWidth(4);
48.     tri.setHeight(8);
49.
50.     // Prints area of the triangle.
51.     cout << "Total Triangle area: " << tri.getArea() << endl;
52. }

```

Output:



```

D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB10.exe
Total Rectangle area: 32
Total Triangle area: 16

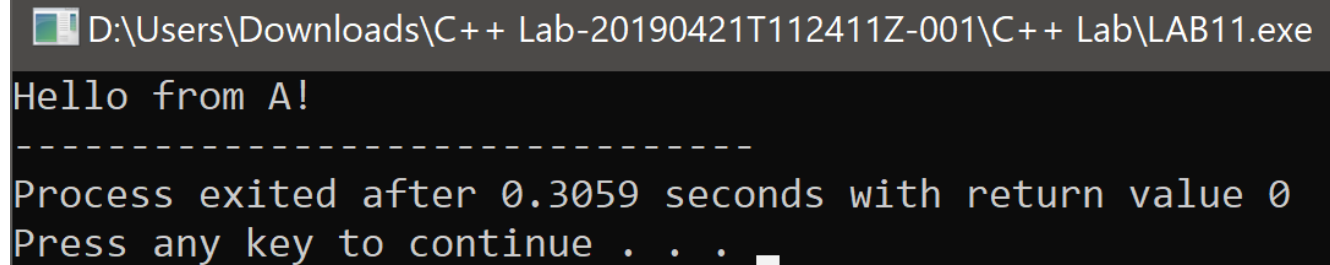
-----
Process exited after 0.5509 seconds with return value 0
Press any key to continue . . . 

```

11. Write a Program to show diamond problem (ambiguity) and its resolution using virtual abstract class.

```
1. #include<iostream>
2.
3. using namespace std;
4.
5. class A{
6.     public:
7.         void hello(){
8.             cout << "Hello from A!";
9.         }
10. };
11.
12. class B: virtual public A{
13.     public:
14. };
15.
16. class C: virtual public A{
17.     public:
18. };
19.
20. class D: public B, public C{
21.     public:
22. };
23.
24. int main(){
25.     D obj;
26.
27.     // classes B and C need to be made virtual, else hello() would be ambiguous
28.     obj.hello();
29. }
```

Output:

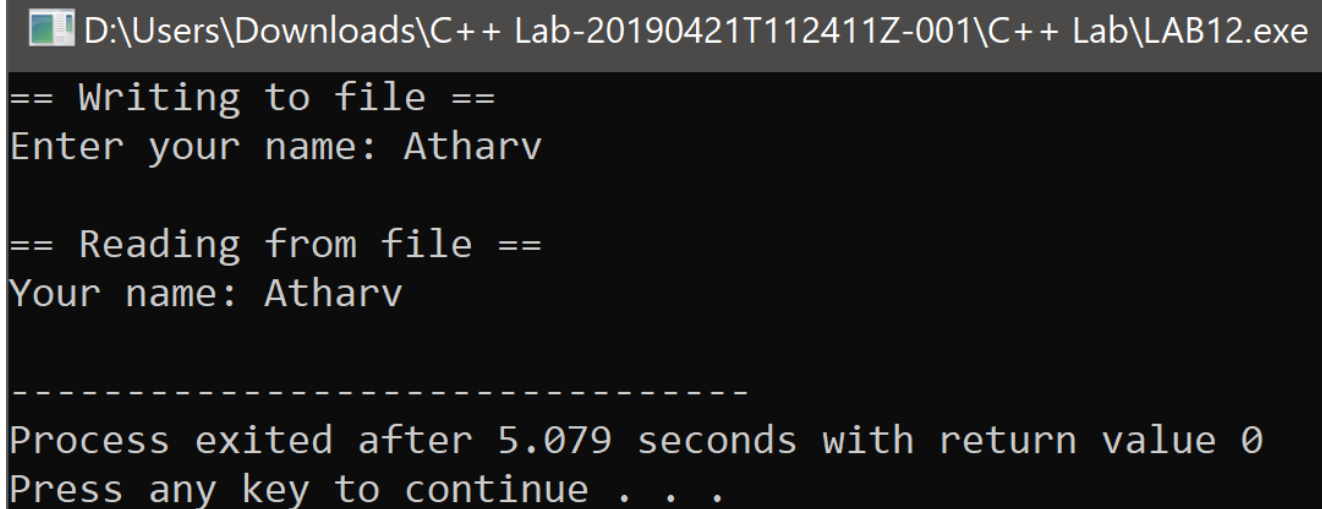


```
D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB11.exe
Hello from A!
-----
Process exited after 0.3059 seconds with return value 0
Press any key to continue . . .
```

12. Write a Program to write and read file using stream in C++.

