LC-3 Assembler

Write a program which can turn LC-3 assembly code to binary machine code.

Requirements

- The first line is the starting address of the program.
- Do not print any space characters.
- When testing, it is guaranteed that there is no error in the input assembly code. You do not need to do error handling and traceback.
- You can test your result by pasting the machine code into LC3Tools.

Ideas

Refer to the idea of scanning twice. In the first scan, the operators and operands are grabbed separately and identified as containing tags or not.
Create a table to describe the location of each label.Replace the labels serial number with the corresponding number in the second scan. Finalize the output.

Main Codes

```
void op_choose(int op_num){
    switch(op_num){
        ...
    }
}
void trans(){
    int op_num;
    while(1){
        op_num=get_opc();
        if(op_num==-1){
            get_lable(opcode,0);
            op_num=get_opc();
        }
        op_choose(op_num);
        line++;
        if(finish==1)   break;
    }
}
```

```
void LABEL_change(){
    for(int i=0;i<line-1;i++){
        for(int j=0;j<16;j++){
            if(bin[i][j]>1){
                LABEL_write(j,15,LABEL_pos[bin[i][j]][0]-i-1,i);
            }
        }
    }
}

void output(){
    for(int j=0;j<line-1;j++){
        for(int i=0;i<16;i++){
                printf("%d",bin[j][i]);
                }
                printf("\n");
        }
}

int main(){
    trans();
    LABEL_change();
    output();
}
```