ADVANCED CODING 2

Assignment 1

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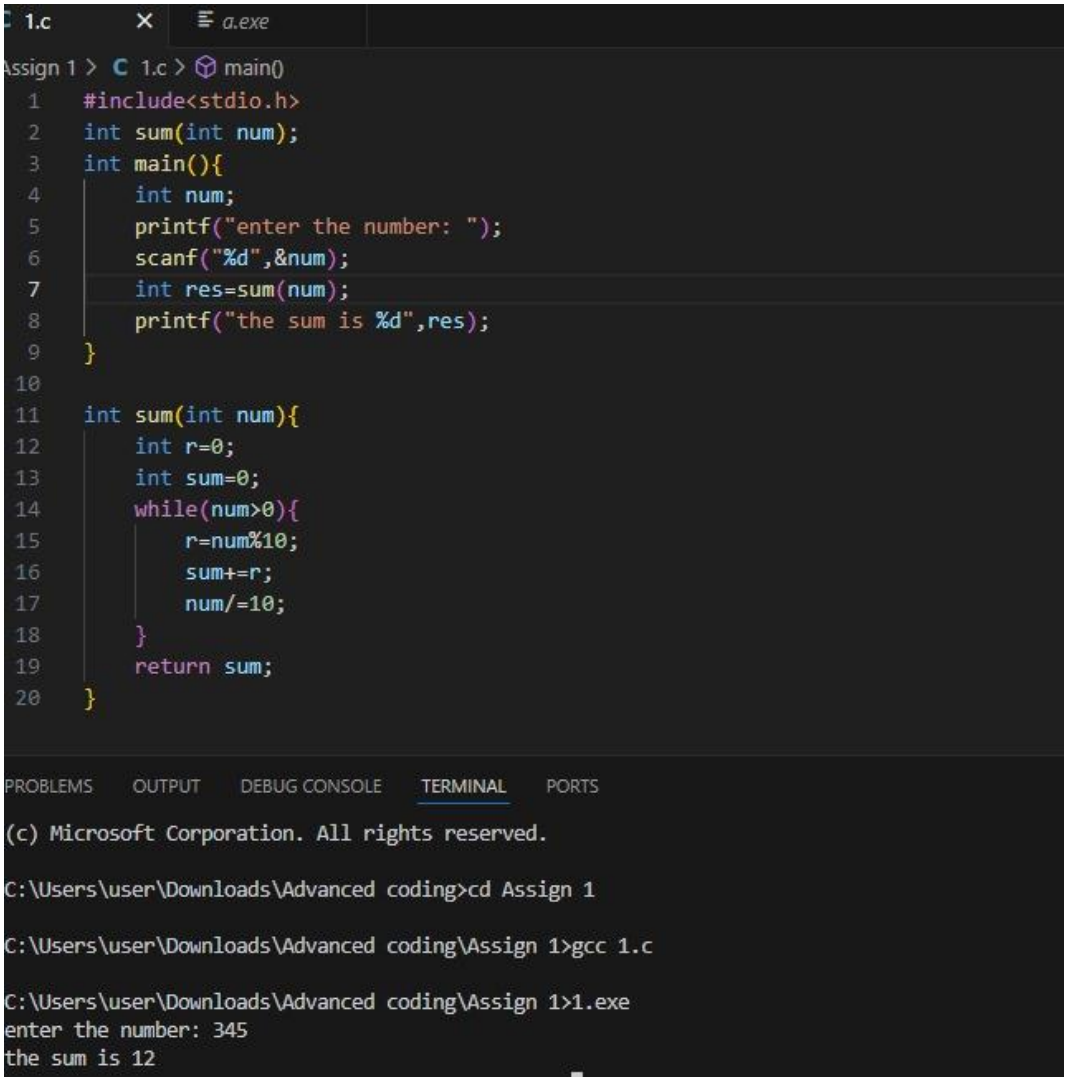
