AMITY SCHOOL OF ENGINEERING & TECHNOLOGY

AMITY UNIVERSITY CAMPUS, SECTOR-125, NOIDA-201303

OBJECT ORIENTED PROGRAMMING IN C++ LAB

PRACTICAL FILE

COURSE CODE: ES203

Submitted to:
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A2305223569

3CSE-3Y

Index

S.No	Category of Assignment	Code	Name of Experiment	Date of Allotment of experiment	Date of Evaluation	Max. Marks	Marks obtained	Sign. of Faculty
1.	**Mandatory Experiment**	**LR (10)**	WAP in C++ to swap to integers by passing them using pointers in the function.			**1**		
2.			WAP in C++ to print 5 terms of Fibonacci Series using classes.			**1**		
3.			WAP in C++ to find the largest of three numbers. Use the member functions(one for input, one for display and one to calculate the largest number). All the three functions should be defined outside the class.			**1**		
4.			WAP in C++ to input the name and roll number of a student using default as well as a parameterised constructor.			**1**		
5.			WAP in C++ to find the factorial of a number using the default and parameterised constructor.			**1**		
6.			An election is contested between five contestants and are numbered 1 to 5. The voting is done by marking the number on ballet paper. WAP in C++ to read the ballots and count the votes for each candidate using an array variable 'count'. In case a number read is outside the range 1-5, the ballot			**1**		

			should be considered as a spoiled ballot. The program should also count the number of spoiled ballots.					
7.			WAP in C++ with a class having two integers as data members and one member function to take input whose friend function calculates the mean of two integers.			**1**		
8.			WAP in C++ to create two classes each having one integer data member. Both the classes should have a function to take the input and write a friend function to calculate the largest of the two numbers.			**1**		
9.			WAP in C++ to find the sum of two complex numbers using the friend function.			**1**		
10.			WAP in C++ to create a class called time that has three integer data members for hours, minutes and seconds. The class should have a constructor to initialise the object to zero. And a constructor to initialise the object to some constant value. The class should also have a member function to add two time objects and a member function to display time in (HH:MM:SS) format. Write a main function to create two time objects, add them and display the			**1**		

			result in (HH:MM:SS) format.					
11.			Create two classes DM and DP . DM stores metres and centimetres and DP stores feet and inches. Write a program that can read values for class objects and add one object of DM with another object of DB. Use a friend function to carry out the addition operation. The object that shows the result may be a DM or DB object depending on the units in which the results are required as per the user input.			**1**		
12.			Create a class "CITY" with two data members - 'Name' and 'Length' . And two member functions - 'Get_name' , in this function ask the user to enter the city name and length of that city name. And 'Print_name' to display the name.			**1**		
13.			Create a base class called shape and create two derived classes called rectangle and triangle. The shape class should store two double type values that could be used to compute the area of figures. The shape class will also have two member functions, get_data and display. Display function should be a virtual function and redefine this function in the derived classes to suit their					

			requirements. Using these 3 classes, design a program that will accept dimensions of a triangle or a rectangle and display the area.					
14.			WAP that reads the following text and counts the number of times the word "It" appears : (It is new. It is singular. It is simple)					
15.			Write a program to illustrate the application of multiple catch statements and use catch all handlers.					
16.			Write a program in C++ to convert temperature from Fahrenheit to Celsius using class templates.					
17.			WAP in C++ that reads several cities names from the keyboard and displays only those names beginning with the letter 'b' or 'c' .					
18.			WAP in C++ to display file handling					

EXPERIMENT 1

OBJECTIVE: WAP in C++ to swap to integers by passing them using pointers in the function.

SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include <iostream>
void swap(int *x,int *y)
{
   int temp;
   temp=*x;
   *x=*y;
   *y=temp;

}
int main()
{
   int x;
   int y;
   std::cout<<"enter numbers";
   std::cin>>x;
   std::cin>>y;
   swap(&x,&y);
   std::cout<<"x : "<<x;
   std::cout<<"\ny : "<<y;

   return 0;
}
```

OUTPUT:

```
enter numbers100
200
x : 200
y : 100

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

Internal Assessment (Mandatory Experiment) Sheet for Lab Experiment
Department of Computer Science & Engineering
Amity University, Noida (UP)

Program	B. Tech CSE	Course Name	Object Oriented Programming using C++
Course Code	ES203	Semester	III
Student Name	Shourya Solanki	Enrollment Number	A2305223569

Marking Criteria

Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 2

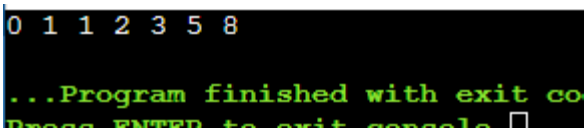
OBJECTIVE: WAP in C++ to print 5 terms of Fibonacci Series using classes.

SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include <iostream>
class fib{
   public:
      int a,b,c;
      void loop();
};
void fib::loop(){
   a=0;
   b=1;
   std::cout<<a<<" "<<b;
   for(int i=0;i<=4;i++){
      c=a+b;
      std::cout<<" "<<c;
      a=b;
      b=c;
   }
}
int main(){
   fib f;
   f.loop();
   return 0;
}
```

OUTPUT:



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Course Code	ES203	Semester	III
Student Name	Shourya Solanki	Enrollment Number	A2305223569

Marking Criteria

Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 3

OBJECTIVE: WAP in C++ to find the largest of three numbers. Use the member functions(one for input, one for display and one to calculate the largest number). All the three functions should be defined outside the class.

SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include <iostream>
using namespace std;
class largest {
   int num1, num2, num3;
public:
   void input();
   void display();
   int findlargest();
};

void largest::input() {
   cout << "Enter three numbers: ";
   cin >> num1 >> num2 >> num3;
}
int largest::findlargest() {
   if (num1 >= num2 && num1 >= num3) {
      return num1;
   } else if (num2 >= num1 && num2 >= num3) {
      return num2;
   } else {
      return num3;
   }
}

void largest::display() {
   cout << "The largest number is: " << findlargest() << endl;
}

int main() {
```

```
    largest obj;
    obj.input();
    obj.display();
    return 0;
}
```

OUTPUT:

```
Enter three numbers: 20
30
40
The largest number is: 40
```

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Student Name	Shourya Solanki	Enrollment Number	A2305223569

Marking Criteria

Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 4

OBJECTIVE: WAP in C++ to input the name and roll number of a student using default as well as a parameterised constructor.

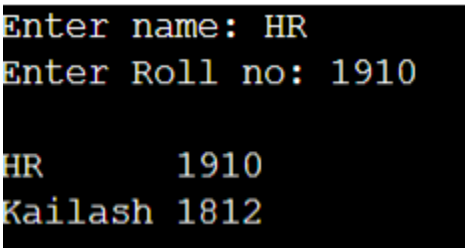
SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include <iostream>
#include <cstring>
using namespace std;
class stud {
   char name[100];
   int rollno;

public:
   stud() {
      cout << "Enter name: ";
      cin >> name;
      cout << "Enter Roll no: ";
      cin >> rollno;
   }

   stud(const char n[], int r) {
      strcpy(name, n);
      rollno = r;
   }
   void display() {
      cout << endl << name << "\t" << rollno;
   }
};

int main() {
   stud s1;
   s1.display();
   stud s2("Kailash", 1812);
   s2.display();
```

```
    return 0;
}
```

OUTPUT:



Internal Assessment (Mandatory Experiment) Sheet for Lab Experiment Department of Computer Science & Engineering Amity University, Noida (UP)			
Program	B. Tech CSE	Course Name	Object Oriented Programming using C++
Course Code	ES203	Semester	III
Student Name	Shourya Solanki	Enrollment Number	A2305223569
Marking Criteria			
Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 5

OBJECTIVE: WAP in C++ to find the factorial of a number using the default and parameterised constructor.

SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include <iostream>
using namespace std;
class facto {
   int number;
public:
   facto() {
      cout << "Enter a number: ";
      cin >> number;
   }
   facto(int num) {
      number = num;
   }
   long long calfac() {
      long long fact = 1;
      for (int i = 1; i <= number; i++) {
         fact *= i;
      }
      return fact;
   }
   void display() {
      cout << "The factorial of " << number << " is: " << calfac() << endl;
   }
};
int main() {
   facto f1;
   f1.display();
   facto f2(5);
   f2.display();
```

```
    return 0;
}
```

