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# ADVANCED CODING 2

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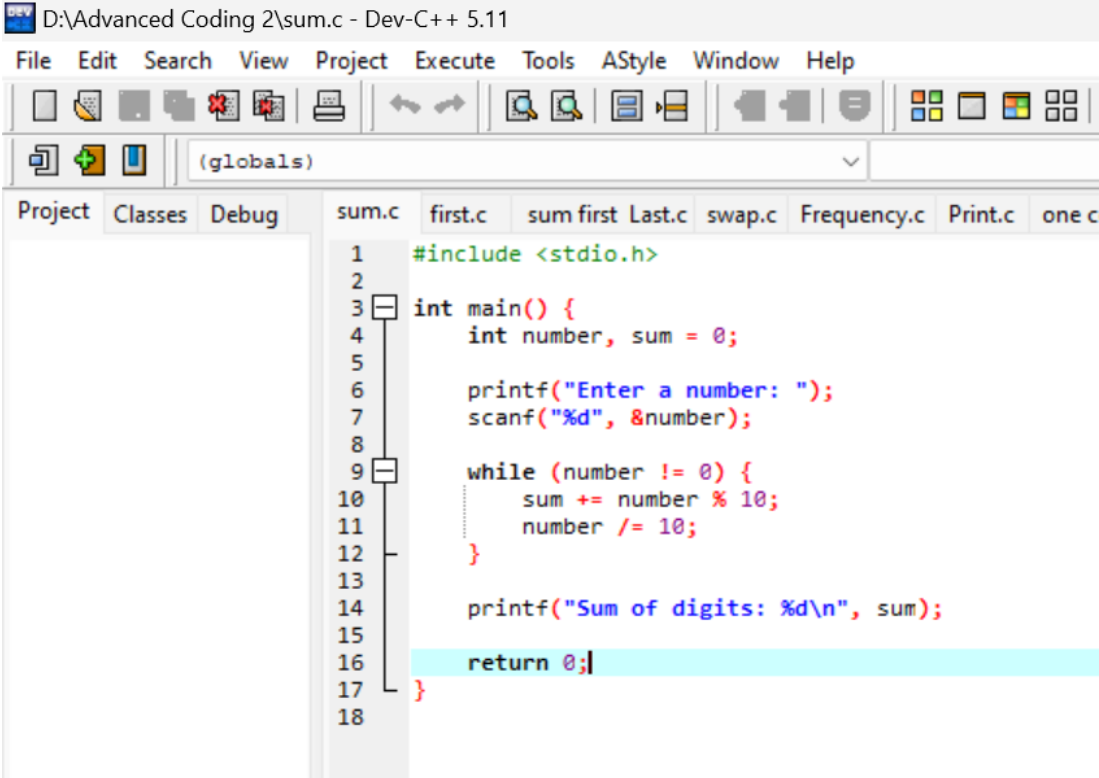
## TASK 1



DECEMBER 4, 2024  
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VU21CSEN0300107 CSE AIML

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

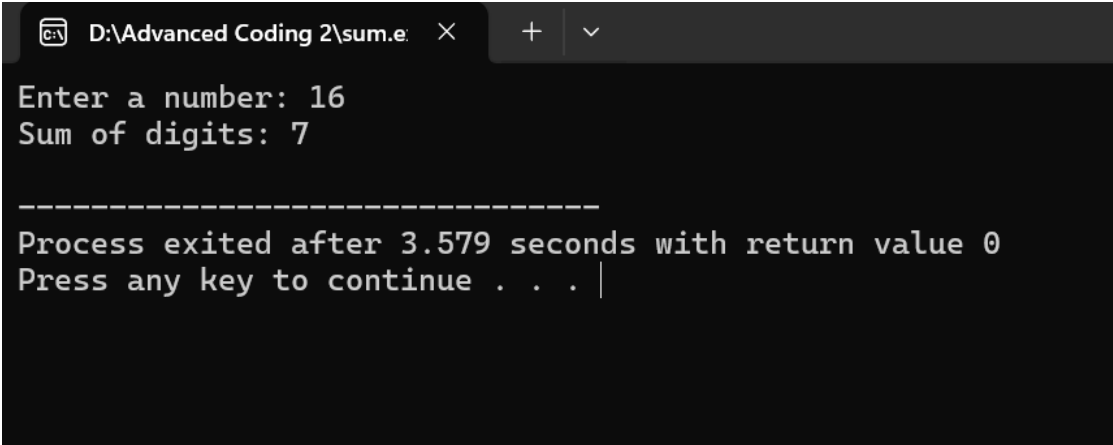
CODE



The screenshot shows the Dev-C++ 5.11 IDE with the file 'sum.c' open. The code is as follows:

```
1  #include <stdio.h>
2
3  int main() {
4      int number, sum = 0;
5
6      printf("Enter a number: ");
7      scanf("%d", &number);
8
9      while (number != 0) {
10         sum += number % 10;
11         number /= 10;
12     }
13
14     printf("Sum of digits: %d\n", sum);
15
16     return 0;
17 }
```

OUTPUT



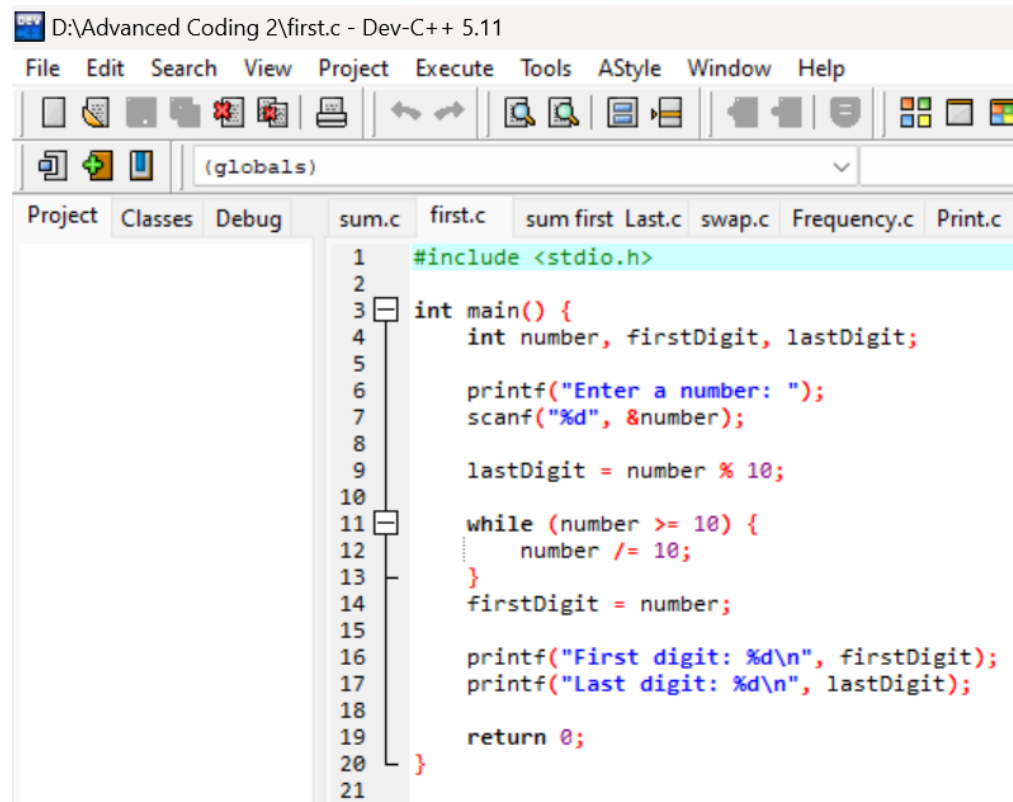
The screenshot shows the output of the program in a terminal window. The output is as follows:

```
Enter a number: 16
Sum of digits: 7

-----
Process exited after 3.579 seconds with return value 0
Press any key to continue . . . |
```

