

## 테스트 코드

```
/* A program to perform selection sort on a 10 element array */
```

```
int x[10];
```

```
int minloc( int a[], int low, int high) {
```

```
    int i; int x; int k;
```

```
    k = low;
```

```
    x = a[low];
```

```
    i = low + 1;
```

```
    while (i < high) {
```

```
        if (a[i] < x) {
```

```
            x = a[i];
```

```
            k = i;
```

```
        }
```

```
        i = i + 1;
```

```
    }
```

```
    return k;
```

```
}
```

```
void sort (int a[], int low, int high) {
```

```
    int i; int k;
```

```
    i = low;
```

```
    while( i < high - 1) {
```

```
        int t;
```

```
        k = minloc(a, i, high);
```

```
        t = a[k];
```

```
        a[k] = a[i];
```

```
        a[i] = t;
```

```
        i = i + 1;
```

```
    }
```

```
}
```

```
void main(void) {
```

```
    int i;
```

```
    i = 0;
```

```
    while ( i < 10 ) {
```

```
        x[i] = input();
```

```
        i = i + 1;
```

```
    }
```

```

    sort(x,0,10);
    i = 0;
    while( i < 10 ) {
        output(x[i]);
        i = i + 1;
    }
}

```

## 1. 실행화면

- Symbol Table: Function Table 부분

```

Administrator: C:\Windows\system32\cmd.exe
Building Symbol Table...
<FUNCTION DECLARATIONS>
Function Name      Data Type
-----
main               Void
Function Parameters Data Type
-----
void               Void
Function Name      Data Type
-----
sort               Void
Function Parameters Data Type
-----
a                  IntegerArray
low                Integer
high               Integer
Function Name      Data Type
-----
input              Integer
Function Parameters Data Type
-----
void               Void
Function Name      Data Type
-----
minloc             Integer
Function Parameters Data Type
-----
a                  IntegerArray
low                Integer
high               Integer
Function Name      Data Type
-----
output             Void
Function Parameters Data Type
-----
arg                Integer

```

- Symbol Table: Functions and Global Variables 부분

```

<FUNCTIONS AND GLOBAL VARIABLES>
  ID Name      ID Type      Data Type
-----
main           Function     Void
sort           Function     Void
input          Function     Integer
minloc         Function     Integer
output         Function     Void
x              Variable     IntegerArray

```

- Symbol Table: Function Parameters and Local Variables 부분

```

<FUNCTION PARAMETERS AND LOCAL VARIABLES>
function name: minloc (nested level: 1)
  ID Name      ID Type      Data Type
-----
low            Variable     Integer
a              Variable     IntegerArray
i              Variable     Integer
k              Variable     Integer
x              Variable     Integer
high           Variable     Integer

function name: minloc (nested level: 2)
  ID Name      ID Type      Data Type
-----

function name: minloc (nested level: 3)
  ID Name      ID Type      Data Type
-----

function name: sort (nested level: 1)
  ID Name      ID Type      Data Type
-----
low            Variable     Integer
a              Variable     IntegerArray
i              Variable     Integer
k              Variable     Integer
high           Variable     Integer

function name: sort (nested level: 2)
  ID Name      ID Type      Data Type
-----
t              Variable     Integer

function name: main (nested level: 1)
  ID Name      ID Type      Data Type
-----
i              Variable     Integer

function name: main (nested level: 2)
  ID Name      ID Type      Data Type
-----

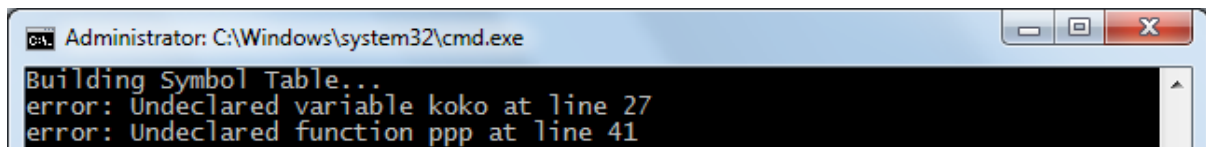
function name: main (nested level: 2)
  ID Name      ID Type      Data Type
-----

Checking Types...
Type Checking Finished

```

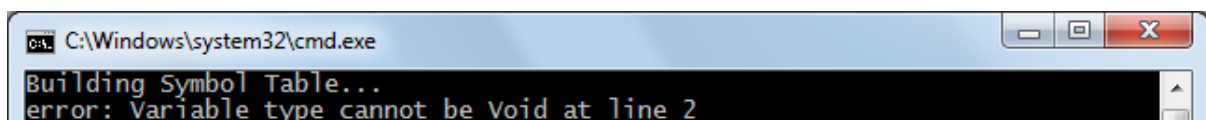
## 2. 오류 테스트

- 오류가 출력되는 부분은 “Symbol Table 출력 전”과  
“Checking Types...” 메시지와 “Type Checking Finished” 메시지 사이의 두 군데로 구성되어 있음
- Undefined Variable, Undefined Function 테스트  
Symbol Table 출력 전에 오류가 출력됨



```
Administrator: C:\Windows\system32\cmd.exe
Building Symbol Table...
error: Undeclared variable koko at line 27
error: Undeclared function ppp at line 41
```