OUTPUT:

```
Enter a number: 6
The factorial of 6 is: 720
The factorial of 5 is: 120
```

Internal Assessment (Mandatory Experiment) Sheet for Lab Experiment **Department of Computer Science & Engineering** **Amity University, Noida (UP)**			
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Course Code	ES203	Semester	III
Student Name	Shourya Solanki	Enrollment Number	A2305223569
Marking Criteria			
Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 6

OBJECTIVE: An election is contested between five contestants and are numbered 1 to 5. The voting is done by marking the number on ballet paper. WAP in C++ to read the ballots and count the votes for each candidate using an array variable 'count'. In case a number read is outside the range 1-5, the ballot should be considered as a spoiled ballot. The program should also count the number of spoiled ballots.

SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include <iostream>

using namespace std;

#define nc 5

int main() {
   int votes[nc] = {0};
   int spoiledBallots = 0;
   int ballot;

   cout << "Enter votes (1 to " << nc << " for candidates, any other number for spoiled ballots). Enter -1 to stop:\n";

   while (true) {
      cout << "Vote: ";
      cin >> ballot;

      if (ballot == -1) {
         break;
      }

      if (ballot >= 1 && ballot <= nc) {
```

```
            votes[ballot - 1]++;
        } else {
            spoiledBallots++;
        }
    }
    cout << "\nVote count:\n";
    for (int i = 0; i < nc; i++) {
        cout << "Candidate " << (i + 1) << ": " << votes[i] << " votes\n";
    }
    cout << "Spoiled ballots: " << spoiledBallots << "\n";

    return 0;
}
```

OUTPUT:

```
Enter votes (1 to 5 for candidates, any other number for spoiled ballots). Enter -1 to stop:
Vote: 2
Vote: 1
Vote: 2
Vote: 5
Vote: 6
Vote: -1

Vote count:
Candidate 1: 1 votes
Candidate 2: 2 votes
Candidate 3: 0 votes
Candidate 4: 0 votes
Candidate 5: 1 votes
Spoiled ballots: 1
```

Internal Assessment (Mandatory Experiment) Sheet for Lab Experiment
Department of Computer Science & Engineering
Amity University, Noida (UP)

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Student Name	Shourya Solanki	Enrollment Number	A2305223569

Marking Criteria

Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 7

OBJECTIVE: WAP in C++ with a class having two integers as data members and one member function to take input whose friend function calculates the mean of two integers.

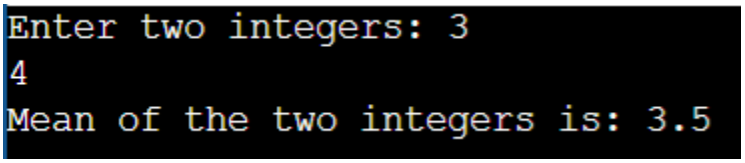
SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include <iostream>
using namespace std;
class numb;
float calmean(numb &num);
class numb {
private:
   int a, b;
public:
   void input() {
      cout << "Enter two integers: ";
      cin >> a >> b;
   }
   friend float calmean(numb &num);
};

float calmean(numb &num) {
   return (num.a + num.b) / 2.0;
}
int main() {
   numb nums;
   nums.input();
   cout << "Mean of the two integers is: " << calmean(nums) << endl;
   return 0;
}
```

OUTPUT:



Internal Assessment (Mandatory Experiment) Sheet for Lab Experiment Department of Computer Science & Engineering Amity University, Noida (UP)			
Program	B. Tech CSE	Course Name	Object Oriented Programming using C++
Course Code	ES203	Semester	III
Student Name	Shourya Solanki	Enrollment Number	A2305223569
Marking Criteria			
Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 8

OBJECTIVE: WAP in C++ to create two classes each having one integer data member. Both the classes should have a function to take the input and write a friend function to calculate the largest of the two numbers.