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

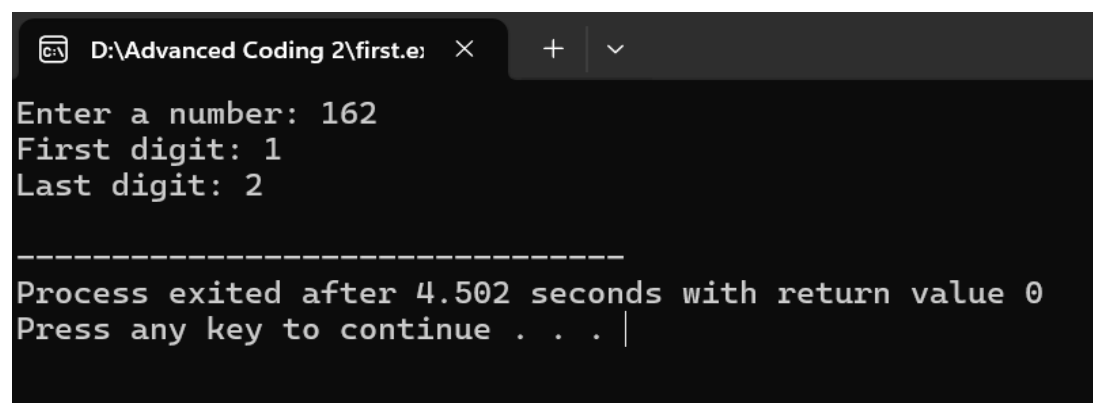
CODE



The screenshot shows the Dev-C++ IDE with the file 'first.c' open. The code is as follows:

```
1  #include <stdio.h>
2
3  int main() {
4      int number, firstDigit, lastDigit;
5
6      printf("Enter a number: ");
7      scanf("%d", &number);
8
9      lastDigit = number % 10;
10
11     while (number >= 10) {
12         number /= 10;
13     }
14     firstDigit = number;
15
16     printf("First digit: %d\n", firstDigit);
17     printf("Last digit: %d\n", lastDigit);
18
19     return 0;
20 }
21
```

OUTPUT



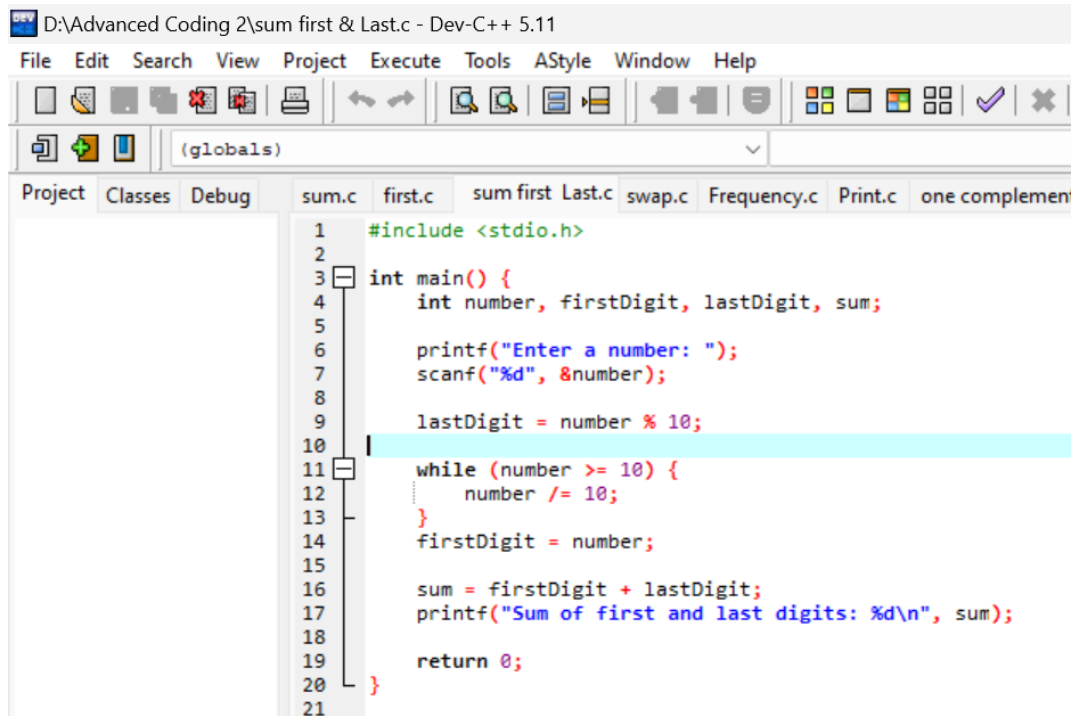
The screenshot shows a terminal window with the following output:

```
D:\Advanced Coding 2\first.e: x + v
Enter a number: 162
First digit: 1
Last digit: 2

-----
Process exited after 4.502 seconds with return value 0
Press any key to continue . . . |
```

