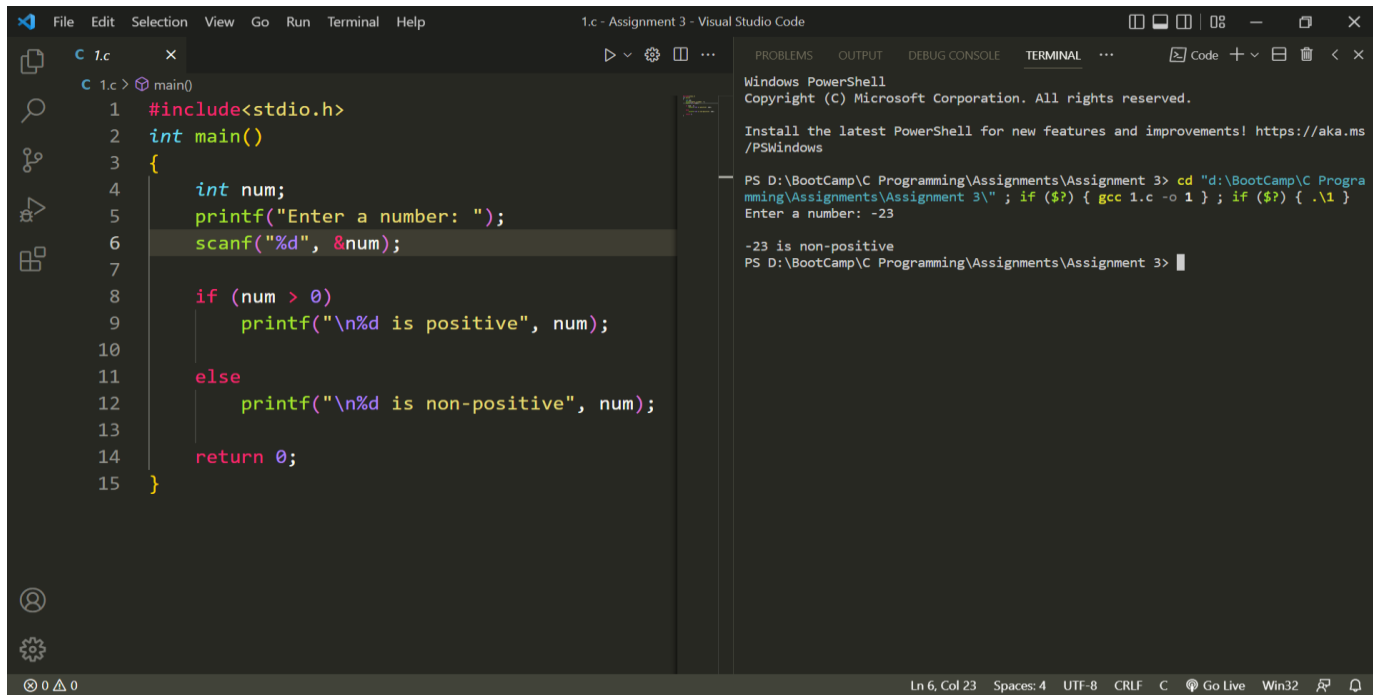


ASSIGNMENT – 03

(Decision Control Statements)

Q1.



The screenshot shows the Visual Studio Code editor with a C file named `1.c`. The code is as follows:

```
1.c > main()
1  #include<stdio.h>
2  int main()
3  {
4      int num;
5      printf("Enter a number: ");
6      scanf("%d", &num);
7
8      if (num > 0)
9          printf("\n%d is positive", num);
10     else
11         printf("\n%d is non-positive", num);
12
13     return 0;
14 }
15
```

The terminal on the right shows the execution of the program:

