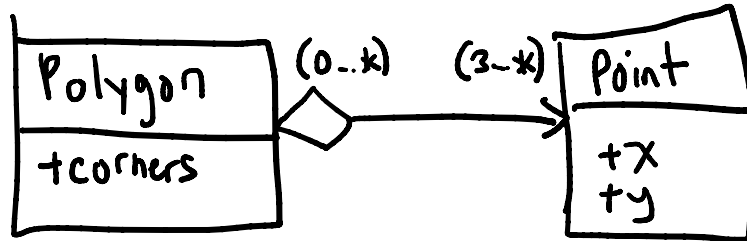


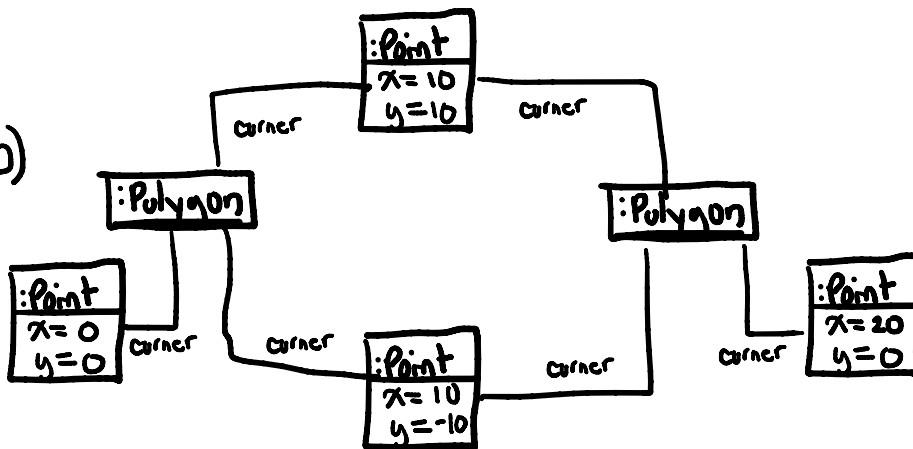
CS 246 W2005 Midterm

1. a)



Each point can be part of 0 or more polygons. Each polygon has 3 or more points.

b)



2. a)

1. * (A magazine can have any number of subscribers)
2. * (A person can subscribe to any number of magazines)
3. 1 (Each subscription has 1 person.)
4. * (A person can have any number of subscriptions)

b)

A scenario would be when a person is subscribed to a magazine but has not yet made any payments.

c)

???

3.

Figure 2 is the most appropriate. Students do not own addresses - they can exist independently, but students must have an address.

4.

```
class Student
{
    std::string _name;
    StudentNumber _number;
    Address* _address;
public:
    Student(std::string name, Address* address);
};

Student::Student (std::string name, Address* address) : _name(name), _address(address) {}
```

5.

```
class Course{
    int number;
    int numStudents;
    Student **students;
public:
    Course(int number);
    void enroll(Student* student);
}

class Student
{
    std::string _name;
    StudentNumber _number;
public:
    Student(std::string name);
    void take(Course*);
};

Student::Student (std::string name) : _name(name) {}
void Student::take(Course* course) {
    course->enroll(this);
}

Course::Course(int number) : number(number) {}
void Course::enroll(Student* student) {
    if (student) {
        students[numStudents] = student;
        ++enrolled;
    }
}
```