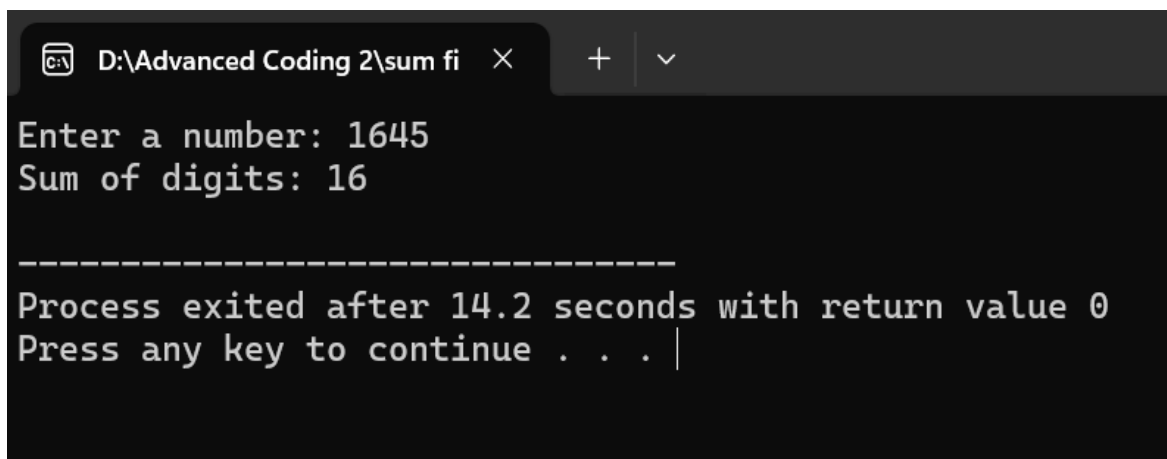
3. Write a C program to find sum of first and last digit of a number.

CODE



```
1  #include <stdio.h>
2
3  int main() {
4      int number, firstDigit, lastDigit, sum;
5
6      printf("Enter a number: ");
7      scanf("%d", &number);
8
9      lastDigit = number % 10;
10
11     while (number >= 10) {
12         number /= 10;
13     }
14     firstDigit = number;
15
16     sum = firstDigit + lastDigit;
17     printf("Sum of first and last digits: %d\n", sum);
18
19     return 0;
20 }
21
```

OUTPUT

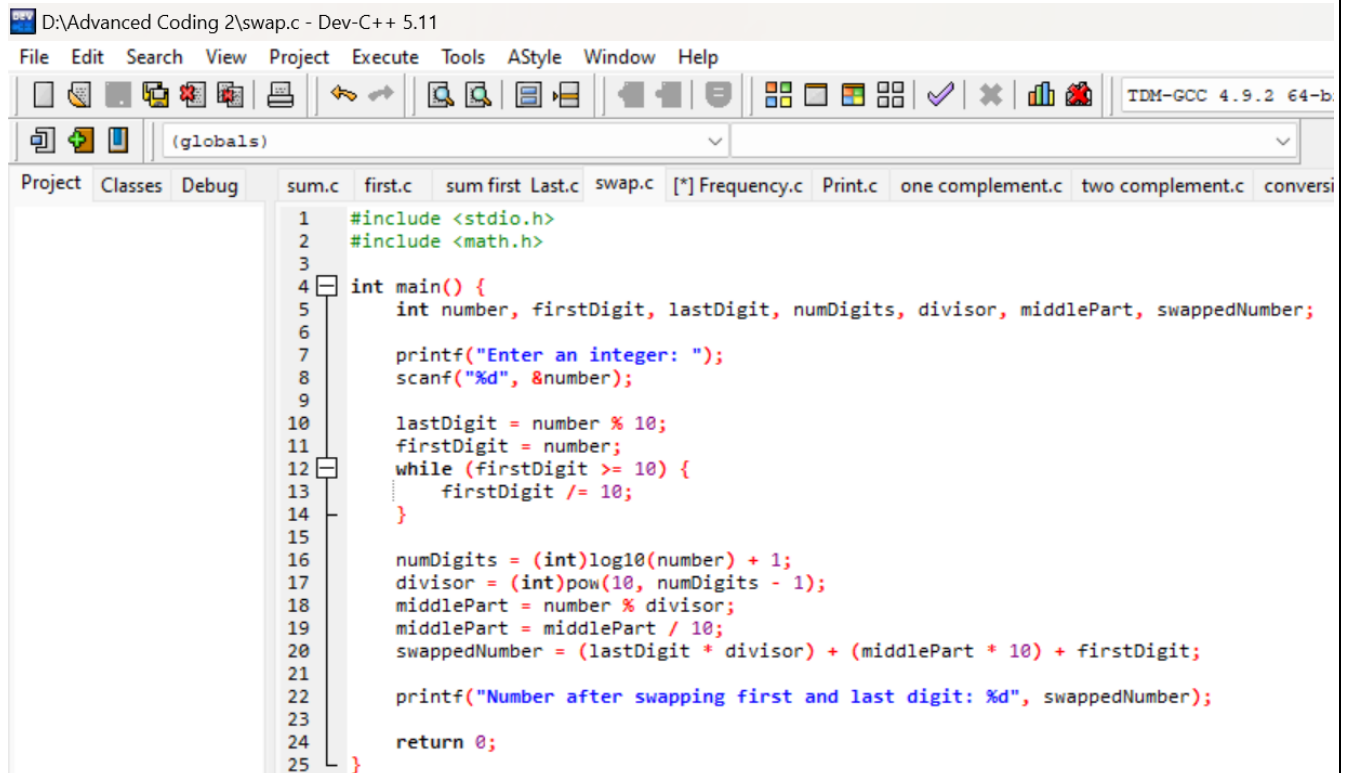


```
D:\Advanced Coding 2\sum fi  X  +  v
Enter a number: 1645
Sum of digits: 16

-----
Process exited after 14.2 seconds with return value 0
Press any key to continue . . . |
```

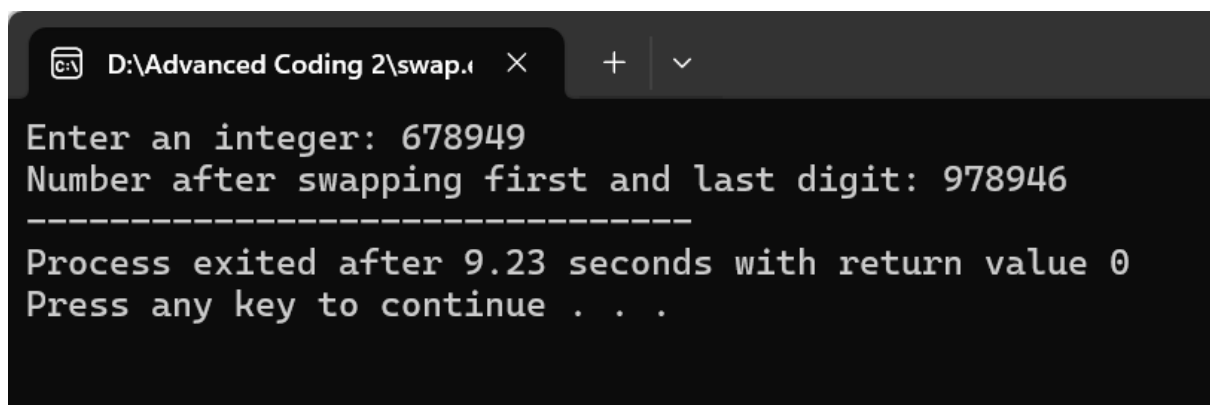
#### 4. Write a C program to swap first and last digits of a number

