

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 $z_1=3+j4$, $z_2=4-j3$ and $z_3=j6$ 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-

| | |
|--|--|
| <pre>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; } };</pre> | <p>Write Statements inside main()</p> <pre>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();</pre> <p>Repeat i)-iv) after writing virtual in front of void Print()</p> |
|--|--|

Topic 4[Pure Virtual Function]

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

| | |
|--|--|
| <pre>class A{ public: virtual void Print()=0; } class B:public A{ public: void Print(){ cout<<"Inside Print() of class B"<<endl; } };</pre> | <p>Write Statements inside main()</p> <pre>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();</pre> |
|--|--|

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
}
```