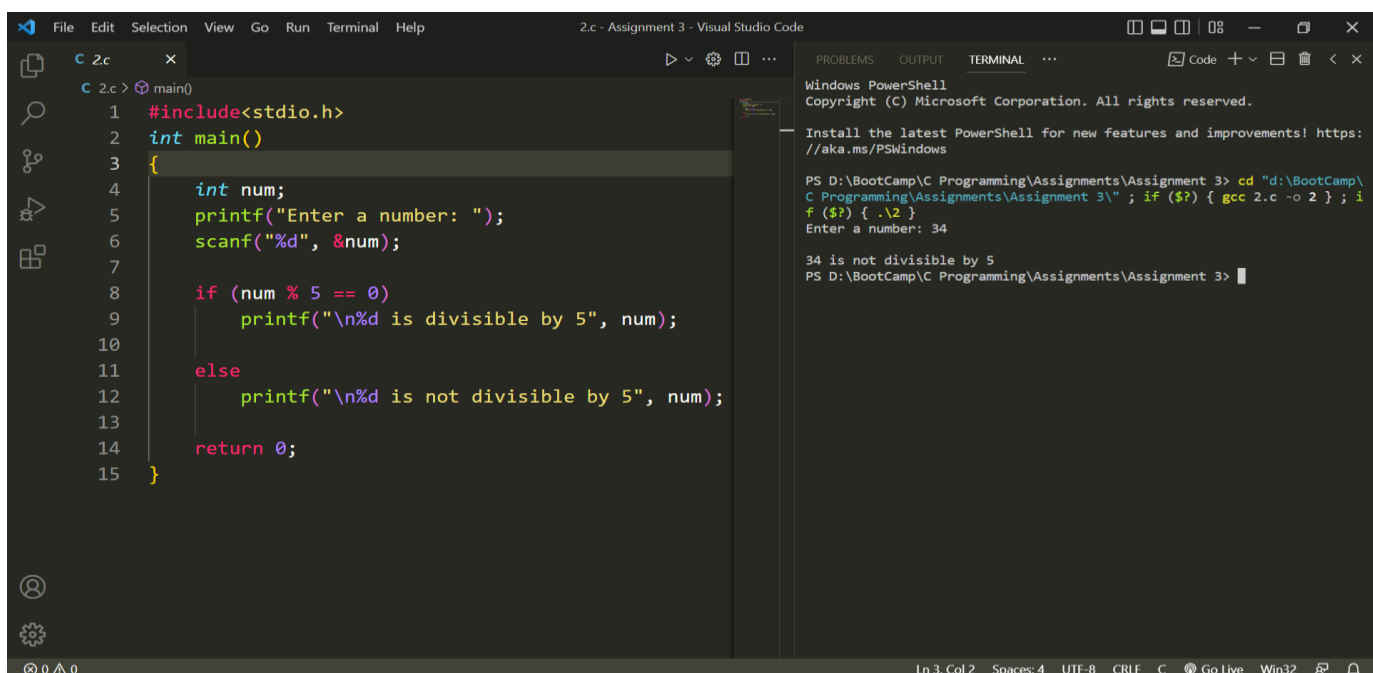
```
Windows PowerShell
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/PSWindows

PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Progra
mming\Assignments\Assignment 3\" ; if ($?) { gcc 1.c -o 1 } ; if ($?) { .\1 }
Enter a number: -23

-23 is non-positive
PS D:\BootCamp\C Programming\Assignments\Assignment 3>
```

Q2.



The screenshot shows the Visual Studio Code editor with a C file named `2.c`. The code is as follows:

```
2.c > main()
1  #include<stdio.h>
2  int main()
3  {
4      int num;
5      printf("Enter a number: ");
6      scanf("%d", &num);
7
8      if (num % 5 == 0)
9          printf("\n%d is divisible by 5", num);
10     else
11         printf("\n%d is not divisible by 5", num);
12
13     return 0;
14 }
15
```

The terminal on the right shows the execution of the program:

```
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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C
Programming\Assignments\Assignment 3\" ; if ($?) { gcc 2.c -o 2 } ; i
f ($?) { .\2 }
Enter a number: 34

34 is not divisible by 5
PS D:\BootCamp\C Programming\Assignments\Assignment 3>
```

Q3.

The screenshot shows a Visual Studio Code editor with a C file named `3.c`. The code is as follows:

```
1 #include<stdio.h>
2 int main()
3 {
4     int num;
5     printf("Enter a number: ");
6     scanf("%d", &num);
7
8     if (num % 2 == 0)
9         printf("\n%d is an even number", num);
10
11     else
12         printf("\n%d is an odd number", num);
13
14     return 0;
15 }
```

The terminal on the right shows the execution of the program:

```
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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Programming\Assignments\Assignment 3\" ; if ($?) { gcc 3.c -o 3 } ; if ($?) { .\3 }
Enter a number: 24

24 is an even number
PS D:\BootCamp\C Programming\Assignments\Assignment 3>
```

Q4.

