



a linear stream of characters

aFileStream

```
void openStream(char * aFileStream);  
void closeStream();
```

**lexical  
analysis**

(useful for generating representations from within the compiler...)

aMemoryStream

lexInit();

**preprocessor**

lookAhead = yylex();

**structural  
analysis**

[aDeclarator install: aSymtab]

**symbol  
table  
manager**

**Driver**  
main() {

obj = syntaxAnalyzer()

**semantic  
analysis**

[\_obj semanticAnalysis: "typeCheck"]

[\_obj genOn: aStream]

**code  
generation**

a linear stream of characters

aFileStream

\_obj will represent an "explicit" parse tree used to describe the underlying structure of program.

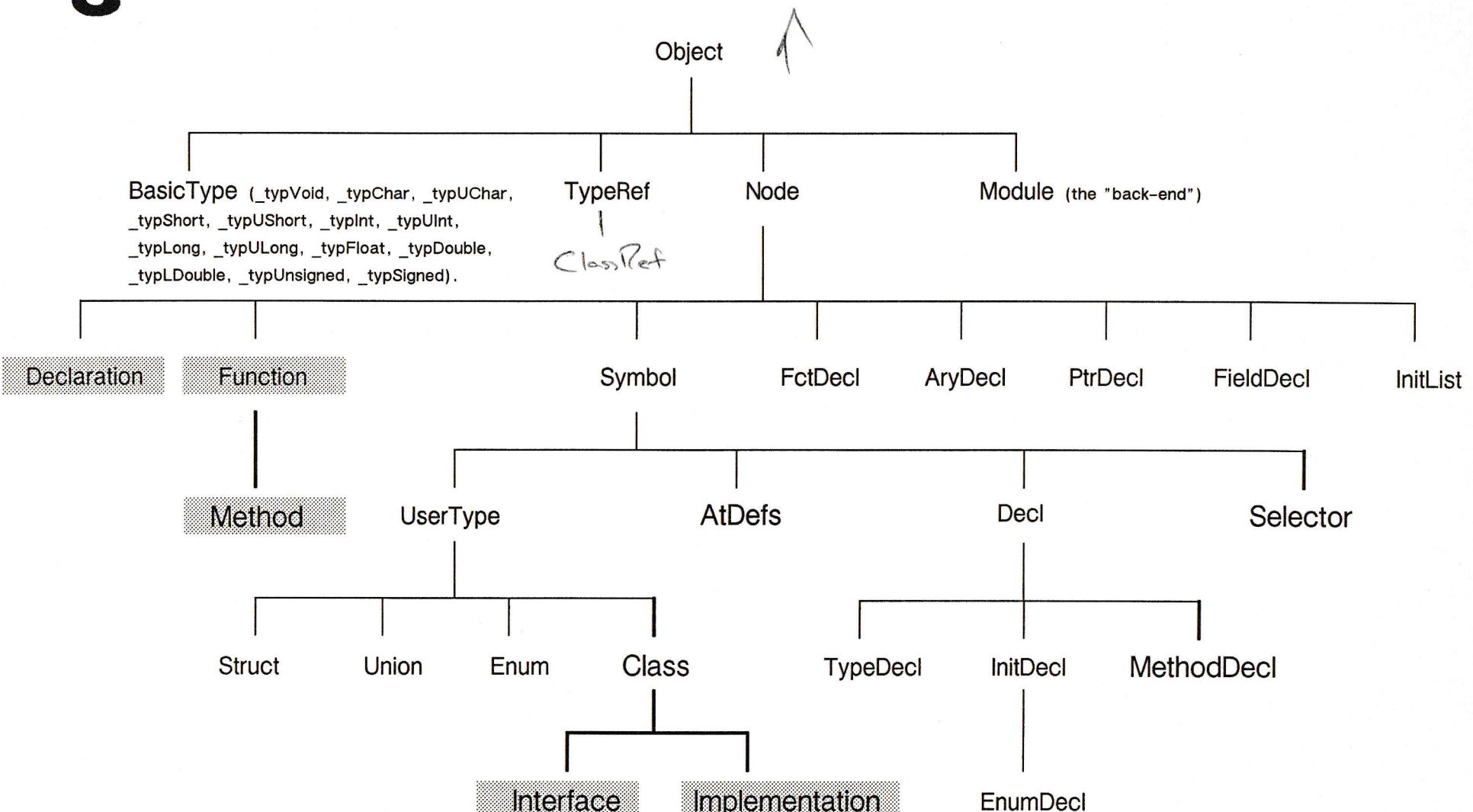
E  
r  
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/objc4.0

