Q.no.1)

```cpp
#include <iostream>
#include <string>
#include <vector>
#include <algorithm>

using namespace std;

// Declaration of the dateType class
class dateType {
public:
    dateType(int m = 1, int d = 1, int y = 1900) {
        setDate(m, d, y);
    }

    void setDate(int m, int d, int y) {
        if (isValidDate(m, d, y)) {
            month = m;
            day = d;
            year = y;
        } else {
            cout << "Invalid date provided. Setting to default date: 01/01/1900.\n";
            month = 1;
            day = 1;
            year = 1900;
        }
    }
```

```
Address Book Entries:
John Doe
Phone Number: 951-123-4567
Address: 1234 Elm St, Riverside, CA 92507
Birthday: 10/12/1992
Relationship: Friend
```

Q.no.2)

```cpp
#include <iostream>
#include <vector>
#include <memory> // for std::unique_ptr
#include <string>
using namespace std;

// Abstract class
class CarbonFootprint {
public:
    virtual double getCarbonFootprint() const = 0; // Pure virtual function
    virtual string getInfo() const = 0; // Pure virtual function
    virtual ~CarbonFootprint() = default; // Virtual destructor
};

class Building : public CarbonFootprint {
public:
    Building(double area, double energyConsumption) : area(area), energyConsumption(energyConsumption) {}

    double getCarbonFootprint() const override {
        // Carbon footprint calculation for buildings
        return area * energyConsumption * 0.5; // Dummy calculation, replace with actual formula
    }
```

```
Building (Area: 2000.000000 sq.ft, Energy Consumption: 10000.000000 kWh) - Carbon Footprint: 1e+07 tons/year
Car (Mileage: 25.000000 miles/gallon, Fuel Consumption: 500.000000 gallons/year) - Carbon Footprint: 1250 tons/year
Bicycle (Distance Traveled: 100.000000 miles) - Carbon Footprint: 0 tons/year
```