##### CODE



```
D:\Advanced Coding 2\swap.c - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
IDM-GCC 4.9.2 64-b
(globals)
Project Classes Debug sum.c first.c sum first Last.c swap.c [*] Frequency.c Print.c one complement.c two complement.c conversi
1  #include <stdio.h>
2  #include <math.h>
3
4  int main() {
5      int number, firstDigit, lastDigit, numDigits, divisor, middlePart, swappedNumber;
6
7      printf("Enter an integer: ");
8      scanf("%d", &number);
9
10     lastDigit = number % 10;
11     firstDigit = number;
12     while (firstDigit >= 10) {
13         firstDigit /= 10;
14     }
15
16     numDigits = (int)log10(number) + 1;
17     divisor = (int)pow(10, numDigits - 1);
18     middlePart = number % divisor;
19     middlePart = middlePart / 10;
20     swappedNumber = (lastDigit * divisor) + (middlePart * 10) + firstDigit;
21
22     printf("Number after swapping first and last digit: %d", swappedNumber);
23
24     return 0;
25 }
```

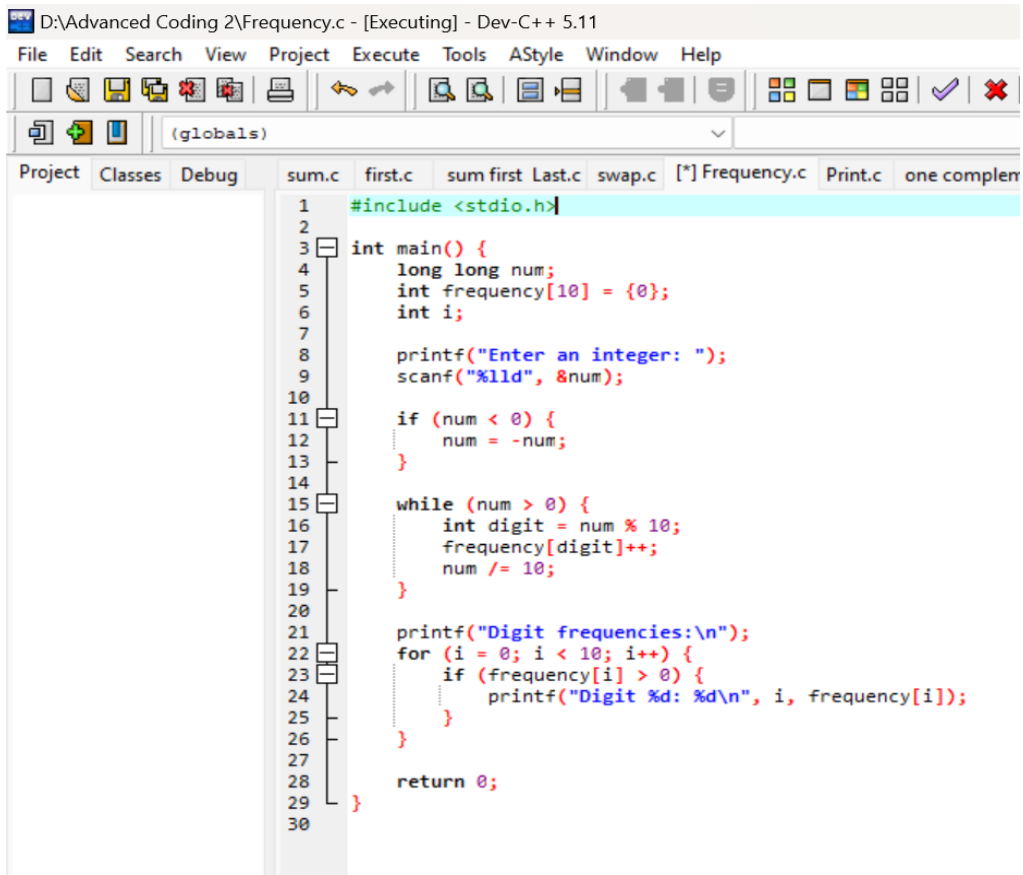
##### OUTPUT



```
D:\Advanced Coding 2\swap.c x + v
Enter an integer: 678949
Number after swapping first and last digit: 978946
-----
Process exited after 9.23 seconds with return value 0
Press any key to continue . . .
```

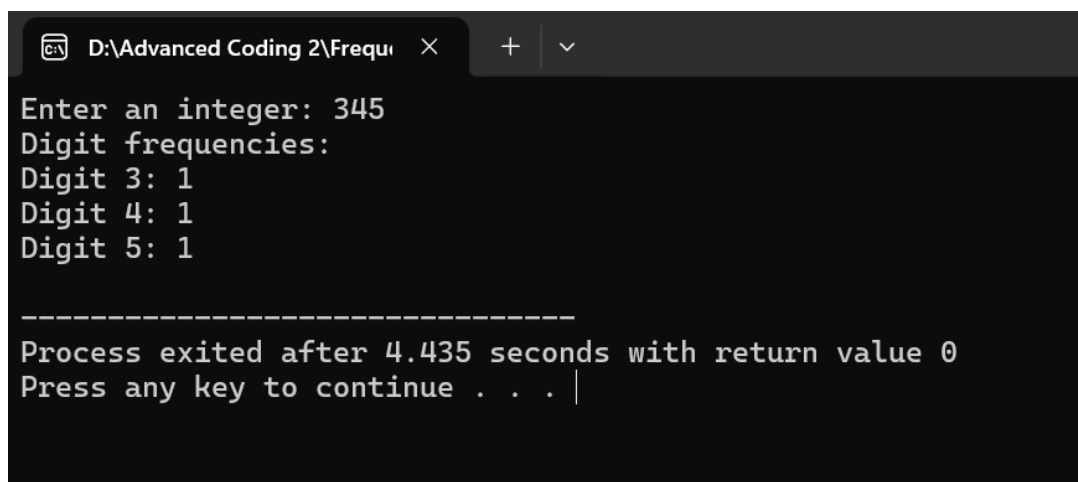
5. Write a C program to find frequency of each digit in a given integer.