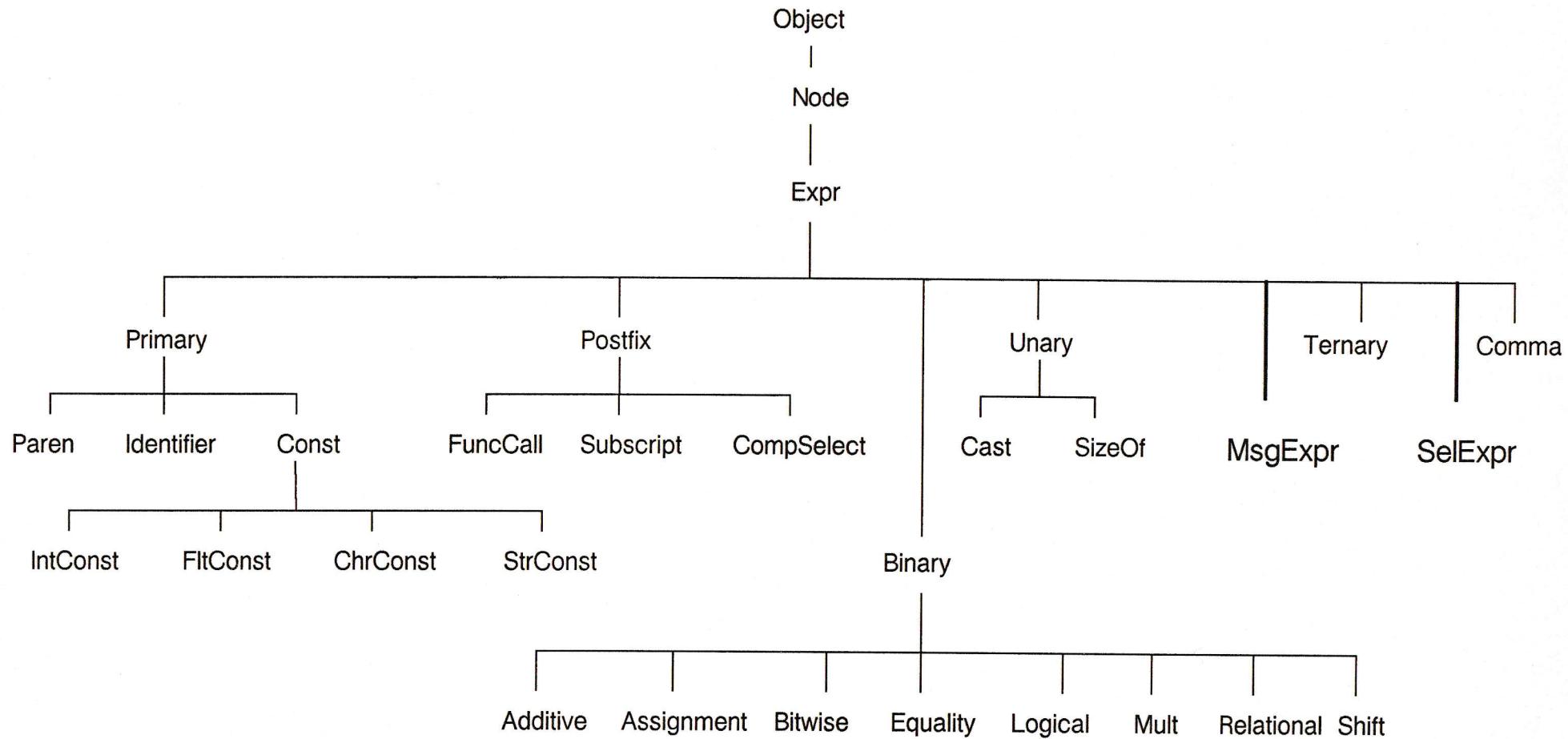


S

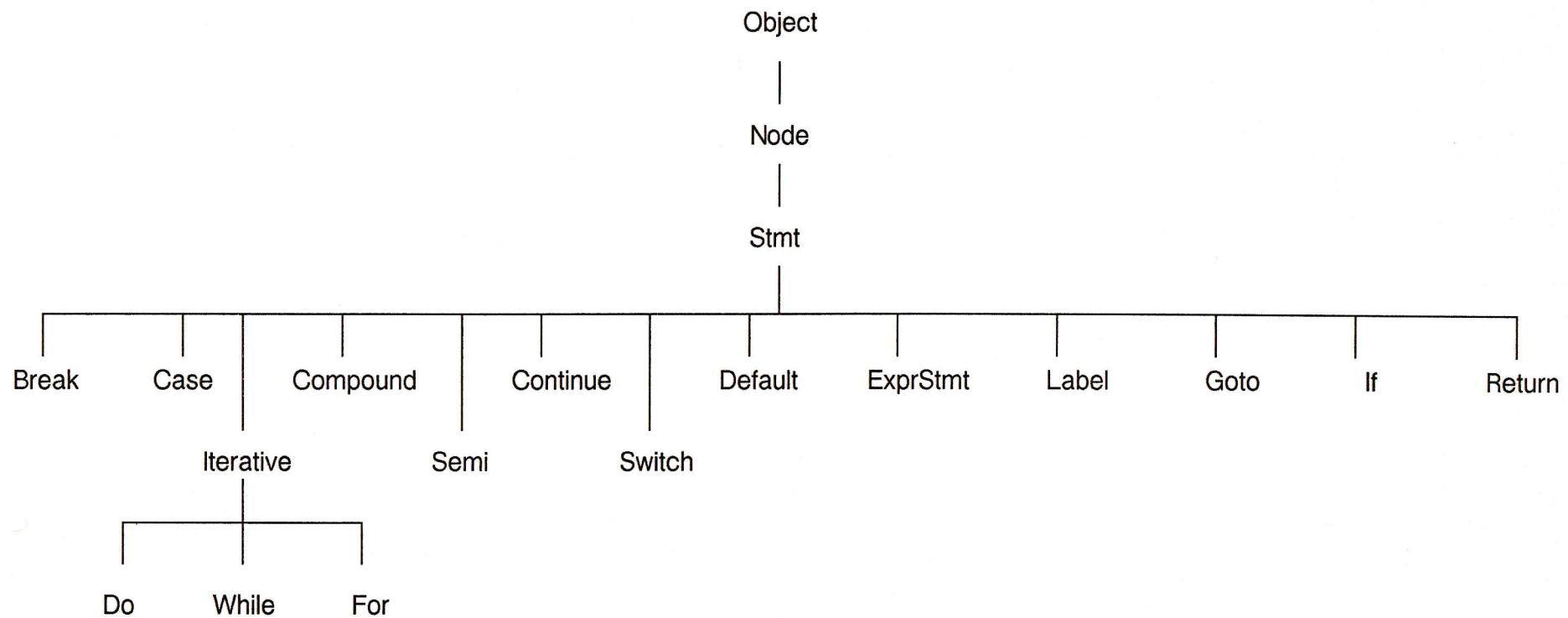


= top-level declaration

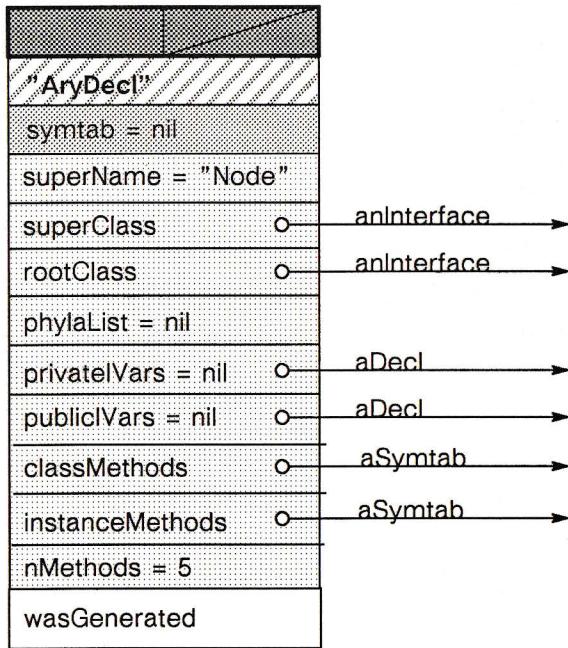
S



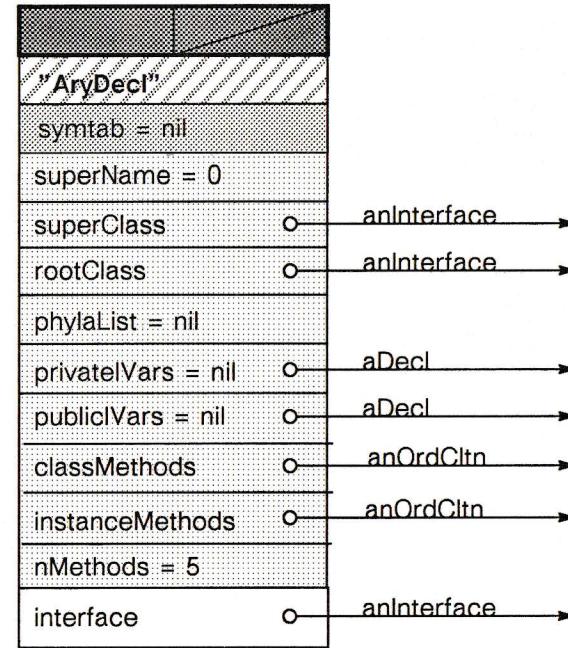
**S**



Interface : Class



