

```
#include <iostream>
#include <string>
using namespace std;

class Person {

public:
    Person(const string& name, const string& address) : name(name), address(address) {}
    const string& getName() const { return name; }
    const string& getAddress() const { return address; }

private:
    string name;
    string address;
    string friends[1000];
};

class Employee : public virtual Person {

public:
    Employee(const string& name, const string& address, const double& salary) :
        Person(name, address), salary(salary) {}

private:
    double salary;
};

class Student : public virtual Person {

public:
    Student(const string& name, const string& address,
            int numUnits, const string& residence) :
        Person(name, address), numUnits(numUnits), residence(residence) {}

private:
    int numUnits;
};
```

```
    string residence;
};

class TeachingAssistant : public virtual Employee, public virtual Student {

public:
    TeachingAssistant(const string& name, const string& address, const string& course,
                     const double& salary, int numUnits, const string& residence) :
        Person(name, address),
        Employee(name, address, salary),
        Student(name, address, numUnits, residence), course(course) {}

private:
    string course;
};

int main (int argc, const char **argv) {
    cout << "sizeof(Person): " << sizeof(Person) << " bytes." << endl;
    cout << "sizeof(Employee): " << sizeof(Employee) << " bytes." << endl;
    cout << "sizeof(Student): " << sizeof(Student) << " bytes." << endl;
    cout << "sizeof(TeachingAssistant): " << sizeof(TeachingAssistant) << " bytes." << endl;

    TeachingAssistant mark("Mark", "1313 Mockingbird Lane", "CS107", 78100.00, 12, "Off Campus");
    cout << "Mark's name is " << mark.Student::getName() << "." << endl;
    return 0;
}

/**
 * quadruple virtual
 *

sizeof(Person): 4008 bytes.
sizeof(Employee): 4024 bytes.
sizeof(Student): 4020 bytes.
sizeof(TeachingAssistant): 4044 bytes.
Mark's name is Mark.
```

```
* double virtual
*

sizeof(Person): 4008 bytes.
sizeof(Employee): 4024 bytes.
sizeof(Student): 4020 bytes.
sizeof(TeachingAssistant): 4044 bytes.
Mark's name is Mark.

* no virtual
*

sizeof(Person): 4008 bytes.
sizeof(Employee): 4016 bytes.
sizeof(Student): 4016 bytes.
sizeof(TeachingAssistant): 8040 bytes.
Mark's name is Mark.

*/
```