CODE



```
1 #include <stdio.h>
2
3 int main() {
4     long long num;
5     int frequency[10] = {0};
6     int i;
7
8     printf("Enter an integer: ");
9     scanf("%lld", &num);
10
11     if (num < 0) {
12         num = -num;
13     }
14
15     while (num > 0) {
16         int digit = num % 10;
17         frequency[digit]++;
18         num /= 10;
19     }
20
21     printf("Digit frequencies:\n");
22     for (i = 0; i < 10; i++) {
23         if (frequency[i] > 0) {
24             printf("Digit %d: %d\n", i, frequency[i]);
25         }
26     }
27
28     return 0;
29 }
30
```

OUTPUT

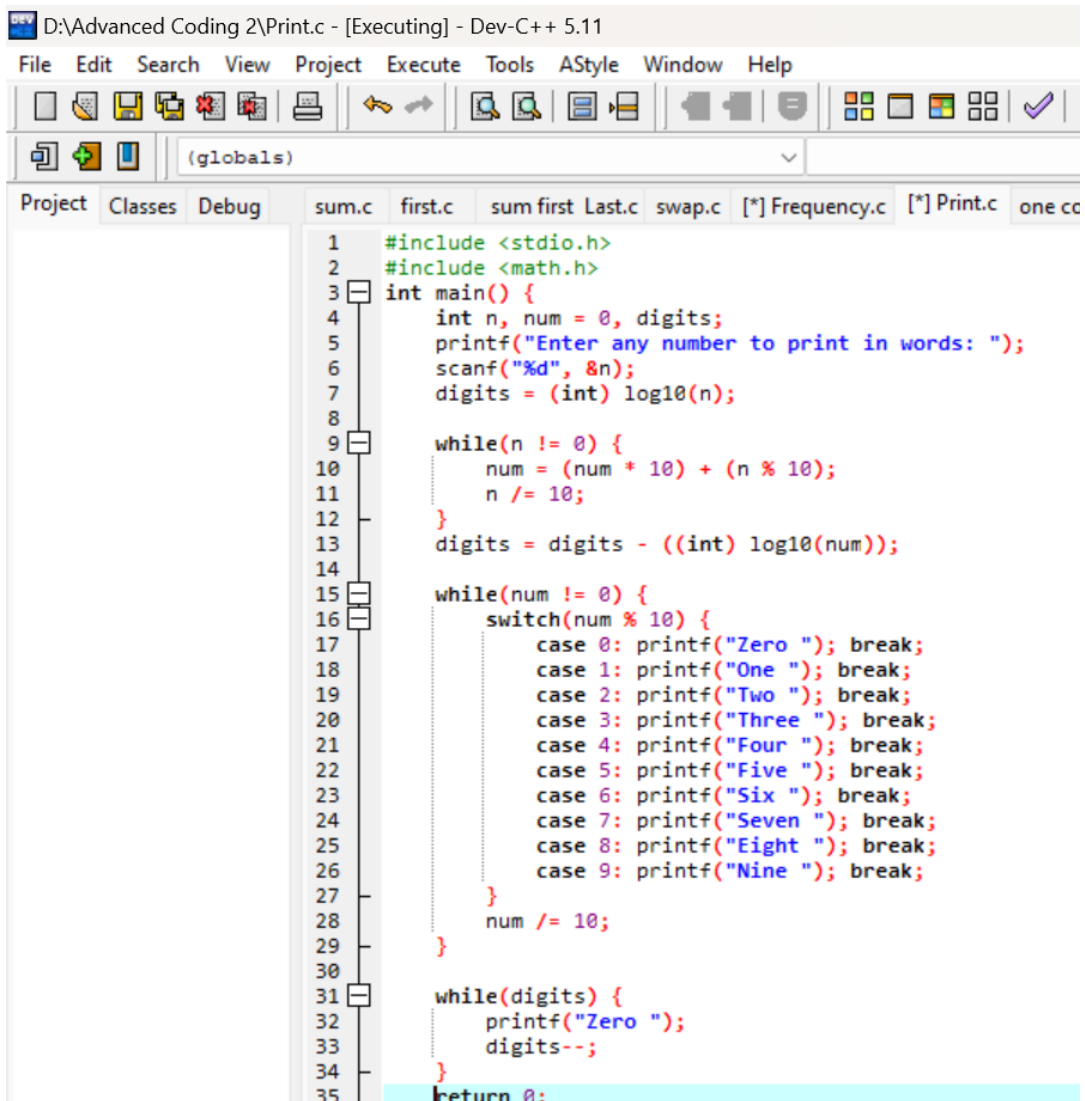


```
D:\Advanced Coding 2\Frequi x + v
Enter an integer: 345
Digit frequencies:
Digit 3: 1
Digit 4: 1
Digit 5: 1

-----
Process exited after 4.435 seconds with return value 0
Press any key to continue . . . |
```

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

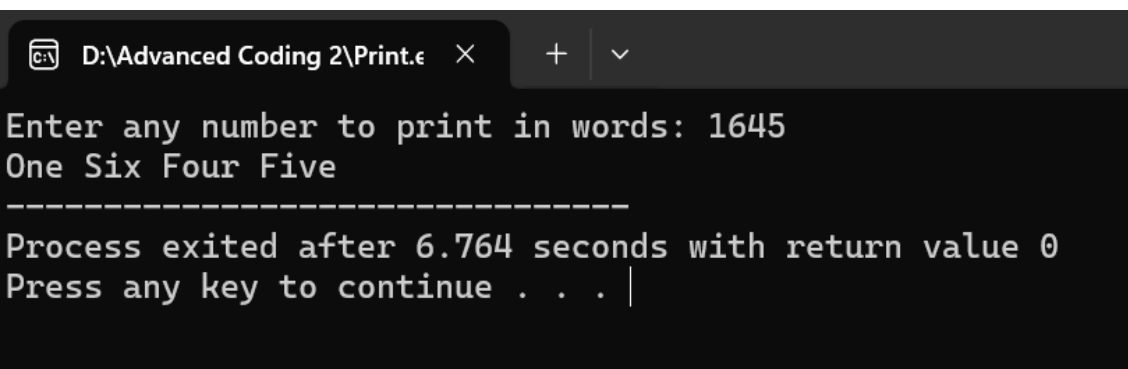
CODE



The screenshot shows the Dev-C++ 5.11 IDE with a C program open in the editor. The program is titled 'D:\Advanced Coding 2\Print.c - [Executing] - Dev-C++ 5.11'. The code is as follows:

```
1  #include <stdio.h>
2  #include <math.h>
3  int main() {
4      int n, num = 0, digits;
5      printf("Enter any number to print in words: ");
6      scanf("%d", &n);
7      digits = (int) log10(n);
8
9      while(n != 0) {
10         num = (num * 10) + (n % 10);
11         n /= 10;
12     }
13     digits = digits - ((int) log10(num));
14
15     while(num != 0) {
16         switch(num % 10) {
17             case 0: printf("Zero "); break;
18             case 1: printf("One "); break;
19             case 2: printf("Two "); break;
20             case 3: printf("Three "); break;
21             case 4: printf("Four "); break;
22             case 5: printf("Five "); break;
23             case 6: printf("Six "); break;
24             case 7: printf("Seven "); break;
25             case 8: printf("Eight "); break;
26             case 9: printf("Nine "); break;
27         }
28         num /= 10;
29     }
30
31     while(digits) {
32         printf("Zero ");
33         digits--;
34     }
35     return 0;
```