Implementation : Class



```

@interface AryDecl : Node
- (BOOL) isSameType:anId;
- encode:aBuf typeSpecifier:tSpec;
- (int) sizeOf:aTypeSpecifier;
- assemble:aComplexDeclarator;
- explainOn:astrm;
@end
  
```

```

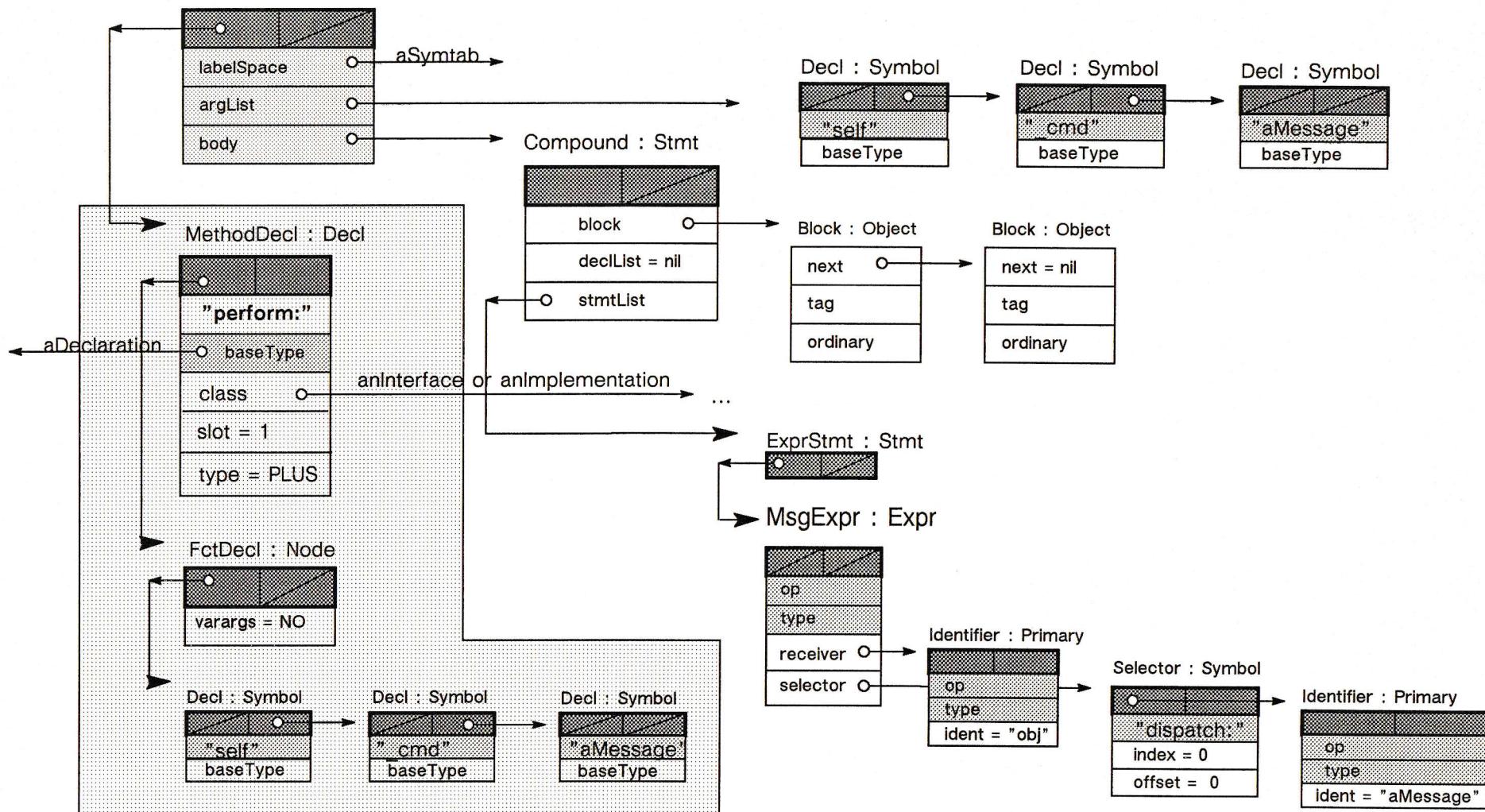
@implementation AryDecl
- (BOOL) isSameType:anId { ... };
- encode:aBuf typeSpecifier:tSpec { ... };
- (int) sizeOf:aTypeSpecifier { ... };
- assemble:aComplexDeclarator { ... };
- explainOn:astrm { ... };
@end
  
