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CS360L

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pointType.h

```
#ifndef POINTTYPE_H
#define POINTTYPE_H

class pointType
{
    public:
        void setPoint(double xCoord, double yCoord);
        void print() const;
        double getX() const;
        double getY() const;
        pointType(double x = 0.0, double y = 0.0);
        void distance(const pointType &p);

    protected:
        double x;
        double y;
};

#endif // POINTTYPE_H
```

pointType.cpp

```
#include <iostream>
#include <cmath>
#include "pointType.h"

using namespace std;

void pointType::setPoint(double xCoord, double yCoord)
{
    x = xCoord;
    y = yCoord;
}
```

```

}
void pointType::print() const
{
    cout << "(" << x << ", " << y << ")" << endl;
}
double pointType::getX() const
{
    return x;
}
double pointType::getY() const
{
    return y;
}
pointType::pointType(double x, double y)
{
    setPoint(x, y);
}
void pointType::distance(const pointType &p)
{
    double xDiff = x - p.getX();
    double yDiff = y - p.getY();
    double distance = sqrt(xDiff * xDiff + yDiff * yDiff);
    cout << "The distance between the two points is " << distance << endl;
}

```

circleType.h

```

#ifndef CIRCLETYPE_H
#define CIRCLETYPE_H
#include "pointType.h"

class circleType: public pointType
{
public:
    void setRadius(double r);
    double getRadius() const;
    void print() const;
    void area() const;
    void circumference() const;
    circleType(double x = 0.0, double y = 0.0, double r = 0.0);
    void distance(const circleType &c);

protected:
    double radius;
}

```

```
};

#endif // CIRCLETYPE_H
```

circleType.cpp

```
#include <iostream>
#include <cmath>
#include "circleType.h"

using namespace std;

void circleType::setRadius(double r)
{
    radius = r;
}

double circleType::getRadius() const
{
    return radius;
}

void circleType::print() const
{
    cout << "Circle with center of (" << x << ", " << y << "), radius = " << radius
<< endl;
}

void circleType::area() const
{
    double area = M_PI * radius * radius;
    cout << "The area of the circle is " << area << endl;
}

void circleType::circumference() const
{
    double circumference = 2 * M_PI * radius;
    cout << "The circumference of the circle is " << circumference << endl;
}

circleType::circleType(double x, double y, double r)
{
    setPoint(x, y);
    setRadius(r);
}

void circleType::distance(const circleType &c)
{
    double xDiff = getX() - c.getX();
```

```

        double yDiff = getY() - c.getY();
        double distance = sqrt(xDiff * xDiff + yDiff * yDiff);
        cout << "The distance between the center of the two circles is " << distance <<
endl;
    }

```

main.cpp

```

#include <iostream>
#include <iomanip>
#include "circleType.h"
#include "pointType.h"
#include "circleType.cpp"
#include "pointType.cpp"

using namespace std;

int main(){
    pointType point1(6.7, 4.9);
    pointType point2(3.1, 5.2);
    cout << fixed << showpoint;
    cout << setprecision(2);
    cout << "Point 1: " ; point1.print();
    cout << "Point 2: " ; point2.print();
    point1.distance(point2);

    circleType c1(1, 2, 3);
    circleType c2(4, 5, 6);
    cout << "Circle 1: " ; c1.print();
    c1.area();
    c1.circumference();
    cout << "Circle 2: " ; c2.print();
    c2.area();
    c2.circumference();
    c1.distance(c2);
    c1.setPoint(5.9, 10.3);
    c1.setRadius(4.5);
    cout << "Circle 1: " ; c1.print();
    c1.area();
    c1.circumference();
    return 0;
}

```

Run program & result:

```
PS D:\VS CODE\C C++\CS360L\Quiz#2> cd "d:\VS CODE\C C++\CS360L\Quiz#2\" ;  
Point 1: (6.70, 4.90)  
Point 2: (3.10, 5.20)  
The distance between the two points is 3.61  
Circle 1: Circle with center of (1.00, 2.00), radius = 3.00  
The area of the circle is 28.27  
The circumference of the circle is 18.85  
Circle 2: Circle with center of (4.00, 5.00), radius = 6.00  
The area of the circle is 113.10  
The circumference of the circle is 37.70  
The distance between the center of the two circles is 4.24  
Circle 1: Circle with center of (5.90, 10.30), radius = 4.50  
The area of the circle is 63.62  
The circumference of the circle is 28.27
```