OUTPUT

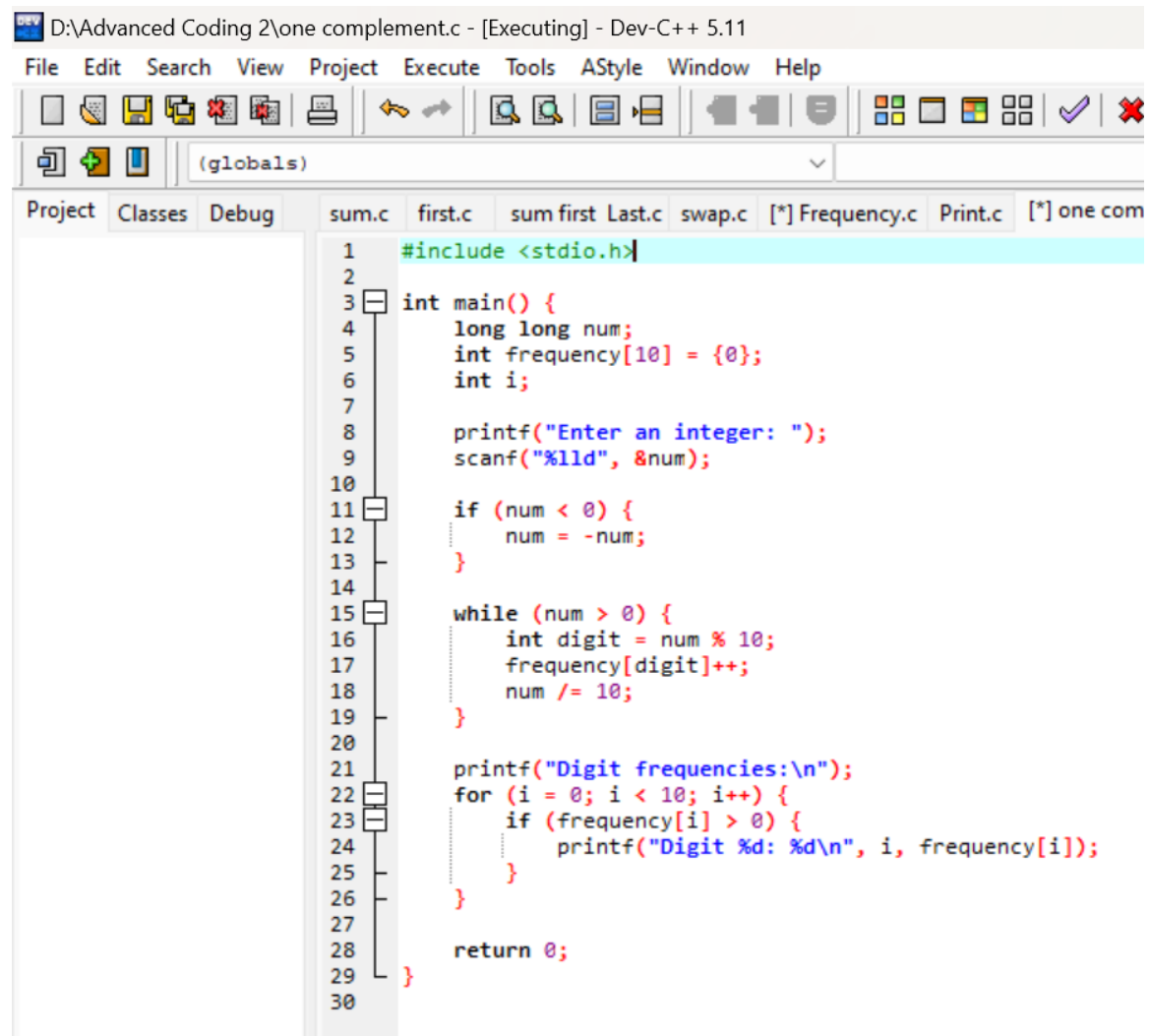


The screenshot shows a terminal window with the following output:

```
D:\Advanced Coding 2\Print.c x + v
Enter any number to print in words: 1645
One Six Four Five
-----
Process exited after 6.764 seconds with return value 0
Press any key to continue . . . |
```

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

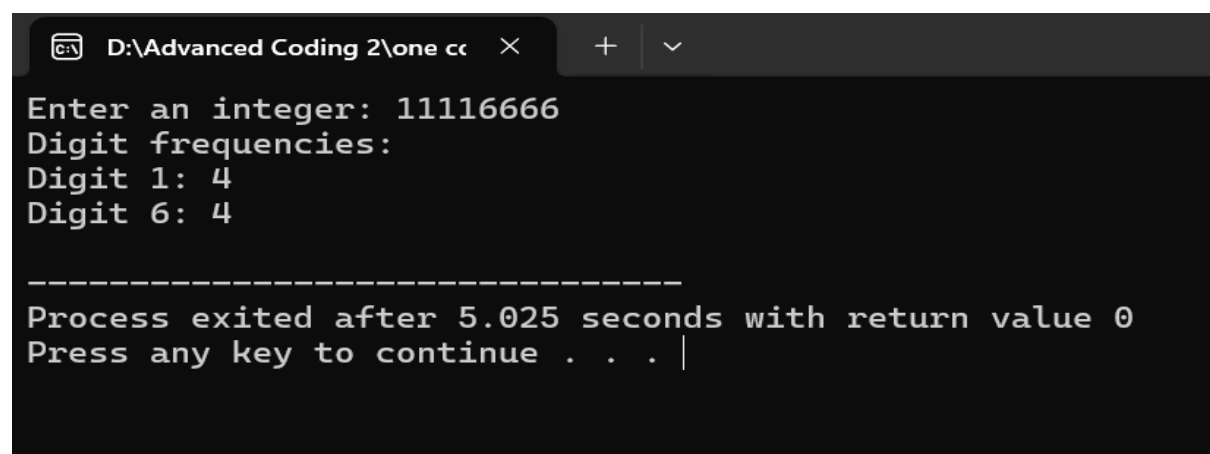
## CODE



The screenshot shows the Dev-C++ IDE with the file 'one complement.c' open. The code is as follows:

```
1  #include <stdio.h>
2
3  int main() {
4      long long num;
5      int frequency[10] = {0};
6      int i;
7
8      printf("Enter an integer: ");
9      scanf("%lld", &num);
10
11     if (num < 0) {
12         num = -num;
13     }
14
15     while (num > 0) {
16         int digit = num % 10;
17         frequency[digit]++;
18         num /= 10;
19     }
20
21     printf("Digit frequencies:\n");
22     for (i = 0; i < 10; i++) {
23         if (frequency[i] > 0) {
24             printf("Digit %d: %d\n", i, frequency[i]);
25         }
26     }
27
28     return 0;
29 }
30
```