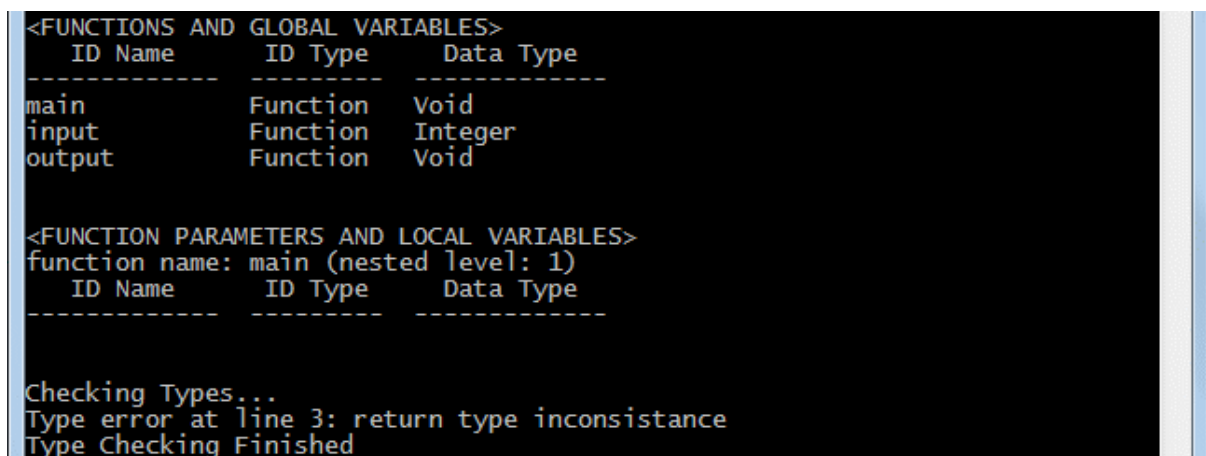
- Void Variable 테스트(Void 타입은 함수만 가질 수 있음)  
Symbol Table 출력 전에 오류가 출력됨



```
C:\Windows\system32\cmd.exe
Building Symbol Table...
error: Variable type cannot be Void at line 2
```

- Return Type 테스트  
Type Checking에서 오류가 출력됨

- `void main(void) { return 0; }`



```
<FUNCTIONS AND GLOBAL VARIABLES>
  ID Name      ID Type      Data Type
-----
main          Function     Void
input         Function     Integer
output        Function     Void

<FUNCTION PARAMETERS AND LOCAL VARIABLES>
function name: main (nested level: 1)
  ID Name      ID Type      Data Type
-----

Checking Types...
Type error at line 3: return type inconsistance
Type Checking Finished
```

- `int main(void) { return ; }`

```

<FUNCTIONS AND GLOBAL VARIABLES>
  ID Name      ID Type      Data Type
-----
main           Function     Integer
input          Function     Integer
output         Function     Void

<FUNCTION PARAMETERS AND LOCAL VARIABLES>
function name: main (nested level: 1)
  ID Name      ID Type      Data Type
-----

Checking Types...
Type error at line 3: return type inconsistance
Type Checking Finished

```

- Assignment Expression 테스트 (Assign시 데이터 타입이 다른 경우)

Symbol Table 출력 전에 오류가 출력됨

`int x[10]; x = 3;` (IntegerArray에 Integer를 Assign시도)

```

Building Symbol Table...
error: Type inconsistance at line 3

<FUNCTION DECLARATIONS>
Function Name      Data Type
-----
main               Integer
Function Parameters Data Type
-----
void               Void

Function Name      Data Type
-----
input              Integer
Function Parameters Data Type
-----
void               Void

Function Name      Data Type
-----
output             Void
Function Parameters Data Type
-----
arg                Integer

<FUNCTIONS AND GLOBAL VARIABLES>
  ID Name      ID Type      Data Type
-----
main           Function     Integer
input          Function     Integer
output         Function     Void

<FUNCTION PARAMETERS AND LOCAL VARIABLES>
function name: main (nested level: 1)
  ID Name      ID Type      Data Type
-----
x              Variable     IntegerArray

```

- Function Parameter 테스트(Function Parameter의 개수나 데이터 타입이 다른 경우)

Type Checking에서 오류가 출력됨

```

ID Name      ID Type      Data Type
-----
low          Variable      Integer
a            Variable      IntegerArray
i            Variable      Integer
k            Variable      Integer
x            Variable      Integer
high         Variable      Integer

function name: minloc (nested level: 2)
ID Name      ID Type      Data Type
-----

function name: minloc (nested level: 3)
ID Name      ID Type      Data Type
-----

function name: sort (nested level: 1)
ID Name      ID Type      Data Type
-----
low          Variable      Integer
a            Variable      IntegerArray
i            Variable      Integer
k            Variable      Integer
high         Variable      Integer

function name: sort (nested level: 2)
ID Name      ID Type      Data Type
-----
t            Variable      Integer

function name: main (nested level: 1)
ID Name      ID Type      Data Type
-----
i            Variable      Integer

function name: main (nested level: 2)
ID Name      ID Type      Data Type
-----

function name: main (nested level: 2)
ID Name      ID Type      Data Type
-----

Checking Types...
Type error at line 27: invalid function call
Type Checking Finished

```

- IF 또는 WHILE Expression이 값을 가지지 않는 경우의 테스트  
Syntax Tree가 만들어지지 않음

```

22:      while( ) {
          22: reserved word: while
          22: special symbol: (
          22: special symbol: )
Syntax error at line 22: syntax error
Current token: special symbol: )

```