

Compiler Design

Lab 3

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sym_tab.h file

```
#define CHAR 1
#define INT 2
#define FLOAT 3
#define DOUBLE 4

typedef struct symbol          //data structure of items in the list
{
    char* name;
    int size;                  //identifier name
    int len;                   //length of identifier name
    int type;                  //identifier type
    char* val;                 //value of the identifier
    int line;                  //line number
    int scope;                 //scope
    struct symbol* next;
}symbol;

typedef struct table           //keeps track of the start of the list
{
    symbol* head;
}table;

static table* t;

table* init_table();          //allocate a new empty symbol table
symbol *init_symbol(char *name, int size, int type, int lineno, int scope); //allocates
space for items in the list


void insert_symbol(char* name, int size, int type, int lineno,int scope); // symbols
into the table when declared
int insert_val(char* name, char* v, int line); //inserts values into the table when initialised

int check_sym_tab(char* name); //checks symbol table whether the
variable has been declared or not
void display_sym_tab();        //displays symbol table
char* retrieve_val(char* name); //retrieves value from symbol table
int retrieve_type(char* name);  //retrieves type from symbol table
int type_check(char* value);    //checks type of value string
```

sample_input1.c file

```
int main()
{
    int a;
    float b;
    double c;
    char d;
}
```

Output Screenshot:



```
pes1ug20cs484@pes1ug20cs484:~/CD Lab/Lab 3$ ./run.sh
pes1ug20cs484@pes1ug20cs484:~/CD Lab/Lab 3$ ./a.out<sample_input1.c
Valid syntax
Name      Size    Type    Lineno  Scope  Value
a         2       2       3       1      ~
b         4       3       4       1      ~
c         8       4       5       1      ~
d         1       1       6       1      ~
pes1ug20cs484@pes1ug20cs484:~/CD Lab/Lab 3$
```