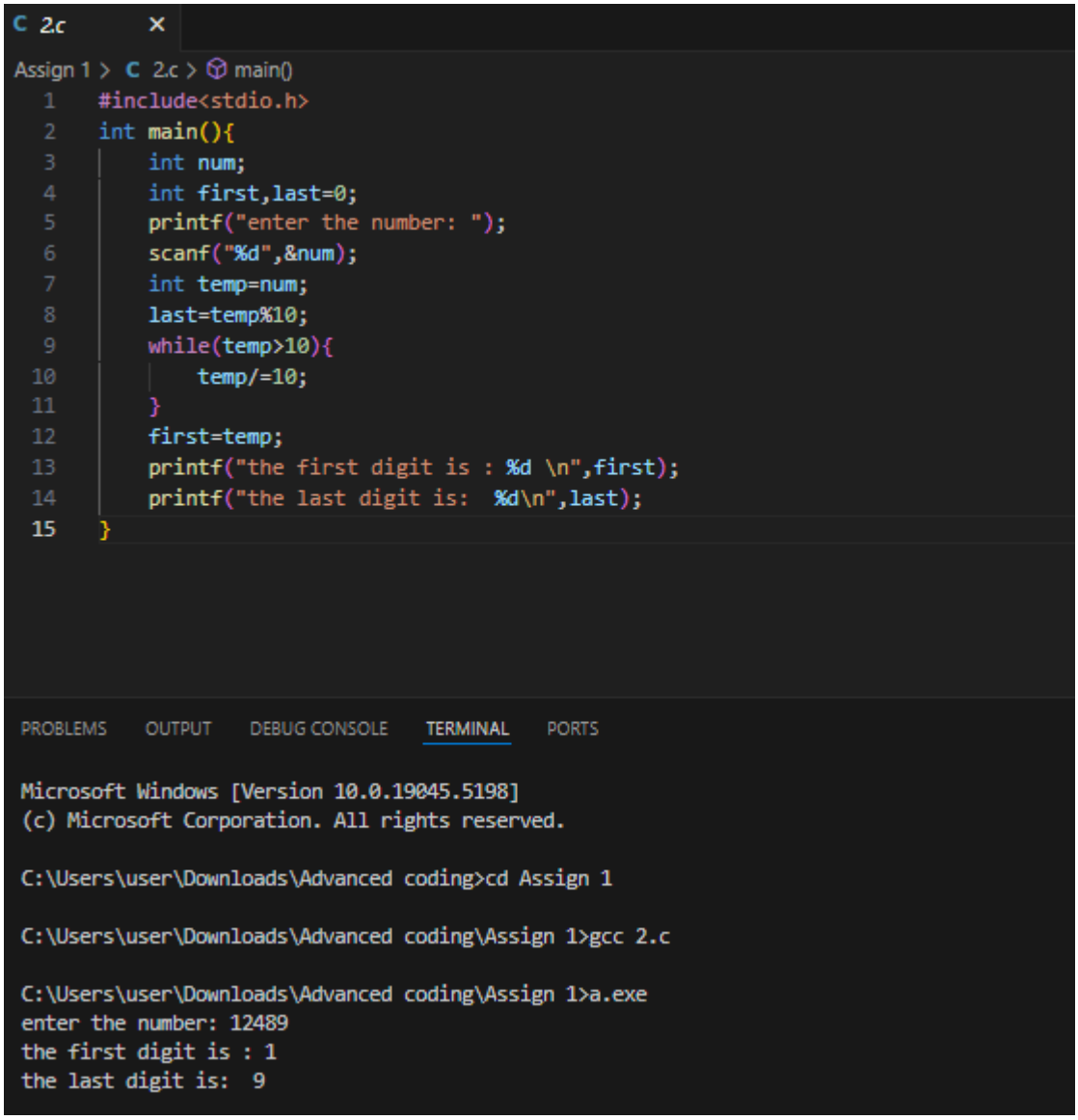
1) Write a C program to calculate sum of digits of a number.

