

Avoid Reinclusion (p.358)

//////// File val.h //////////

```
#ifndef Val_SEEN
#define Val_SEEN
```

```
class Val
{ public:
    Val(double d):vk(NUM){theVal.NumVal= d;}
    Val(int i):vk(NUM){theVal.NumVal= i;}
    Val(bool b):vk(BOOL){theVal.BoolVal= b;}
    bool GetBool(string msg);
    double GetNum(string msg);
    string toString();
```

```
private:
    enum ValKind{NUM,BOOL};
    ValKind vk;
    union{double NumVal; bool BoolVal;} theVal;
};
#endif
```

```
///// File: expr.h /////
#ifndef Expr_SEEN
#define Expr_SEEN

#include <string>
#include "val.h"

using namespace std;
class Expr;
typedef Expr* Expp;
class Expr
{ public:
    virtual Val eval()const=0;
    virtual string toString(int pp)const=0;
};
void display(Expp e);

#endif
```

Make

// File: Makefile

all: val.o expr.o dexpr.o scanner.o parser.o errmsg.o exshop.o

g++ val.o expr.o dexpr.o scanner.o parser.o errmsg.o exshop.o

val.o: val.cpp val.h

g++ -c val.cpp

Tabulator

expr.o: expr.cpp expr.h

g++ -c expr.cpp

dexpr.o: dexpr.cpp dexpr.h

g++ -c dexpr.cpp

scanner.o: scanner.cpp scanner.h errmsg.h

g++ -c scanner.cpp

parser.o: parser.cpp parser.h errmsg.h scanner.h expr.h dexpr.h val.h

g++ -c parser.cpp

errmsg.o: errmsg.cpp errmsg.h

g++ -c errmsg.cpp

exshop.o: exshop.cpp scanner.h parser.h

g++ -c exshop.cpp