```



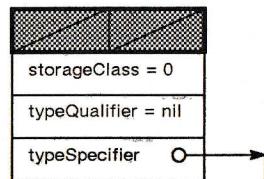
example: @implementation Example

```
+ perform: (char *)aMessage
{
    [obj dispatch:aMessage];
}
@end
```

### Method : Function

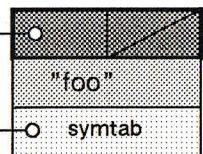


Declaration : Node

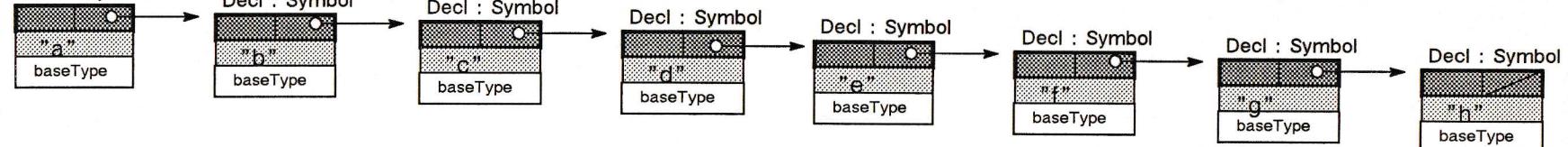


example: struct foo {  
                  int a,b,c,d,e,f,g,h;  
};