Code and Output:



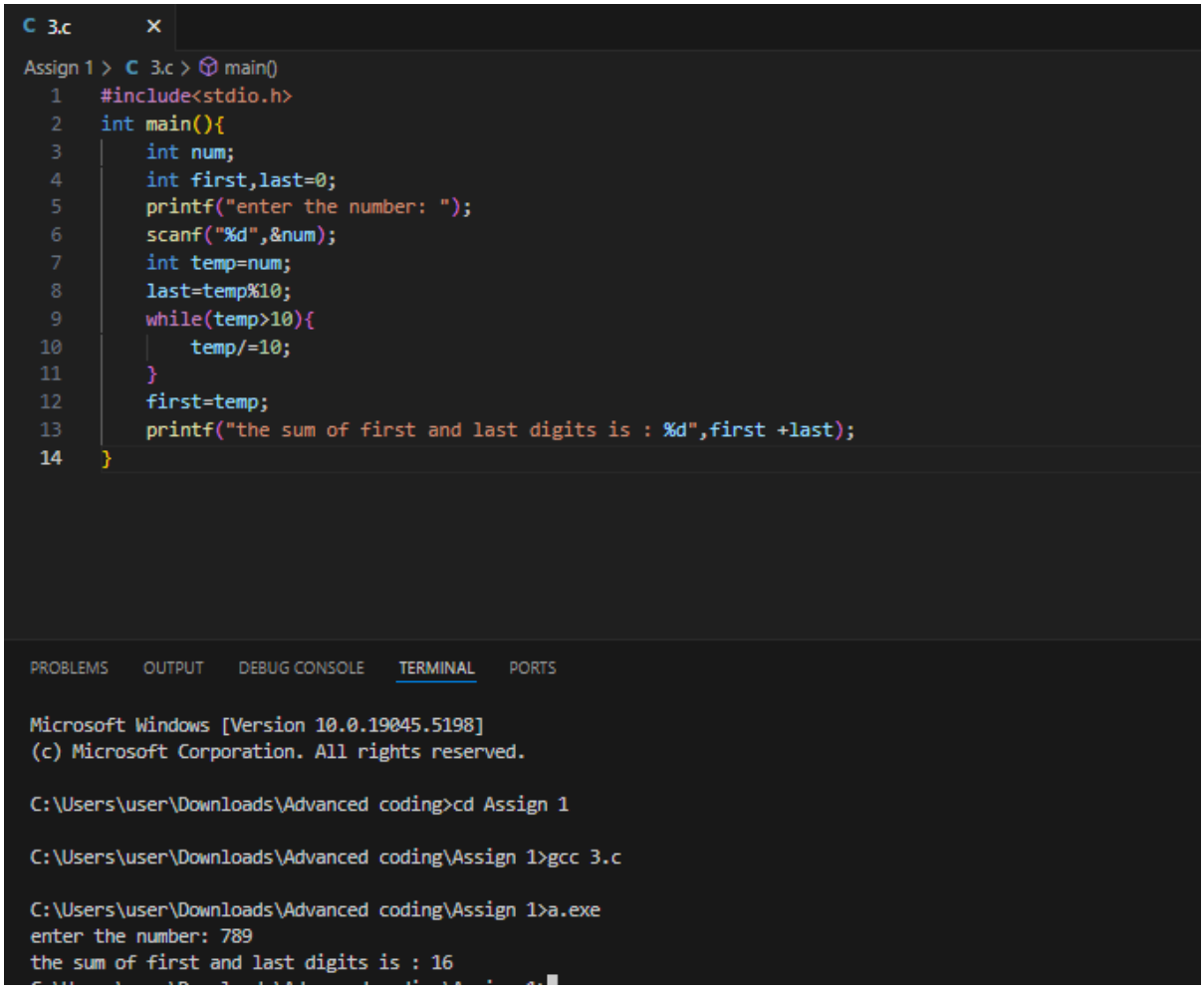
2) Write a C program to find first and last digit of a number.