SOFTWARE USED: Turbo C++

SOURCE CODE:

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

class numB;
class numA {
private:
   int a;
public:
   void input() {
      cout << "Enter an integer for class numA: ";
      cin >> a;
   }
   friend int flargest(numA, numB);
};
class numB {
private:
   int b;
public:
   void input() {
      cout << "Enter an integer for class numB: ";
      cin >> b;
   }
   friend int flargest(numA, numB);
};
int flargest(numA objA, numB objB) {
   if (objA.a > objB.b)
      return objA.a;
   else
      return objB.b;
}
```

```
int main() {
    numA objA;
    numB objB;
    objA.input();
    objB.input();
    cout << "The largest of the two numbers is: " << flargest(objA, objB) << endl;
    return 0;
}
```

OUTPUT:

```
Enter an integer for class numA: 1
Enter an integer for class numB: 5
The largest of the two numbers is: 5
```

Internal Assessment (Mandatory Experiment) Sheet for Lab Experiment Department of Computer Science & Engineering Amity University, Noida (UP)			
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Course Code	ES203	Semester	III
Student Name	Shourya Solanki	Enrollment Number	A2305223569
Marking Criteria			
Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		

Total	6		

EXPERIMENT 9

OBJECTIVE: WAP in C++ to find the sum of two complex numbers using the friend function.
SOFTWARE USED: Turbo C++

SOURCE CODE:

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

class complex
{
   private:
      float real;
      float imag;
   public:
      complex(){
         real=0;
         imag=0;
      }
      complex(float r, float i){
         real=r;
         imag=i;
      }
      friend complex add(complex c1, complex c2);
      void display(){
         cout<<"("<<real<<","<<imag<<")"<<endl;
      }
};
complex add(complex c1, complex c2){
   complex temp;
   temp.real = c1.real+c2.real;
   temp.imag = c1.imag+c2.imag;
   return temp;
}
int main()
{
```

```
    complex c1(2.3,4.4),c2(3.3,4.5),c3;
    c3=add(c1,c2);
    c1.display();
    c2.display();
    cout<<"Sum is"<<endl;
    c3.display();
    return 0;
}
```

OUTPUT:

```
(2.3,4.4)
(3.3,4.5)
Sum is
(5.6,8.9)
```

Internal Assessment (Mandatory Experiment) Sheet for Lab Experiment Department of Computer Science & Engineering Amity University, Noida (UP)			
Program	B. Tech CSE	Course Name	Object Oriented Programming using C++
Course Code	ES203	Semester	III
Student Name	Shourya Solanki	Enrollment Number	A2305223569
Marking Criteria			
Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		

Performance(C)	2		
Total	6		

EXPERIMENT 10

OBJECTIVE: WAP in C++ to create a class called time that has three integer data members for hours, minutes and seconds. The class should have a constructor to initialise the object to zero. And a constructor to initialise the object to some constant value. The class should also have a member function to add two time objects and a member function to display time in (HH:MM:SS) format. Write a main function to create two time objects, add them and display the result in (HH:MM:SS) format.

SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include <iostream>
using namespace std;
class Time {
private:
   int hours, minutes, seconds;
public:
   Time() {
      hours = 0;
      minutes = 0;
      seconds = 0;
   }
   Time(int h, int m, int s) {
      hours = h;
      minutes = m;
      seconds = s;
   }
   Time addT(Time t) {
      Time re;
      re.seconds = seconds + t.seconds;
      re.minutes = minutes + t.minutes + (re.seconds / 60);
      re.seconds = re.seconds % 60;
      re.hours = hours + t.hours + (re.minutes / 60);
```

```
        re.minutes = re.minutes % 60;
        re.hours = re.hours % 24;
        return re;
    }
    void displayTime() {
        cout << (hours < 10 ? "0" : "") << hours << ":"
             << (minutes < 10 ? "0" : "") << minutes << ":"
             << (seconds < 10 ? "0" : "") << seconds << endl;
    }
};

int main() {
    Time t1(2, 45, 50);
    Time t2(1, 20, 30);
    Time t3 = t1.addT(t2);
    cout << "Time 1: ";
    t1.displayTime();
    cout << "Time 2: ";
    t2.displayTime();
    cout << "Added Time: ";
    t3.displayTime();
    return 0;
}
```

OUTPUT:

```
Time 1: 02:45:50
Time 2: 01:20:30
Added Time: 04:06:20
```

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Marking Criteria

Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 11

OBJECTIVE: Create two classes DM and DP . DM stores metres and centimetres and DP stores feet and inches. Write a program that can read values for class objects and add one object of DM with another object of DP. Use a friend function to carry out the addition operation. The object that shows the result may be a DM or DP object depending on the units in which the results are required as per the user input.

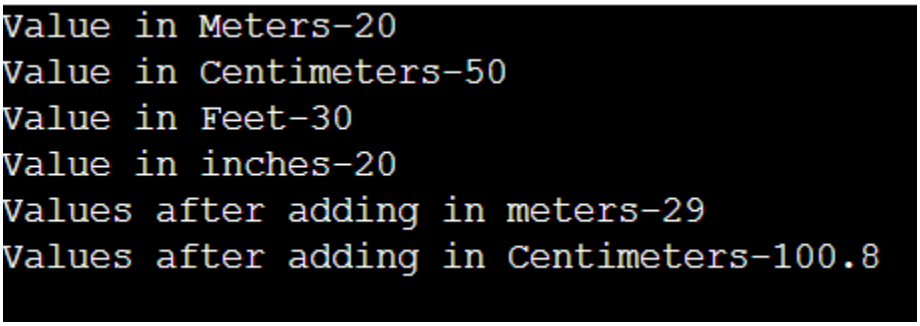
SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include<iostream>
using namespace std;
class DM
{
   public:
      float a,b;
      void dis()
      {
         cout<<"Value in Meters-";
         cin>>a;
         cout<<"Value in Centimeters-";
         cin>>b;
      }
};
class DP
{
   public:
      float c,d;
      void see()
      {
         cout<<"Value in Feet-";
         cin>>c;
         cout<<"Value in inches-";
         cin>>d;
      }
```

```
};
int main()
{
   DM dm;
   dm.dis();
   DP dp;
   dp.see();
   dp.c=dp.c*0.3;
   dp.d=dp.d*2.54;
   cout<<"Values after adding in meters-"<<dm.a+dp.c<<"\n";
   cout<<"Values after adding in Centimeters-"<<dm.b+dp.d<<"\n";
}
```

OUTPUT:



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Marking Criteria

Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 12

OBJECTIVE: Create a class "CITY" with two data members - 'Name' and 'Length' . And two member functions - 'Get_name' , in this function ask the user to enter the city name and length of that city name. And 'Print_name' to display the name.

SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include <iostream>
#include <string>
using namespace std;
class CITY {
private:
   string Name;
   int len;

public:
   void Get_name() {
      cout << "Enter the city name: ";
      getline(cin, Name);
      len = Name.length();
   }
   void Print_name() {
      cout << "City Name: " << Name << endl;
      cout << "Length of City Name: " << len << " characters." << endl;
   }
};
int main() {
   CITY city;
   city.Get_name();
   city.Print_name();
   return 0;
}
```

OUTPUT:

```
Enter the city name: Chennai
City Name: Chennai
Length of City Name: 7 characters.
```

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Marking Criteria			
Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 13

OBJECTIVE: Create a base class called shape and create two derived classes called rectangle and triangle. The shape class should store two double type values that could be used to compute the area of figures. The shape class will also have two member functions, get_data and display. Display function should be a virtual function and redefine this function in the derived classes to suit their requirements. Using these 3 classes, design a program that will accept dimensions of a triangle or a rectangle and display the area.

SOFTWARE USED: Turbo C++

SOURCE CODE:

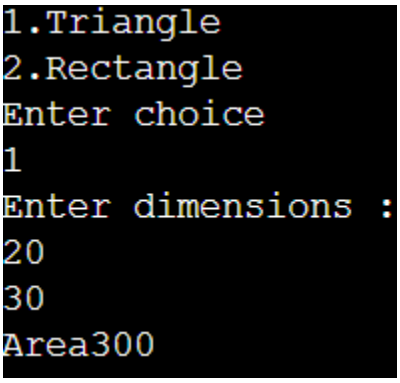
```
#include <iostream>
#include <math.h>
using namespace std;
class shape{
   public:
      double d1;
      double d2;
      void getdata(double di1, double di2)
      {
         d1=di1;
         d2=di2;
      }
      virtual double display() const=0;
};
class triangle : public shape {
   public:
      double display() const{
         return 0.5*d1*d2;
      }
};
class rectangle : public shape{
   public:
      double display() const{
         return d1*d2;
      }
```