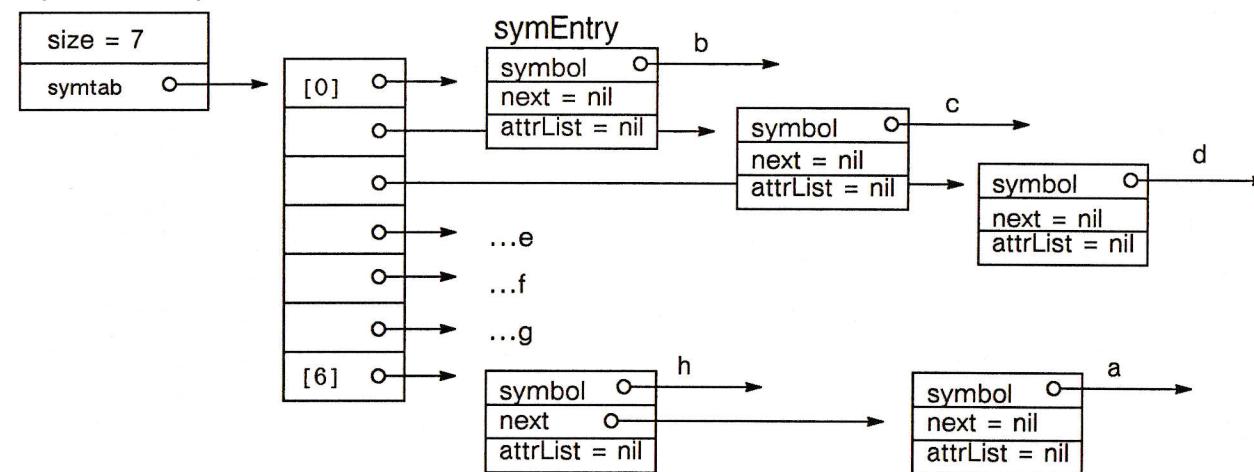
Struct : UserType



Decl : Symbol



Symtab : Object

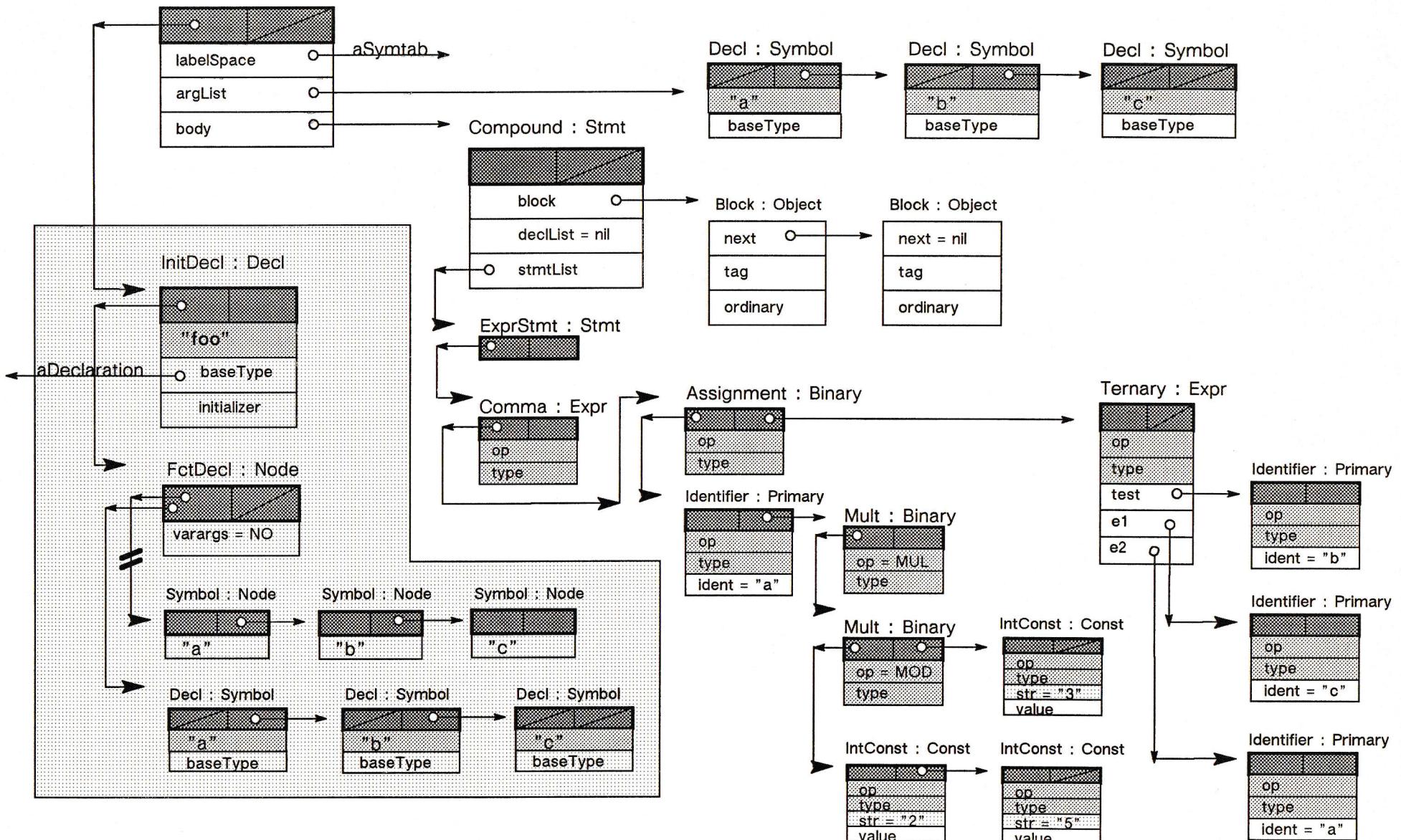