Code and Output:



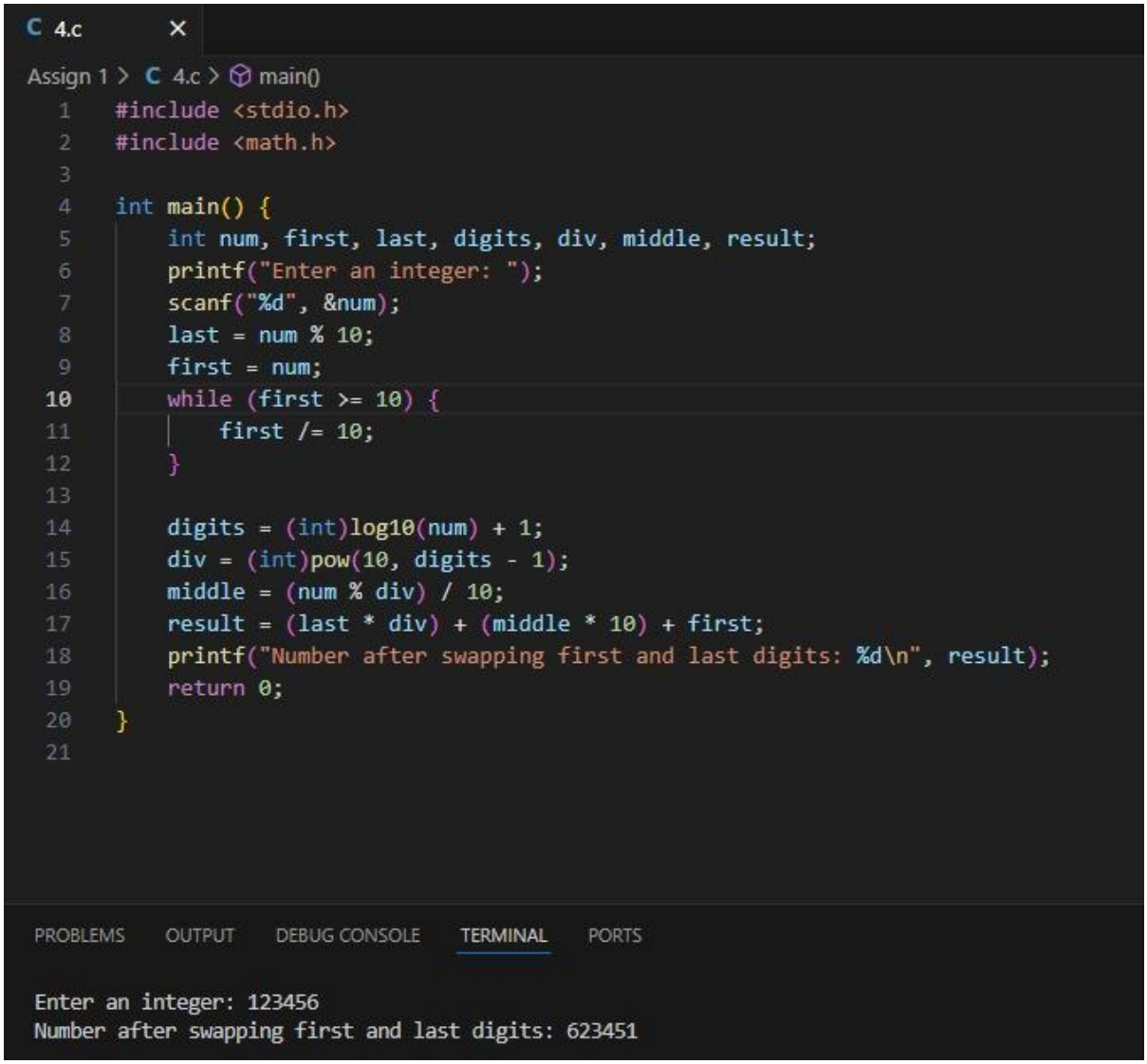
3) Write a C program to find sum of first and last digit of a number.

