

Q1 What is data encapsulation in OOP? Explain its importance?

Data encapsulation is an important feature of OOP where data is encapsulated in form of different classes and access to this data is restricted from outside of the class. In this way, data is protected and can only be accessed by the ~~classes/functions~~ we allow.

Q2 Implement a class Rectangle in C++ that encapsulates the attributes length and width. Include methods to calculate the area and perimeter of the rectangle.

```

class Rectangle {
private:
    double length;
    double width;
public:
    Rectangle();
    Rectangle(double len, double wd) {
        this->length = len;
        this->width = wd;
    }
    double calculateArea() {
        return length * width;
    }
    double calculatePerimeter() {
        return 2 * (length + width);
    }
    double getLength() { return length; }
    double getWidth() { return width; }
    void setLength(double len) { length = len; }
    void setWidth(double wd) { width = wd; }
};
```