## OUTPUT



The screenshot shows a terminal window with the following output:

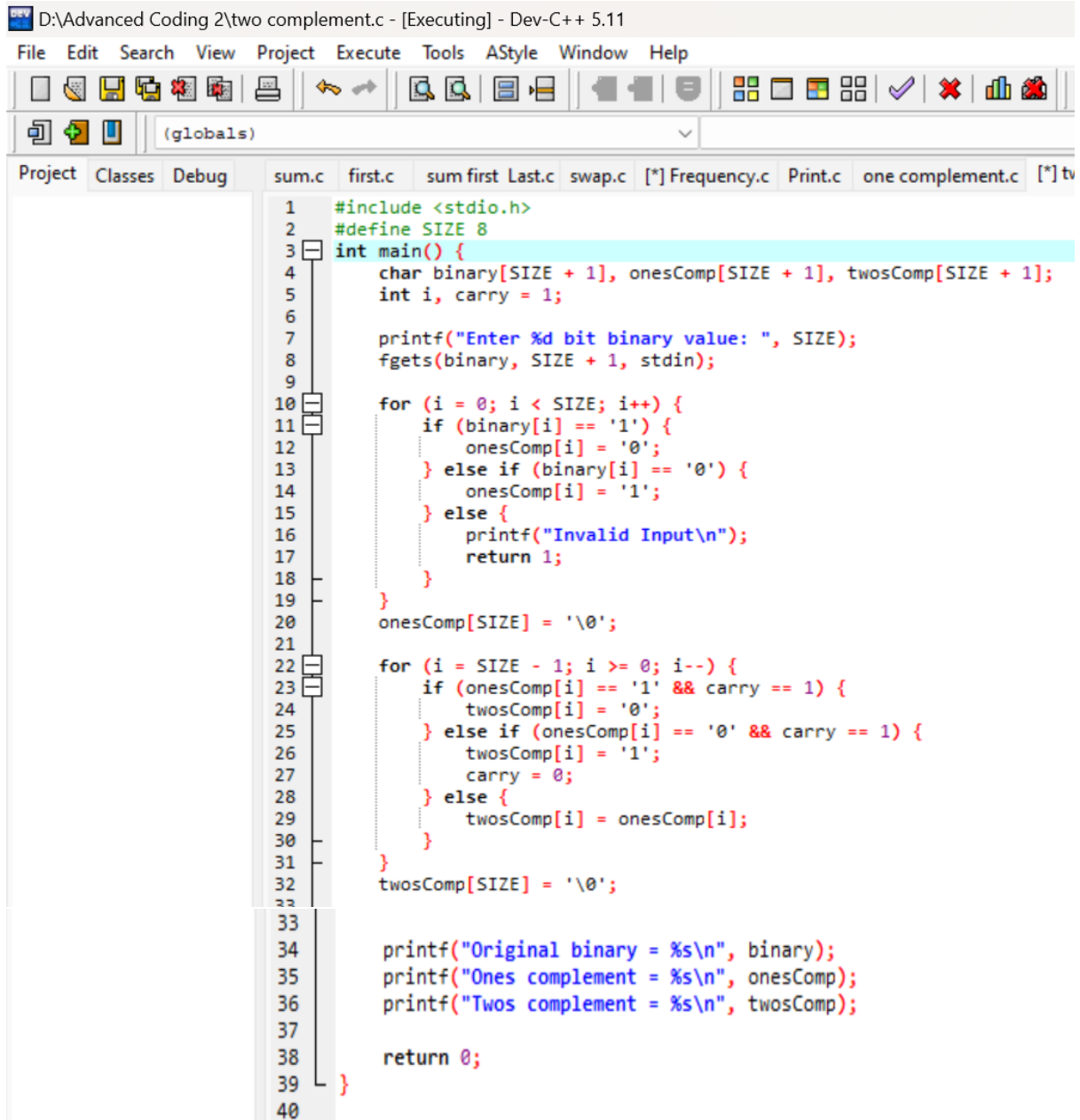
```
D:\Advanced Coding 2\one cc  X  +  v
Enter an integer: 11116666
Digit frequencies:
Digit 1: 4
Digit 6: 4

-----
Process exited after 5.025 seconds with return value 0
Press any key to continue . . . |
```



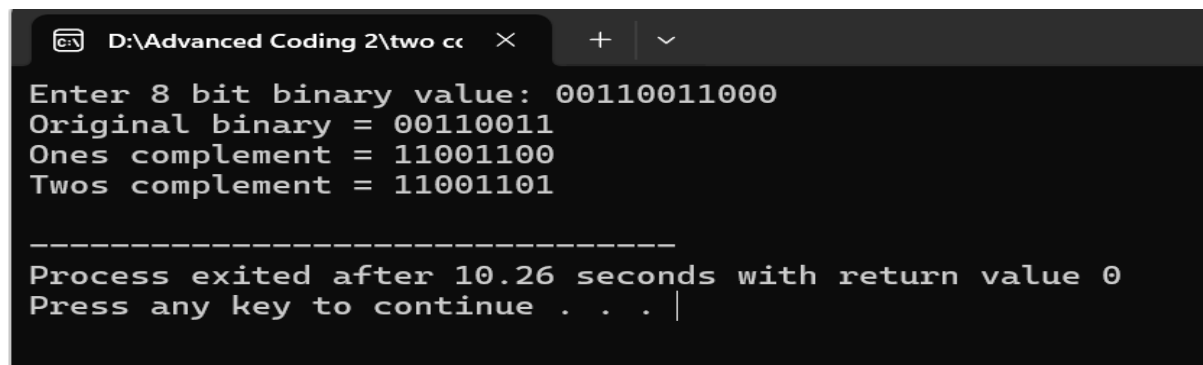
8. Write a C program to find two's complement of a binary number.

CODE



```
1  #include <stdio.h>
2  #define SIZE 8
3  int main() {
4      char binary[SIZE + 1], onesComp[SIZE + 1], twosComp[SIZE + 1];
5      int i, carry = 1;
6
7      printf("Enter %d bit binary value: ", SIZE);
8      fgets(binary, SIZE + 1, stdin);
9
10     for (i = 0; i < SIZE; i++) {
11         if (binary[i] == '1') {
12             onesComp[i] = '0';
13         } else if (binary[i] == '0') {
14             onesComp[i] = '1';
15         } else {
16             printf("Invalid Input\n");
17             return 1;
18         }
19     }
20     onesComp[SIZE] = '\0';
21
22     for (i = SIZE - 1; i >= 0; i--) {
23         if (onesComp[i] == '1' && carry == 1) {
24             twosComp[i] = '0';
25         } else if (onesComp[i] == '0' && carry == 1) {
26             twosComp[i] = '1';
27             carry = 0;
28         } else {
29             twosComp[i] = onesComp[i];
30         }
31     }
32     twosComp[SIZE] = '\0';
33
34     printf("Original binary = %s\n", binary);
35     printf("Ones complement = %s\n", onesComp);
36     printf("Twos complement = %s\n", twosComp);
37
38     return 0;
39 }
40
```