Code and Output:



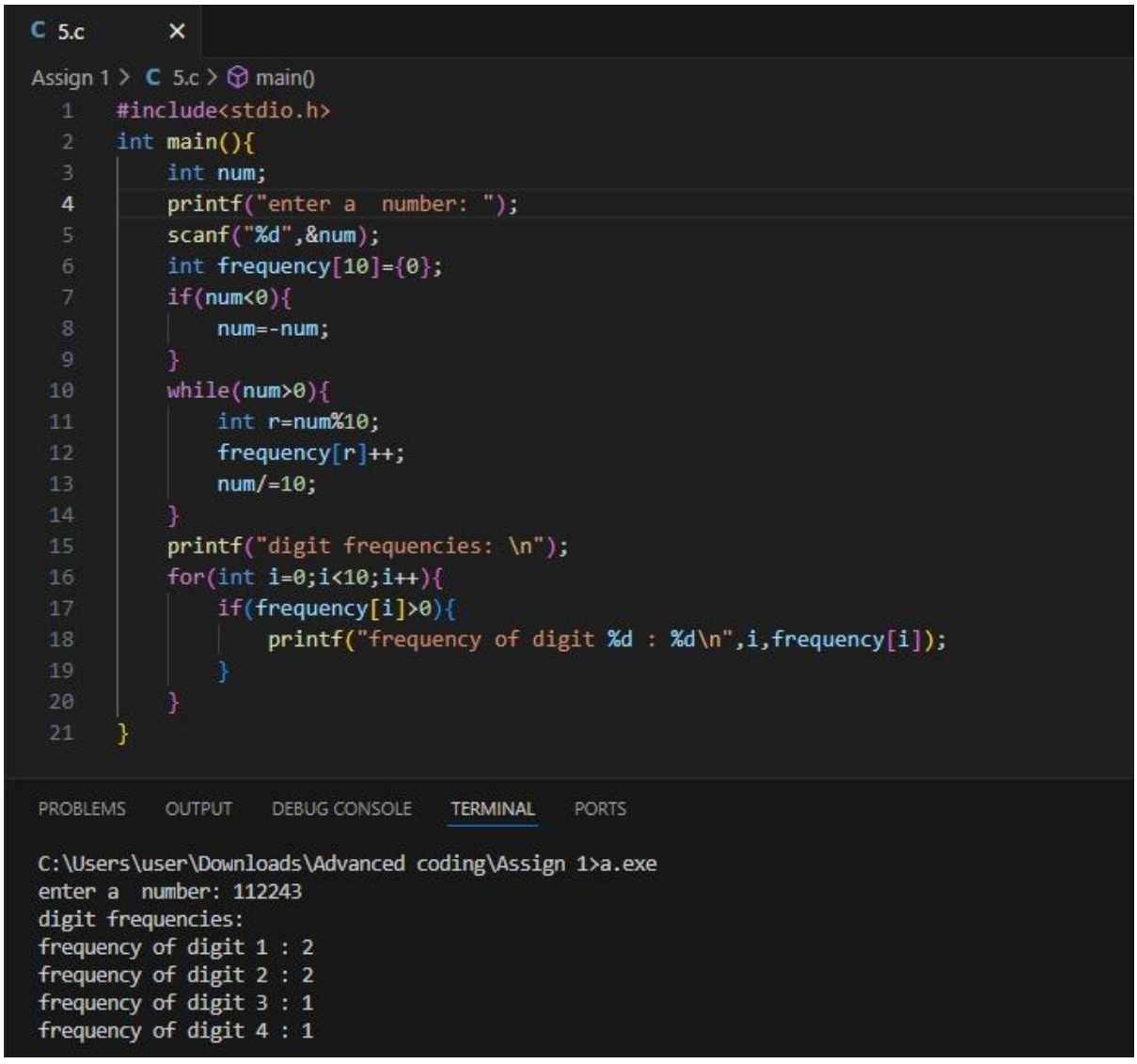
4) Write a C program to swap first and last digits of a number.

Code and Output:



5) Write a C program to find frequency of each digit in a given integer.

Code and Output:



```c
#include<stdio.h>
int main(){
    int num;
    printf("enter a  number: ");
    scanf("%d",&num);
    int frequency[10]={0};
    if(num<0){
        num=-num;
    }
    while(num>0){
        int r=num%10;
        frequency[r]++;
        num/=10;
    }
    printf("digit frequencies: \n");
    for(int i=0;i<10;i++){
        if(frequency[i]>0){
            printf("frequency of digit %d : %d\n",i,frequency[i]);
        }
    }
}
```

```
C:\Users\user\Downloads\Advanced coding\Assign 1>a.exe
enter a  number: 112243
digit frequencies:
frequency of digit 1 : 2
frequency of digit 2 : 2
frequency of digit 3 : 1
frequency of digit 4 : 1
```

6) Write a C program to enter a number and print it in words.