```
1. #include<iostream>
2. #include<fstream>
3.
4. using namespace std;
5.
6. int main(){
7.     // writing to file
8.     char data[100];
9.
10.    ofstream outfile;
11.    outfile.open("A12.txt", ios::out);
12.
13.    cout << "== Writing to file ==" << endl;
14.    cout << "Enter your name: ";
15.    cin.getline(data, 100);
16.    outfile << data << endl;
17.
18.    outfile.close();
19.
20.    // reading from file
21.    ifstream infile;
22.    infile.open("A12.txt", ios::in);
23.
24.    cout << endl << "== Reading from file ==" << endl;
25.    infile >> data;
26.
27.    cout << "Your name: " << data << endl;
28.
29.    infile.close();
30. }
```

Output:



```
D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB12.exe
== Writing to file ==
Enter your name: Atharv

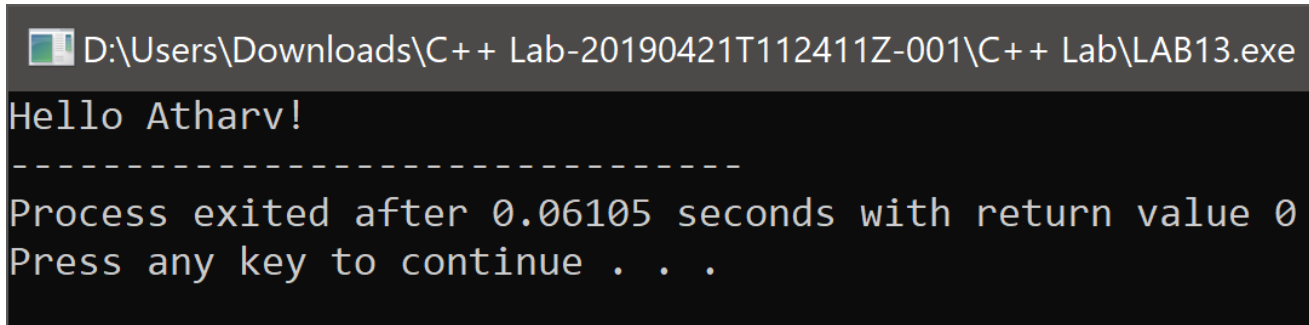
== Reading from file ==
Your name: Atharv

-----
Process exited after 5.079 seconds with return value 0
Press any key to continue . . .
```

13. Write a Program using command line arguments.

```
1. #include<iostream>
2.
3. using namespace std;
4.
5. int main(int argc, char* argv[]){
6.     if(argc != 2){
7.         cout << "You forgot to type your name.";
8.         return 1;
9.     }
10.
11.     cout << "Hello " << argv[1] << "!";
12. }
```

Output:



```
D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB13.exe
Hello Atharv!
-----
Process exited after 0.06105 seconds with return value 0
Press any key to continue . . .
```

14. WAP on Exception Handling

- Division by zero exception

```
1. #include <iostream>
2. using namespace std;
3.
4. double division(int a, int b) {
5.     if( b == 0 ) {
6.         throw "Division by zero condition!";
7.     }
8.     return (a/b);
9. }
10.
11. int main () {
12.     int x = 50;
13.     int y = 0;
14.     double z = 0;
15.
16.     try {
17.         z = division(x, y);
18.         cout << z << endl;
19.     } catch (const char* msg) {
20.         cerr << msg << endl;
21.     }
22.     return 0; }
```

Output:

```
D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB14a.exe
Division by zero condition!