```

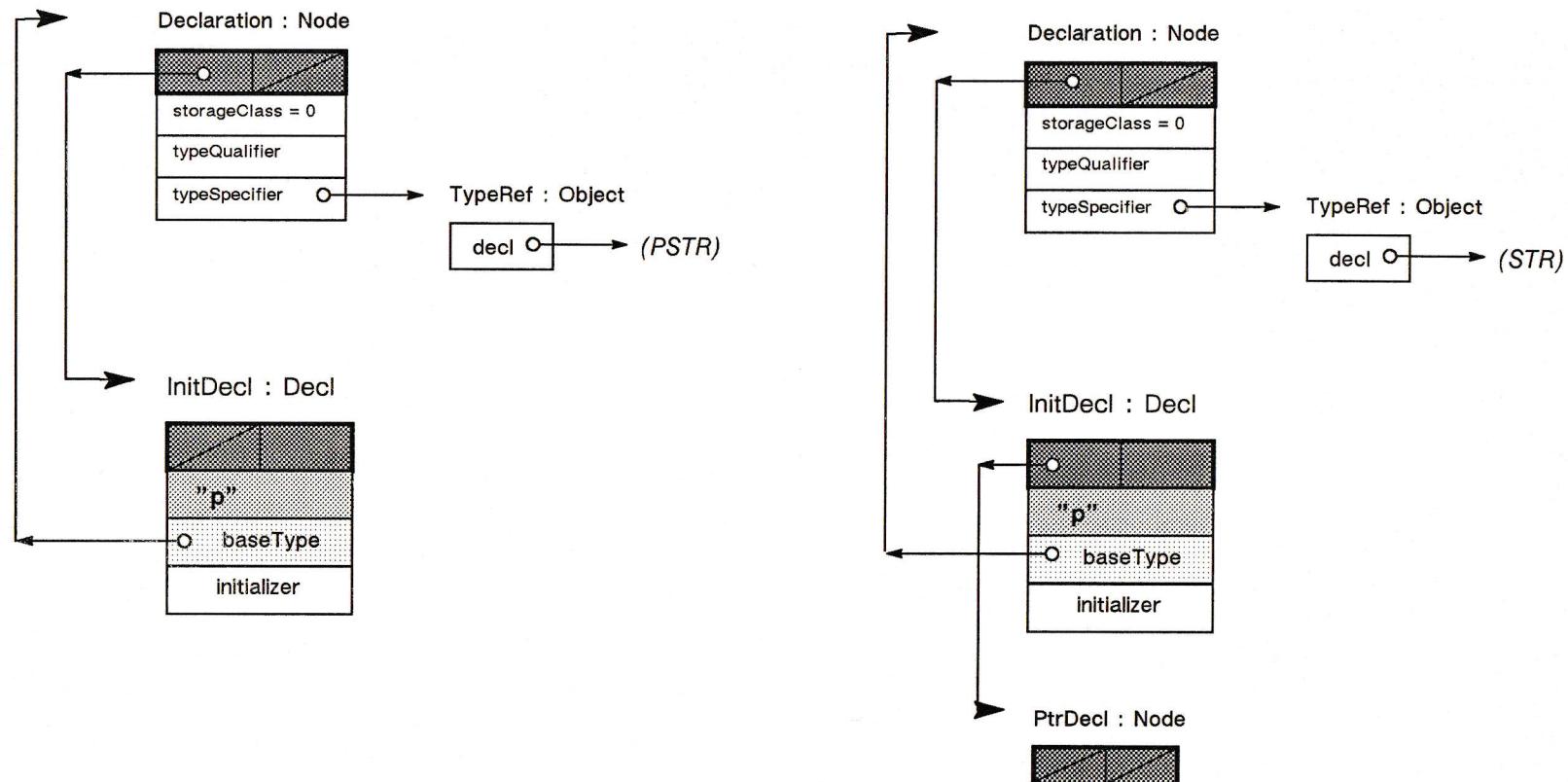
example: int foo(a, b, c)
int a,b,c;
{
    a = 2%5*3, b ? c : a;
}