Code :

```c
#include <stdio.h>
void printNumberInWords(int num) {
    if (num == 0) {
        printf("Zero");
        return;
    }
    int reversed = 0, isNegative = 0;
    if (num < 0) {
        isNegative = 1;
        num = -num;
    }
    while (num > 0) {
        reversed = reversed * 10 + (num % 10);
        num /= 10;
    }
    if (isNegative) {
        printf("Minus ");
    }
    while (reversed > 0) {
        switch (reversed % 10) {
            case 0: printf("Zero "); break;
            case 1: printf("One "); break;
            case 2: printf("Two "); break;
            case 3: printf("Three "); break;
            case 4: printf("Four "); break;
            case 5: printf("Five "); break;
            case 6: printf("Six "); break;
            case 7: printf("Seven "); break;
            case 8: printf("Eight "); break;
            case 9: printf("Nine "); break;
        }
        reversed /= 10;
    }
}
int main() {
    int number;
    printf("Enter a number: ");
    scanf("%d", &number);
    printf("Number in words: ");
    printNumberInWords(number);
    printf("\n");
    return 0;
}
```

Output:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

C:\Users\user\Downloads\Advanced coding\Assign 1>gcc 6.c

C:\Users\user\Downloads\Advanced coding\Assign 1>a.exe
Enter a number: -458
Number in words: Minus Four Five Eight

C:\Users\user\Downloads\Advanced coding\Assign 1>
```

7)Write a C program to find one’s complement of a binary number.

Code and Output:

8) Write a C program to find two’s complement of a binary number.

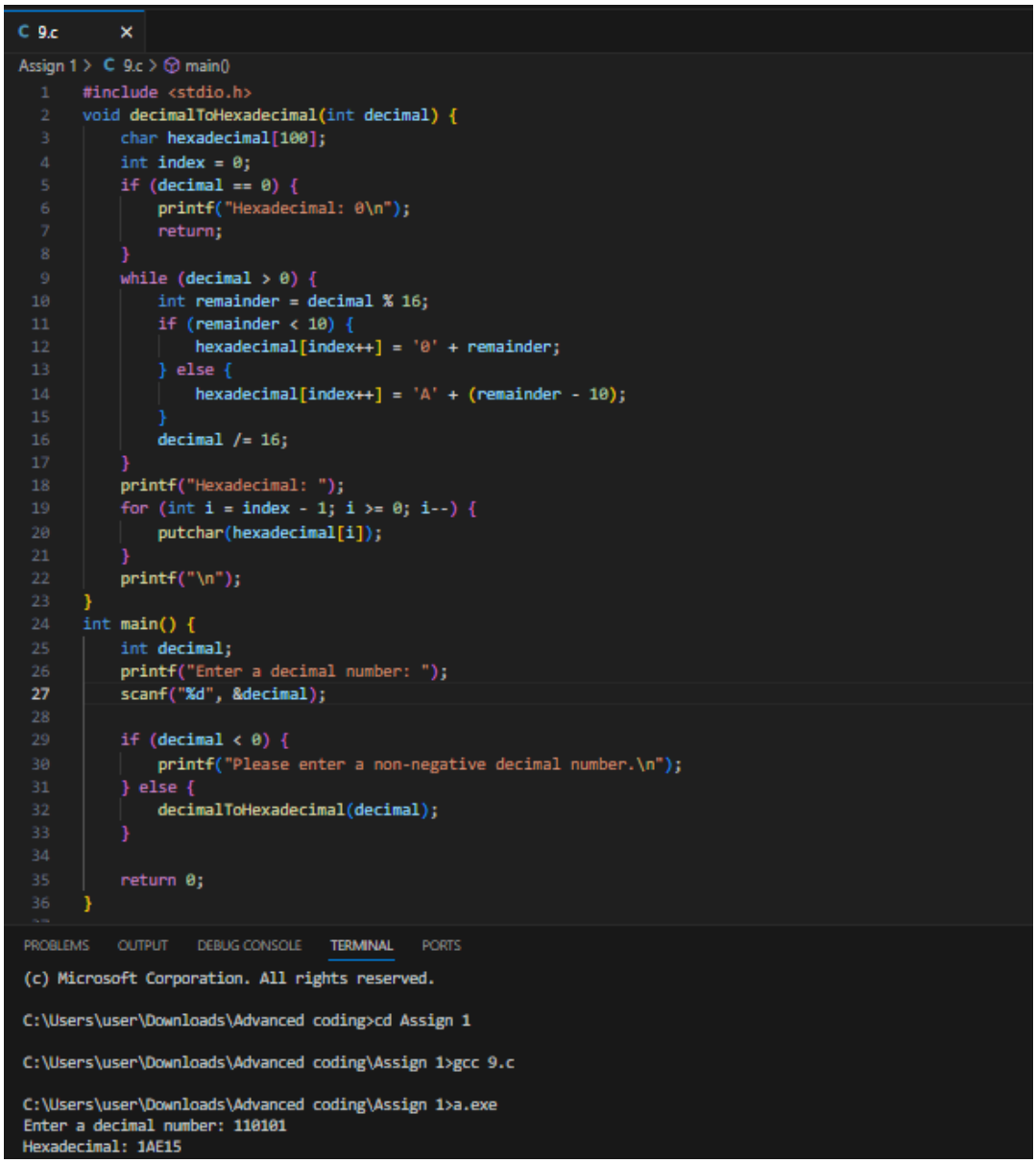
Code and Output:

```c
#include <stdio.h>
#include <string.h>
void findOnesComplement(char binary[]) {
    for (int i = 0; binary[i] != '\0'; i++) {
        if (binary[i] == '0') {
            binary[i] = '1';
        } else if (binary[i] == '1') {
            binary[i] = '0';
        } else {
            printf("Invalid binary number.\n");
            return;
        }
    }
}

void findTwosComplement(char binary[]) {
    findOnesComplement(binary);
    int length = strlen(binary);
    int carry = 1;
    for (int i = length - 1; i >= 0; i--) {
        if (binary[i] == '1' && carry == 1) {
            binary[i] = '0';
        } else if (binary[i] == '0' && carry == 1) {
            binary[i] = '1';
            carry = 0;
        }
    }
    printf("Two's complement: %s\n", binary);
}

int main() {
    char binary[100];
    printf("Enter a binary number: ");
    scanf("%s", binary);
    findTwosComplement(binary);
    return 0;
}
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

C:\Users\user\Downloads\Advanced coding\Assign 1>a.exe
Enter a binary number: 1101101
Two's complement: 0010011
```

9) Write a C program to convert Decimal to Hexadecimal number system

Code and Output:



```c
#include <stdio.h>
void decimalToHexadecimal(int decimal) {
    char hexadecimal[100];
    int index = 0;
    if (decimal == 0) {
        printf("Hexadecimal: 0\n");
        return;
    }
    while (decimal > 0) {
        int remainder = decimal % 16;
        if (remainder < 10) {
            hexadecimal[index++] = '0' + remainder;
        } else {
            hexadecimal[index++] = 'A' + (remainder - 10);
        }
        decimal /= 16;
    }
    printf("Hexadecimal: ");
    for (int i = index - 1; i >= 0; i--) {
        putchar(hexadecimal[i]);
    }
    printf("\n");
}
int main() {
    int decimal;
    printf("Enter a decimal number: ");
    scanf("%d", &decimal);

    if (decimal < 0) {
        printf("Please enter a non-negative decimal number.\n");
    } else {
        decimalToHexadecimal(decimal);
    }

    return 0;
}
```

```
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C:\Users\user\Downloads\Advanced coding>cd Assign 1

C:\Users\user\Downloads\Advanced coding\Assign 1>gcc 9.c

C:\Users\user\Downloads\Advanced coding\Assign 1>a.exe
Enter a decimal number: 110101
Hexadecimal: 1AE15
```