Heaven's Light is Our Guide
Rajshahi University of Engineering & Technology
Department of Computer Science & Engineering

Lab Manual

Course Code: **CSE 1204 (Sec A)**
Course Title: Sessional based on CSE 1203
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Module 4 [polymorphism]: (for Week 5)

Topic 1[**Method/Function Overloading**]

Problem Statement: Define a class Test where overload a method Sum() to sum numbers sent from main() function.

```
class Test{

  public:
  //overload Sum() method according to the requirement of main()
};
int main(){
  Test t;
  t.Sum(10); //returns 10
  t.Sum(10,20) //return 30
  t.Sum(5.7,20) //return 25.7
  t.Sum(10,2.6) //return 12.6
  t.Sum(10.5,20.7) //return 21.2
}
```

Topic 2 [**Operator Overloading**]: Suppose in a AC circuit, there are 3 impedances z1=3+j4, z2=4-j3 and z3=j6 are connected in parallel. Now find the current in the circuit if input voltage is 100+j50. Implement **operator overloading** concept for your calculation. Use class **Circuit** and initialize the impedance values (real & img) by a constructor.

```
class Circuit{
 private:
    int real;
    int img;
  public:
    //write constructor
   //write operator overloaded method
  //write a display method to display real and img
};

int main(){
 Circuit z1(3,4);
 //write required statements to find the current
}
```

Topic 3[Method/Function Overriding]

Problem statement: Write a class A with a method **Print()** and a derived class B with method **Print()** overloaded. Now observe the output when following statements are written in the **main()** function-

```
class A{
  public:
     void Print(){
     cout<<"Inside Print() of class A"<<endl;
    }
};

class B:public A{
 public:
    void Print(){
     cout<<"Inside Print() of class B"<<endl;
    }
};
```

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static binding vs dynamic binding ;

Write Statements inside main()

```
i)    A a;
      a.Print();
ii)   B b;
      b.Print();
iii)  A a;
      A *p;
      p=&a;
      p->Print();
 iv)  B b;
      A *p;
      p=&b;
      p->Print();
```

Repeat i)-iv) after writing virtual in front of void Print()

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Topic 4[Pure Virtual Function] page 123

Problem statement: Modify the class defined in Topic 3 executes the following statements i)-iv) and observe the output:

```
class A{
  public:
     virtual void Print()=0;
    }
};

class B:public A{
 public:
    void Print(){
     cout<<"Inside Print() of class B"<<endl;
    }
};
```

Write Statements inside main()

```
iii)  A a;
      a.Print();
iv)   B b;
      b.Print();
iii)  A a;
      A *p;
      p=&a;
      p->Print();
 iv)  B b;
      A *p;
      p=&b;
      p->Print();
```

Topic 5 [Friend Function] ****

Problem Statement: Using the following class, write three friend functions

i) `Add()`: Assign value to the data member x
ii) `IncX()` : Increase the value of x by m
iii) `DecX()` : Decrease the value of x by n

```
class A{
 private:
    int x;
  public:
     //Prototype of friend functions
};

//write body of friend functions

int main(){
 //call these methods
}
```

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