OUTPUT

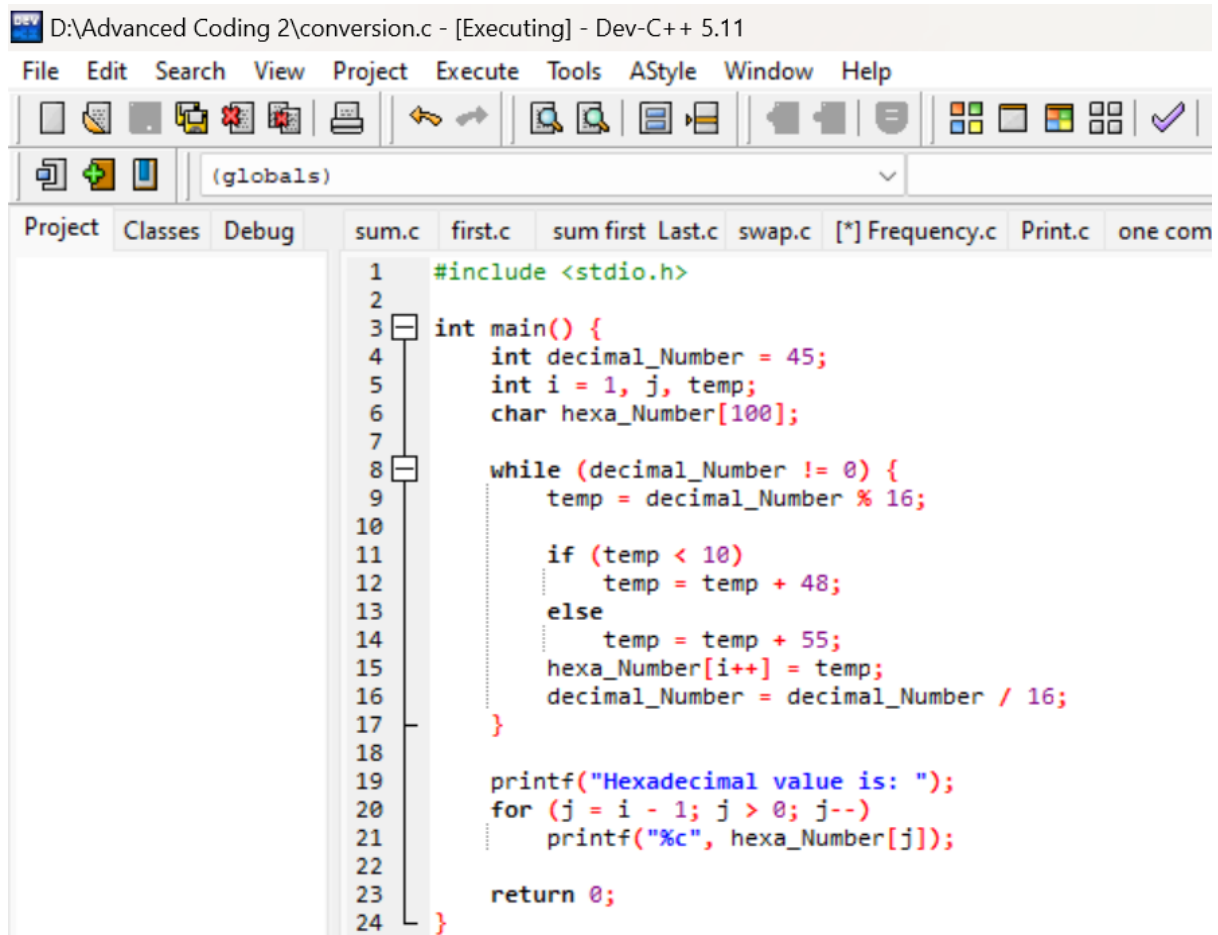


```
D:\Advanced Coding 2\two cc  X  +  v
Enter 8 bit binary value: 00110011000
Original binary = 00110011
Ones complement = 11001100
Twos complement = 11001101

-----
Process exited after 10.26 seconds with return value 0
Press any key to continue . . .
```

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

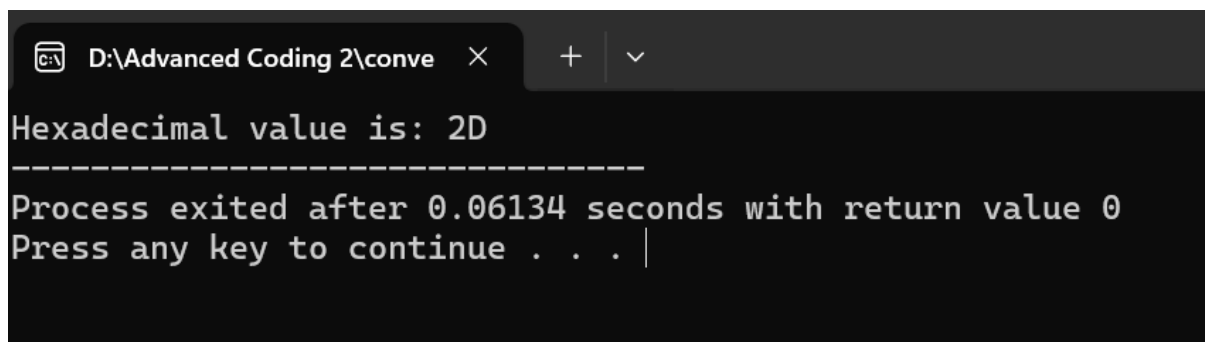
CODE



The screenshot shows the Dev-C++ 5.11 IDE with a C program open in the editor. The program is titled 'D:\Advanced Coding 2\conversion.c - [Executing] - Dev-C++ 5.11'. The code is as follows:

```
1  #include <stdio.h>
2
3  int main() {
4      int decimal_Number = 45;
5      int i = 1, j, temp;
6      char hexa_Number[100];
7
8      while (decimal_Number != 0) {
9          temp = decimal_Number % 16;
10
11         if (temp < 10)
12             temp = temp + 48;
13         else
14             temp = temp + 55;
15         hexa_Number[i++] = temp;
16         decimal_Number = decimal_Number / 16;
17     }
18
19     printf("Hexadecimal value is: ");
20     for (j = i - 1; j > 0; j--)
21         printf("%c", hexa_Number[j]);
22
23     return 0;
24 }
```

OUTPUT



The screenshot shows a terminal window with the following output:

```
D:\Advanced Coding 2\conve  x  +  v
Hexadecimal value is: 2D
-----
Process exited after 0.06134 seconds with return value 0
Press any key to continue . . . |
```