```
};

int main(){
   int c;
   double di1,di2;
   cout<<"1.Triangle \n2.Rectangle"<<endl;
   cout<<"Enter choice"<<endl;
   cin>>c;
   switch(c){
      case 1:
      {
         triangle tt;
         shape *st=&tt;
         cout<<"Enter dimensions : "<<endl;
         cin>>di1>>di2;
         st->getdata(di1,di2);
         cout<<"Area"<<st->display()<<endl;
         break;
      }
      case 2:
      {
         rectangle rt;
         shape *sr=&rt;
         cout<<"Enter dimensions : "<<endl;
         cin>>di1>>di2;
         sr->getdata(di1,di2);
         cout<<"Area"<<sr->display()<<endl;
         break;
      }
      default:
         cout<<"Invalid"<<endl;
         break;
   }

}
```

OUTPUT:



Internal Assessment (Mandatory Experiment) Sheet for Lab Experiment Department of Computer Science & Engineering Amity University, Noida (UP)			
Program	B. Tech CSE	Course Name	Object Oriented Programming using C++
Course Code	ES203	Semester	III
Student Name	Shourya Solanki	Enrollment Number	A2305223569
Marking Criteria			
Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 14

OBJECTIVE: WAP that reads the following text and counts the number of times the word “It” appears : “It is new. It is singular. It is simple”

SOFTWARE USED: Turbo C++

SOURCE CODE:

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

int main() {
    string text = "(It is new. It is singular. It is simple)";
    string word = "It";
    int count = 0;
    for (int i = 0; i <= text.length() - word.length(); i++) {
        if (text.substr(i, word.length()) == word) {
            count++;
        }
    }
    cout << "The word \"" << word << "\" appears " << count << " times." << endl;
    return 0;
}
```

OUTPUT:

```
The word "It" appears 3 times.
```

Internal Assessment (Mandatory Experiment) Sheet for Lab Experiment
Department of Computer Science & Engineering
Amity University, Noida (UP)

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Student Name	Shourya Solanki	Enrollment Number	A2305223569

Marking Criteria

Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 15

OBJECTIVE: Write a program to illustrate the application of multiple catch statements and use catch all handlers.

SOFTWARE USED: Turbo C++

SOURCE CODE:

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

double divide(double numerator, double denominator) {
    if (denominator == 0) {
        throw runtime_error("Error: Division by zero.");
    }
    return numerator / denominator;
}

int main() {
    double num, denom;

    cout << "Enter numerator: ";
    cin >> num;

    cout << "Enter denominator: ";
    cin >> denom;

    try {
        double result = divide(num, denom);
        cout << "Result: " << result << endl;
    } catch (const runtime_error &e) {
        cout << e.what() << endl;
    }

    return 0;
}
```

OUTPUT:

```
Enter numerator: 20
Enter denominator: 30
Result: 0.666667
```

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Marking Criteria			
Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		

EXPERIMENT 16

OBJECTIVE: Write a program in C++ to convert temperature from Fahrenheit to Celsius using class templates.

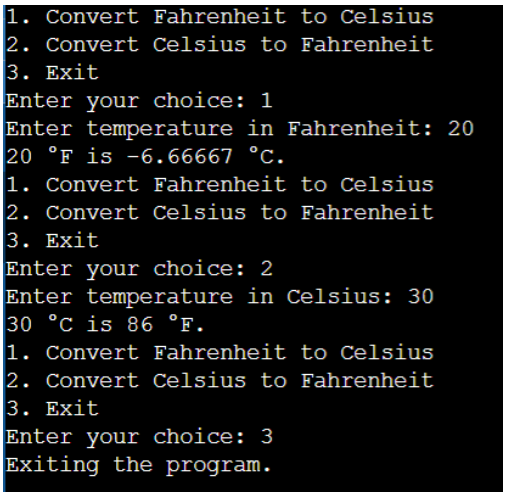
SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include <iostream>
using namespace std;
template <typename T>
class tempconv {
public:
    tempconv(T tempr, bool faren) {
        if (faren) {
            farentemp = tempr;
        } else {
            celsiusTemp = tempr;
        }
    }

    T toCelsius() {
        return (farentemp - 32) * 5.0 / 9.0;
    }

    T toFahrenheit() {
        return (celsiusTemp * 9.0 / 5.0) + 32;
    }

private:
    T farentemp = 0;
    T celsiusTemp = 0;
};

int main() {
    int ch;
    double temprInput;
```

```
    do {
        cout << "1. Convert Fahrenheit to Celsius\n";
        cout << "2. Convert Celsius to Fahrenheit\n";
        cout << "3. Exit\n";
        cout << "Enter your choice: ";
        cin  >> ch;

        switch (ch) {
            case 1:
                cout << "Enter temperature in Fahrenheit: ";
                cin >> temprInput;
                {
                    tempconv<double> converter(temprInput, true);
                    cout << temprInput << " °F is " << converter.toCelsius() << " °C." <<
endl;
                }
                break;

            case 2:
                cout << "Enter temperature in Celsius: ";
                cin >> temprInput;
                {
                    tempconv<double> converter(temprInput, false);
                    cout << temprInput << " °C is " << converter.toFahrenheit() << " °F."
<< endl;
                }
                break;

            case 3:
                cout << "Exiting the program." << endl;
                break;

            default:
                cout << "Invalid choice! Please try again." << endl;
        }
    } while (ch!= 3);

    return 0;
}
```

