

CS 12 - Quiz 5

May 28, 1997

1. (14 pts) Given the following class definitions, write a search function that is a member of the list class that takes in one character parameter and returns a pointer to the first node that contains that character.

```
class node
{
    char ch;
    int num_of_ch;
    node *next;
};

class list
{
protected:
    node *head;
public:
    list()
    {
        head = NULL;
    };
    ~list();
    void enter(int x, char c);
};
```

2. (14 pts) Given the class definitions of the previous problem, overload the << operator for the **node** class. Be sure to show whatever code would have to be added to the class definition.

3. (10 pts) Explain what the difference would be if one were to overload the << operator for the node class versus overloading the << operator for the list class. Show examples, using the following definitions of how each overloaded operator would be called. You do not need to write the overloaded functions, just show how they would be called.

```
node N;  
list L;
```

4. (12 pts) Given the class definitions:

```
class C1
{
    protected:
        char ch1, ch2;
    public:
        void setinfo()
        {
            ch1 = 'e';
            ch2 = 'f';
        };
        virtual void show()
        {
            cout << ch1 << "\t" << ch2 << endl;
        };
};
class C2 : public C1
{
    private:
        int count;
    public:
        C2()
        {
            count = 1;
        };
        void setinfo()
        {
            ch1 = 'y';
            ch2 = 'z';
            count = 3;
        };
        virtual void show()
        {
            for(int i=0; i<count; i++)
                cout << ch1 << "\t" << ch2 << endl;
        };
};

C1 A;
C2 B;
C1 *Ptr;
```

Show the output for each of the following:

- (a) A.setinfo();
A.show();

- (b) `B.setinfo();`
`B.show();`

- (c) `A.setinfo();`
`Ptr = &A;`
`Ptr->show();`

- (d) `B.setinfo();`
`Ptr = &B;`
`Ptr->show();`

- (e) `Ptr = &A;`
`Ptr->setinfo();`
`A.show();`

- (f) `C2 C;`
`Ptr = &C;`
`Ptr->setinfo();`
`C.show();`