

Q2

```

a) #include <iostream>
#include <cmath>
using namespace std;
class point
{
protected:
    int x, y;
public:
    point (int in_x, int in_y)
    {
        x = in_x;
        y = in_y;
    }
    virtual void find_length () = 0;
};
class line : public point
{
protected:
    int x1, y1;
public:
    line (int in_x, int in_y, int in_x1, int in_y1);
    point (in_x, in_y)
    {
        x1 = in_x1;
        y1 = in_y1;
    }
    void find_length ()
    {
        cout << " length = " << pow (pow (x1 - x, 2) + pow (y1 - y, 2), 0.5);
    }
};

```

```

class Triangle : public line
{
protected:
    int x2, y2;

```

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public :

Triangle (int p_n-x, int p_n-y, int p_n-x₁, int p_n-y₁, int p_n-x₂,
int p_n-y₂) : line (p_n-x, p_n-y, p_n-x₁, p_n-y₁)

{
x₂ = p_n-x₂;

y₂ = p_n-y₂;

} void findLength ()

{ cout << "Length L = " << pow (pow (x₁-x₂, 2) +
pow (y₁-y₂, 2), 0.5) ;

}
int main ()

{ int x, y, x₁, y₁, x₂, y₂;

cout << "Enter two pt. to calculate distance :";

cout << " x = " ; cin >> x;

cout << " y = " ;

cin >> y;

cout << " x₁ = " ;

cin >> x₁;

cout << " y₁ = " ;

cin >> y₁;

Point * p = new line (x, y, x₁, y₁);

findLength ();

delete p;

cout << "Enter another point to form a triangle";

cout << " x₂ = " ; cin >> x₂;

cout << " y₂ = " ; cin >> y₂;

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$f =$ new triangle $(x, y, x_1, y_1, x_2, y_2);$

~~f~~ find-length ();

delete f;

return 0;

}

Q2 b) Every object in C++ has access to its own address through an imp pointer called this pointer. The 'this' pointer is an implicit parameter to all member function.

Example

```
#include <iostream>
```

```
using namespace std;
```

```
class Variable {
```

```
public:
```

```
    int x;
```

```
    variable (int x) : x(x) {}
```

```
    int maximum (const variable &v) {
```

```
        if (this -> x > v.x) {
```

```
            return -this -> x;
```

```
        }
```

```
        return v.x;
```

```
    } };
```

```
    int main () {
```

```
        variable obj1 (20);
```

```
        variable obj2 (10);
```

```
        cout << obj1.maximum (obj2) << endl;
```

```
        return 0;
```

```
    }
```

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