OUTPUT:



Internal Assessment (Mandatory Experiment) Sheet for Lab Experiment Department of Computer Science & Engineering Amity University, Noida (UP)			
Program	B. Tech CSE	Course Name	Object Oriented Programming using C++
Course Code	ES203	Semester	III
Student Name	Shourya Solanki	Enrollment Number	A2305223569
Marking Criteria			
Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		

Total	6		

EXPERIMENT 17

OBJECTIVE: WAP in C++ that reads several cities names from the keyboard and displays only those names beginning with the letter 'b' or 'c' .

SOFTWARE USED: Turbo C++

SOURCE CODE:

```
#include <iostream>
#include <string>
using namespace std;
int main()
{
   int cite=100;
   string cities[cite];
   string city;
   int c=0;
   cout<<"Enter the city names"<<endl;
   while(c<cite)
   {
      cin>>city;
      if(city=="1")
      {
         break;
      }
      cities[c]=city;
      c++;
   }
   cout<<"Cities that begin with B or C : "<<endl;
   for(int i=0;i<c;i++)
   {
      if(cities[i].find('B') == 0 || cities[i].find('C') == 0 ||cities[i].find('b') == 0 ||
cities[i].find('c') == 0)
      {
         cout<<cities[i]<<endl;
      }
```

```
    }
}
```

OUTPUT:

```
Enter the city names
Chennai
Mumbai
Bengaluru
Bombay
Chidambaram
1
Cities that begin with B or C :
Chennai
Bengaluru
Bombay
Chidambaram
```

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Student Name	Shourya Solanki	Enrollment Number	A2305223569
Marking Criteria			
Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		

Total	6		

EXPERIMENT 18

OBJECTIVE: WAP in C++ to display file handling

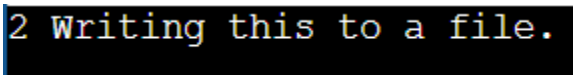
SOFTWARE USED: Turbo C++

SOURCE CODE:

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

int main()
{
   ofstream myfile;
   myfile.open("example.txt");
   myfile<<"2 Writing this to a file. \n";
   myfile.close();
   string line;

   ifstream myfl("example.txt");
   if(myfl.is_open())
   {
      while(getline(myfl,line))
      {
         cout<<line<<'\n';
      }

      myfl.close();
   }
   else
   {
      cout<<"Unable to open file";
   }
   return 0;
```

}

OUTPUT:



Internal Assessment (Mandatory Experiment) Sheet for Lab Experiment Department of Computer Science & Engineering Amity University, Noida (UP)			
Program	B. Tech CSE	Course Name	Object Oriented Programming using C++
Course Code	ES203	Semester	III
Student Name	Shourya Solanki	Enrollment Number	A2305223569
Marking Criteria			
Criteria	Total Marks	Marks Obtained	Comments
Concept(A)	2		
Implementation(B)	2		
Performance(C)	2		
Total	6		