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B.Tech II year I semester CSE(S2)

Course name : Object Oriented Programming through C++ lab

Week - 06 (13-10-2023) task

1. Create a class Node and List

Classname: List
Attributes: Public: *head, *tail

Methods:
List() // constructor
void display();
void append(Node*)

Classname: Node
Attributes: public: data, *next
Methods: Node(int) // constructor

- The display and append methods of List class should access Node class private members data and next field.
- Create a list of nodes and display the list.
  10 - - > 20 - - > 30 - - > 40

Hint: use friend function concept to access private data of other class members.

2. Create a class Point and Rectangle

Classname: Point
Attributes: public: x,y;
Methods: Point(int,int)// constructor

Classname: Rectangle
Attributes: private: left_top,right_bottom
Methods: Public: double area();

```
int main(){
   Point p1(2,5),p2(8,10);
   Rectangle r1(p1,p2),r2(p1,5,6),r3(5,6);
   cout<<"area="<<r1.area()<<endl;
   cout<<"area="<<r2.area()<<endl;
   cout<<"area="<<r3.area()<<endl;
   return 0;
}
```

Write the appropriate constructors in the Rectangle for the above main() function to work correctly.

Hint: use constructor overloading

3. Write a c++ class that read a complex number and perform the following operations

Classname: Complex
Attributes: Private: real,img;
Methods: Complex operator+(const complex&); Complex operator-(const complex&); Complex operator*(const complex&); istream& operator>>(istream&) ostream& operator<<(ostream&)

```
int main(){
   complex c1(2.1,3.4),c2(4.3,5.1);
   complex ac=c1+c2;
   complex sc=c1-c2;
   complex mc=c1*c2;
   cout<<"complex number 1: ";
   c1.display();
   cout<<"complex number 2: ";
   c2.display();
   cout<<"addition of complex number 1 and 2 : ";
   ac.display();
  cout<<"subtraction of complex number 1 and 2 : ";
   sc.display();
  cout<<"multiplication of complex number 1 and 2 : ";
   mc.display();
   return 0;
}
```

Implement the complex class such that the above main() should work correctly.

Hint: Use Operator overloading