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Purpose: Edit the given code of symtable.c to make it work.

My screenshot of the result:

The first screenshot: inserting the symbol and their address from the user into symbol table.

```
nle@allman:~/CS370/lab3> make
gcc symtable.c -o lab3
nle@allman:~/CS370/lab3> make run
./lab3

      SYMBOL TABLE IMPLEMENTATION

1.INSERT
2.DISPLAY
3.DELETE
4.SEARCH
5.MODIFY
6.END

Enter your option : 1

Enter the symbol : apple

Enter the address : 2

Symbol inserted

      SYMBOL TABLE IMPLEMENTATION

1.INSERT
2.DISPLAY
3.DELETE
4.SEARCH
5.MODIFY
6.END

Enter your option : a

Enter the symbol :
Enter the address : 1

Symbol inserted
```

The second screenshot: displaying the table with the symbol and address from the user

```
SYMBOL TABLE IMPLEMENTATION

1.INSERT
2.DISPLAY
3.DELETE
4.SEARCH
5.MODIFY
6.END

Enter your option : 2

SYMBOL      ADDRESS
apple       2
a           1
```

The third screenshot: deleting the symbol from the table

SYMBOL TABLE IMPLEMENTATION

- 1.INSERT
- 2.DISPLAY
- 3.DELETE
- 4.SEARCH
- 5.MODIFY
- 6.END

Enter your option : 3

Enter the symbol to be deleted : a

After Deletion:

SYMBOL	ADDRESS
apple	2

SYMBOL TABLE IMPLEMENTATION

- ```
apple 2
SYMBOL TABLE IMPLEMENTATION

1.INSERT
2.DISPLAY
3.DELETE
4.SEARCH
5.MODIFY
6.END
```

Enter your option : 1

Enter the symbol : a

Enter the address : 4

Symbol inserted

#### SYMBOL TABLE IMPLEMENTATION

- 1.INSERT
- 2.DISPLAY
- 3.DELETE
- 4.SEARCH
- 5.MODIFY
- 6.END

Enter your option : 4

Enter the symbol to be searched : a

The fourth screenshot: search for the symbol in the table.

Search for symbol a: it is inside the table, so the search result is "The symbol is present in the symbol table"

Search for symbol b: b is not in the table, so the search result is "The symbol. Is not present in the symbol table"

```
1.INSERT
2.DISPLAY
3.DELETE
4.SEARCH
5.MODIFY
6.END
```

Enter your option : 1

Enter the symbol : a

Enter the address : 4

Symbol inserted

SYMBOL TABLE IMPLEMENTATION

```
1.INSERT
2.DISPLAY
3.DELETE
4.SEARCH
5.MODIFY
6.END
```

Enter your option : 4

Enter the symbol to be searched : a

Search Result:

The symbol is present in the symbol table

SYMBOL TABLE IMPLEMENTATION

```
1.INSERT
2.DISPLAY
3.DELETE
4.SEARCH
5.MODIFY
6.END
```

Enter your option : 4

Enter the symbol to be searched : b

Search Result:

The symbol is not present in the symbol table

The fifth, sixth, seventh screenshot: modify the symbol, which user can change symbol's name and symbol's address.

The fifth screenshot: only the symbol

## SYMBOL TABLE IMPLEMENTATION

- 1.INSERT
- 2.DISPLAY
- 3.DELETE
- 4.SEARCH
- 5.MODIFY
- 6.END

Enter your option : 5

What do you want to modify?

- 1.Only the symbol
  - 2.Only the address
  - 3.Both the symbol and address
- Enter your choice : 1

Enter the old symbol : a

Enter the new symbol : b

After Modification:

| SYMBOL | ADDRESS |
|--------|---------|
| apple  | 2       |
| b      | 4       |

The sixth screenshot: only the address

```
SYMBOL TABLE IMPLEMENTATION

1.INSERT
2.DISPLAY
3.DELETE
4.SEARCH
5.MODIFY
6.END

Enter your option : 5

What do you want to modify?

1.Only the symbol
2.Only the address
3.Both the symbol and address
Enter your choice : 2

Enter the symbol where the address is to be modified : b

Enter the new address : 9

After Modification:

SYMBOL ADDRESS
apple 2
b 9
```

The seventh screenshot: both symbol and address

```
SYMBOL TABLE IMPLEMENTATION

1.INSERT
2.DISPLAY
3.DELETE
4.SEARCH
5.MODIFY
6.END

Enter your option : 5

What do you want to modify?

1.Only the symbol
2.Only the address
3.Both the symbol and address
Enter your choice : 3

Enter the old symbol : b

Enter the new symbol : r

Enter the new address : 19

After Modification:

SYMBOL ADDRESS
apple 2
r 19
```

The eight screenshot: show the end option

```
SYMBOL TABLE IMPLEMENTATION

1.INSERT
2.DISPLAY
3.DELETE
4.SEARCH
5.MODIFY
6.END

Enter your option : 6
nle@allman:~/CS370/lab3> █
```

Question part:

1/ What is the main data structure in this code?

The main data structure in this code is a linked list which uses nodes.

2/What are the fields, and how is the structure built?

The fields are pointers and malloc() function. The structure is build based on linked list; in this case is SymbTab.