```

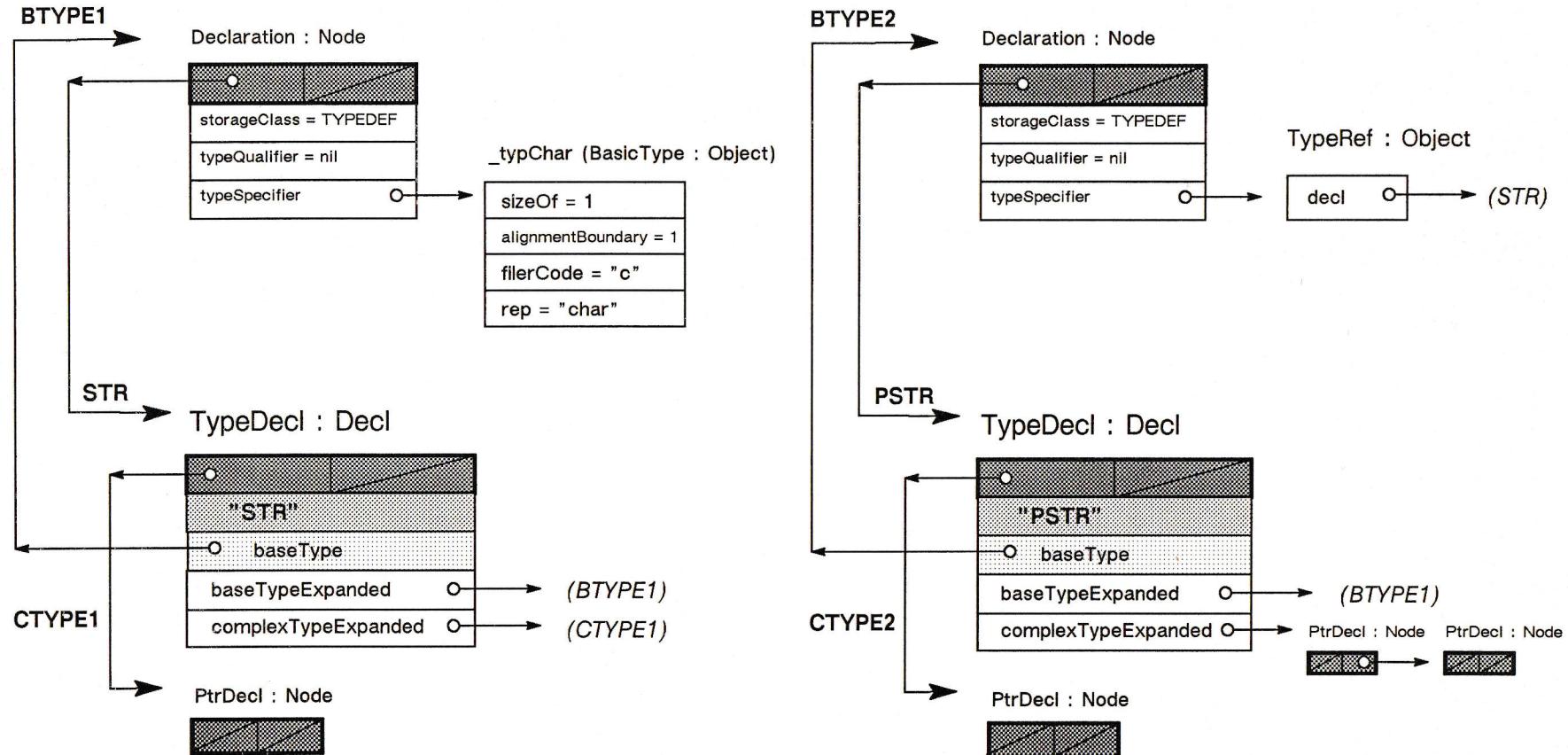
### Function : Node



example: PSTR p;  
STR \*p;



```
example: typedef char *STR; // simple type definition...
         typedef STR *PSTR; // nested type definition...
```



```
example: struct NODE (*f1[])(struct _PRIVATE *self, char *sel, ...),
        *(*f2)(unsigned int [], int (*)());
```

