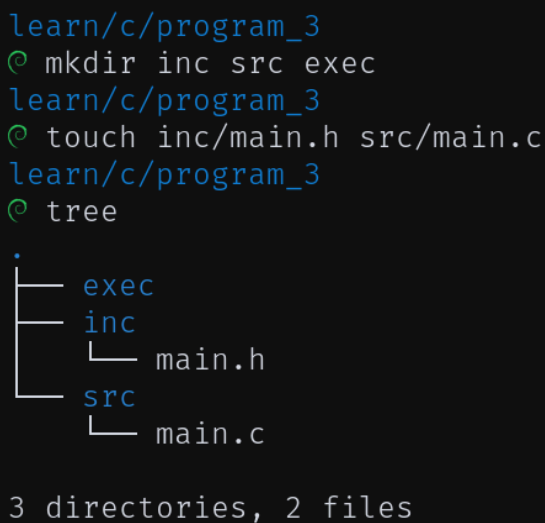


Create two variables InputValue and OutputValue, get the value of InputValue from user, Now by using Macro READBIT read last 4 bits individually and use SETBIT or RESETBIT macro to change the MSB 4bits of the OutputValue and print the output.

Step 1 . Created the directory structure using following command

```
mkdir src inc exec && touch src/main.c inc/main.h
```



```
learn/c/program_3
└─ mkdir inc src exec
learn/c/program_3
└─ touch inc/main.h src/main.c
learn/c/program_3
└─ tree
.
├── exec
├── inc
│   └── main.h
└── src
    └── main.c

3 directories, 2 files
```

Step 2. code inside `main.h`

```
#ifndef MAIN_H
#define MAIN_H

// read bit at postion 'pos'
#define READBIT(value,pos) (((value)>>(pos))&1)
// set bit at postion 'pos'
#define SETBIT(value,pos) ((value)|= (1<<(pos)))
// reset bit at postion 'pos'
```

```
#define RESETBIT(value,pos) ((value)&= ~(1<<(pos)))

#endif
```

Step 3. code inside `main.c`

```
#include"main.h"
#include<stdio.h>
#include<inttypes.h>

int main(){
    uint8_t inputValue,outputValue;

    // get inputValue from user
    printf("Enter 8-bit value (0 to 255 ) : ");
    scanf("%hhhd",&inputValue);

    // read each bit using READBIT micro
    printf("value in Binary : ");
    int bit_pos; // bit position
    for(bit_pos=7;bit_pos>=0;bit_pos--){
        printf("%d",READBIT(inputValue,bit_pos));
    }
    printf("\n");

    // set 4 MSB bit using SETBIT micro
    outputValue=inputValue;
    for(bit_pos=7;bit_pos>=4;bit_pos--){
        SETBIT(outputValue,bit_pos);
    }
    printf("After setting 4 MSB : %u\n",outputValue);
```

```
// reset 4 MSB bit using RESETBIT micro
outputValue=inputValue;
for(bit_pos=7;bit_pos>=4;bit_pos--){
    RESETBIT(outputValue,bit_pos);
}
printf("After resetting 4 MSB : %u\n",outputValue);
return 0;
}
```

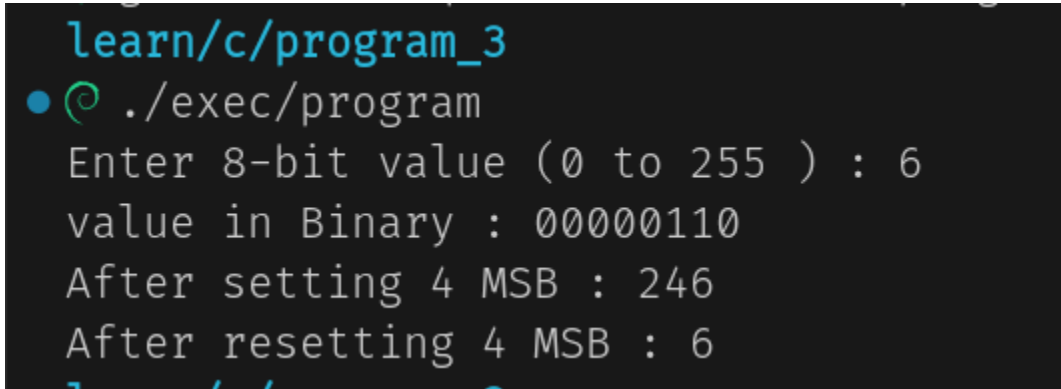
Step 4 . Compiling

```
gcc -Wall -iquote inc -o exec/program src/main.c
```

Step 5. Running the program

```
./exec/program
```

Output

A terminal window with a black background and light blue text. The window title is 'learn/c/program_3'. The prompt is a blue circle with a white '@' symbol. The user enters './exec/program'. The program prompts 'Enter 8-bit value (0 to 255) : 6'. The user enters '6'. The program outputs 'value in Binary : 00000110'. The program outputs 'After setting 4 MSB : 246'. The program outputs 'After resetting 4 MSB : 6'.

```
learn/c/program_3
● @ ./exec/program
Enter 8-bit value (0 to 255 ) : 6
value in Binary : 00000110
After setting 4 MSB : 246
After resetting 4 MSB : 6
```