-----
Process exited after 0.04305 seconds with return value 0
Press any key to continue . . .
```

- Using Std::exception class to implement your own exception

```
1. #include<iostream>
2. #include<exception>
3. using namespace std;
4.
5. struct myException: public exception
6. {
7.     const char *what() const throw()
8.     {
9.         return "C++ exception";
10.    }
11. };
12.
13. int main()
14. {
15.     try
16.     {
17.         throw myException();
18.     }
19.     catch(myException &e)
20.     {
21.         std::cout<<"My exception caught"<<std::endl;
22.         std::cout<<e.what()<<std::endl;
23.     }
24. }
```

Output:

```
D:\Users\Downloads\C++ Lab-20190421T112411Z-001\C++ Lab\LAB14b.exe
My exception caught
C++ exception

-----
Process exited after 0.04675 seconds with return value 0
Press any key to continue . . .
```

15. Create your own program

```
1. #include<iostream>
2. #include<stdio.h>
3. #include<conio.h>
4. using namespace std;
5.
6. void getdata();
7. void displaydata();
8. void calculate();
9.
10. class Student
11. {
12.     public:
13.         char F_Name[20], L_Name[20], School[20], Program[20];
14.         int Roll_no;
15.         int DCCN, DBMS, CPP, CONA, SE;
16.
17.         void getdata();
18.         void displaydata();
19.         void calculate();
20. };
21.
22. void Student::getdata(){
23.
24.     cout<<"\n || Enter Student Details || \n ";
25.     cout<<"\n\n First Name : ";
26.     gets(F_Name);
27.     cout<<"\n Last Name : ";
28.     gets(L_Name);
29.     cout<<"\n School : ";
30.     gets(School);
31.     cout<<"\n Program : ";
32.     gets(Program);
33.     cout<<"\n Roll No : ";
34.     cin>>Roll_no;
35.     cout<<"\n || Enter Marks (Out of 100) || \n ";
36.     cout<<"\n\n DCCN : ";
37.     cin>>DCCN;
38.     cout<<"\n DBMS : ";
39.     cin>>DBMS;
40.     cout<<"\n C++ Programming : ";
41.     cin>>CPP;
42.     cout<<"\n CONA : ";
43.     cin>>CONA;
44.     cout<<"\n Software Engineering : ";
45.     cin>>SE;
46.
47. }
48.
49. void Student::calculate(){
50.
51.     float Percentage=0;
52.     Percentage=(DCCN+DBMS+CPP+CONA+SE)/5.0;
53.     cout<<"\n Percentage : "<<Percentage<<endl;
```

```

54.     if((Percentage>=80)&&(Percentage<=100))
55.         cout<<" Grade : A ";
56.     else if((Percentage>=60)&&(Percentage<80))
57.         cout<<" Grade : B ";
58.     else if((Percentage>=40)&&(Percentage<60))
59.         cout<<" Grade : C ";
60.     else if((Percentage>=33)&&(Percentage<40))
61.         cout<<" Grade : D ";
62.     else
63.         cout<<" Grade : F ";
64.     cout<<"\n _____ ";
65.     cout<<"\n";
66. }
67. void Student::displaydata(){
68.     cout<<"\n _____ ";
69.     cout<<"\n\n Name : "<<F_Name<<" "<<L_Name<<" ";
70.     cout<<"\n Roll no : "<<Roll_no;
71.     cout<<"\n School : "<<School;
72.     cout<<"\n Program : "<<Program;
73.
74.
75. }
76.
77. main(){
78.     Student S;
79.     S.getdata();
80.     S.displaydata();
81.     S.calculate();
82.     cout<<"\n _____ ";
83.     cout<<"\n |Grade Table| _____ ";
84.     cout<<"\n |Grade A : 100-80| _____ ";
85.     cout<<"\n |Grade B : 80-60| _____ ";
86.     cout<<"\n |Grade C : 60-40| _____ ";
87.     cout<<"\n |Grade D : 40-33| _____ ";
88.     cout<<"\n |Grade F : Below 33| _____ ";
89.     cout<<"\n _____ ";
90.     getch();
91.
92. }

```


Output:

```
C:\Users\HP\AppData\Local\Packages\microsoft.windowscommunicationsapps_8wekyb3d8bbwe\LocalState\Files\S0\70\ATHARV1[1194].exe

|| Enter Student Details ||

First Name : Puneet
Last Name : Bhaviskar
School : AIIT
Program : BSc.IT
Roll No : 106

|| Enter Marks (Out of 100) ||

DCCN : 69
DBMS : 70
C++ Programming : 56
CONA : 74
Software Engineering : 80

-----
Name : Puneet Bhaviskar
Roll no : 106
School : AIIT
Program : BSc.IT
Percentage : 69.8
Grade : B
-----

|Grade Table|
|Grade A : 100-80|
|Grade B : 80-60|
|Grade C : 60-40|
|Grade D : 40-33|
|Grade F : Below 33|
|_|
```