The screenshot shows a Visual Studio Code editor with a C file named `4.c`. The code is as follows:

```
1 #include<stdio.h>
2 int main()
3 {
4     int num;
5     printf("Enter a number: ");
6     scanf("%d", &num);
7
8     if((num & 1) == 0)
9         printf("\n%d is an even number", num);
10
11     else
12         printf("\n%d is an odd number", num);
13
14     return 0;
15 }
```

The terminal on the right shows the execution of the program:

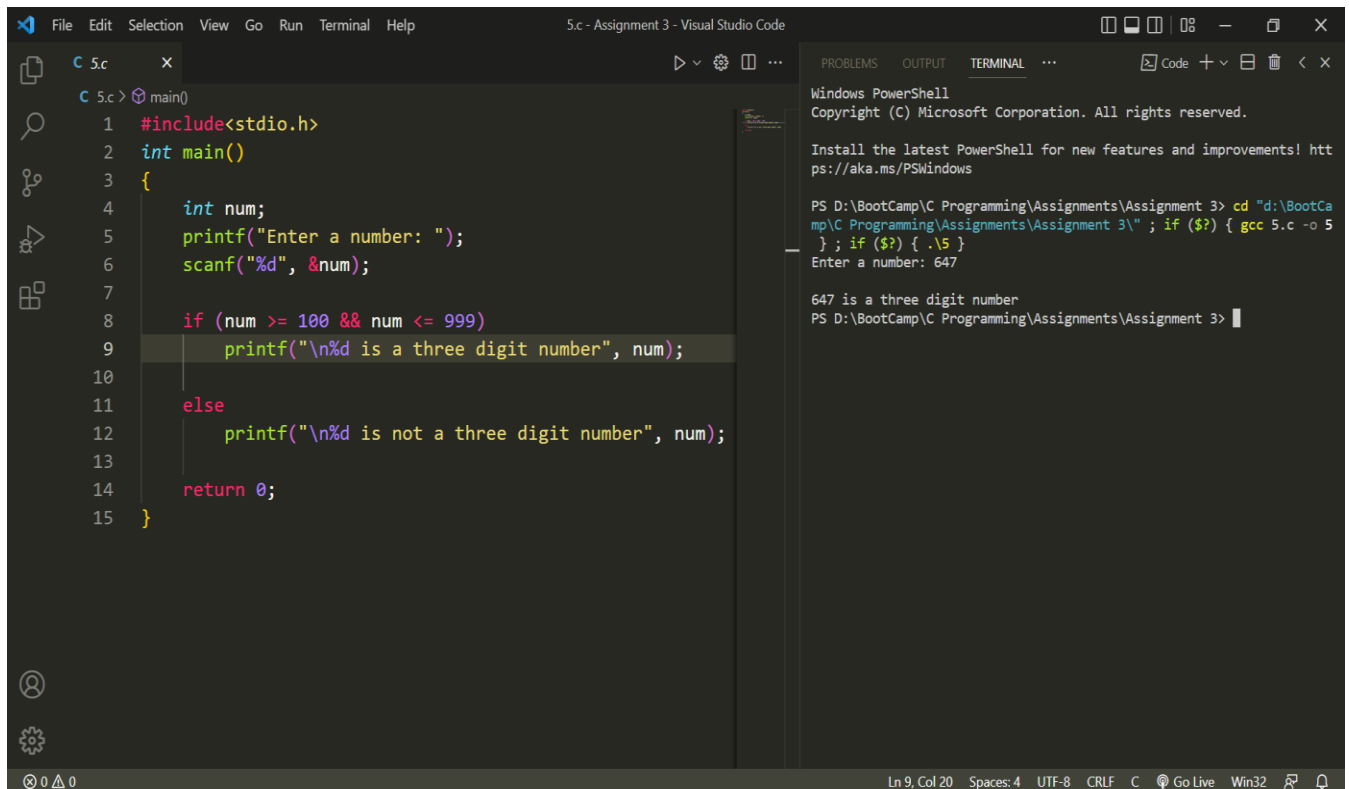
```
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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Programming\Assignments\Assignment 3\" ; if ($?) { gcc 4.c -o 4 } ; if ($?) { .\4 }
Enter a number: 73

73 is an odd number
PS D:\BootCamp\C Programming\Assignments\Assignment 3>
```

Q5.



The screenshot shows the Visual Studio Code editor with a C file named `5.c`. The code is as follows:

```
1 #include<stdio.h>
2 int main()
3 {
4     int num;
5     printf("Enter a number: ");
6     scanf("%d", &num);
7
8     if (num >= 100 && num <= 999)
9         printf("\n%d is a three digit number", num);
10
11     else
12         printf("\n%d is not a three digit number", num);
13
14     return 0;
15 }
```

The terminal on the right shows the execution of the program:

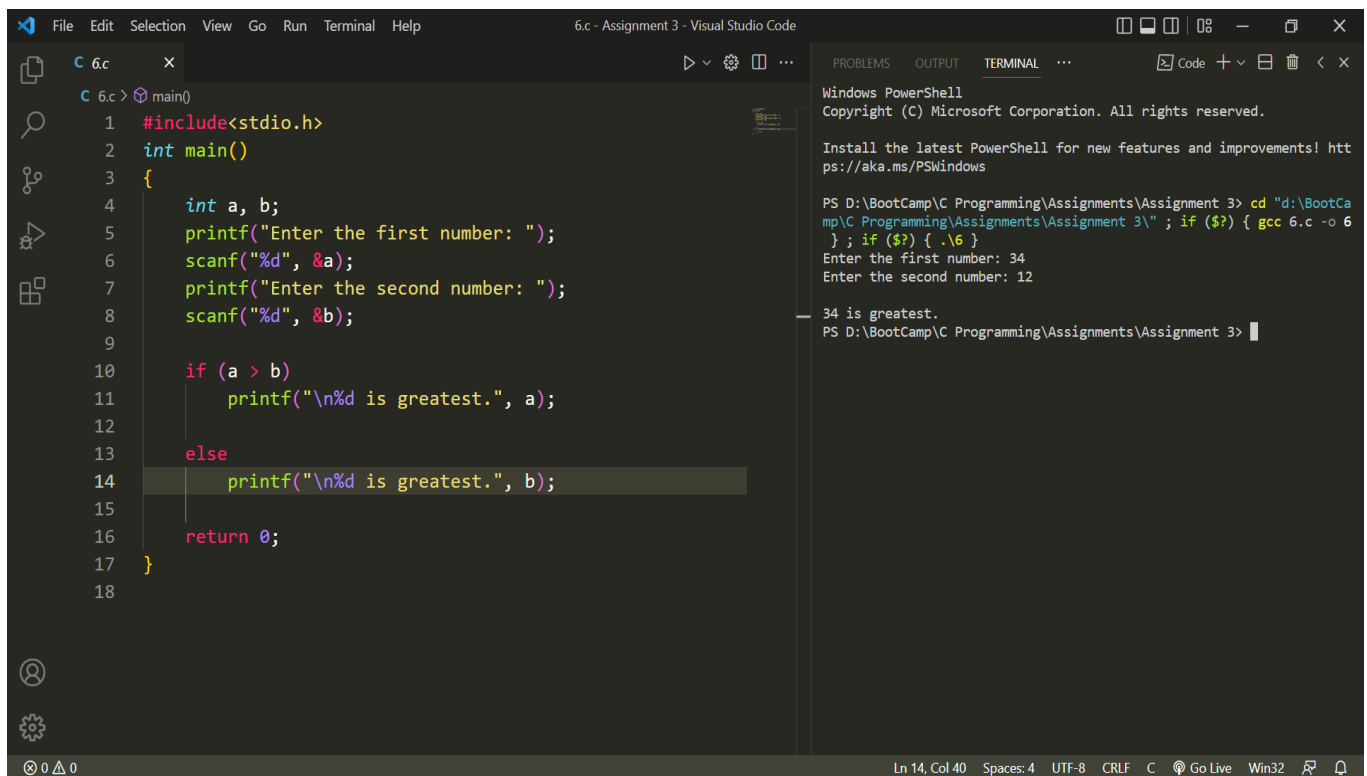
```
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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCa
mp\C Programming\Assignments\Assignment 3\" ; if ($?) { gcc 5.c -o 5
} ; if ($?) { .\5 }
Enter a number: 647

647 is a three digit number
PS D:\BootCamp\C Programming\Assignments\Assignment 3> |
```

Q6.



The screenshot shows the Visual Studio Code editor with a C file named `6.c`. The code is as follows:

```
1 #include<stdio.h>
2 int main()
3 {
4     int a, b;
5     printf("Enter the first number: ");
6     scanf("%d", &a);
7     printf("Enter the second number: ");
8     scanf("%d", &b);
9
10     if (a > b)
11         printf("\n%d is greatest.", a);
12
13     else
14         printf("\n%d is greatest.", b);
15
16     return 0;
17 }
18
```

The terminal on the right shows the execution of the program:

```
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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCa
mp\C Programming\Assignments\Assignment 3\" ; if ($?) { gcc 6.c -o 6
} ; if ($?) { .\6 }
Enter the first number: 34
Enter the second number: 12

34 is greatest.
PS D:\BootCamp\C Programming\Assignments\Assignment 3> |
```

Q7.

The screenshot shows a Visual Studio Code editor with a C program named `7.c` open. The program prompts the user to enter values for `a`, `b`, and `c`, calculates the discriminant `D = b*b - 4*a*c`, and prints the nature of the roots based on the value of `D`. The terminal window on the right shows the execution of the program, where the user enters `a=2`, `b=5`, and `c=2`, resulting in the output: "The roots of given QE are real and distinct".

```
7.c - Assignment 3 - Visual Studio Code

C 7.c x
C 7.c > main()
1 #include<stdio.h>
2 int main()
3 {
4     int a, b, c, D;
5     printf("Enter the value of a: ");
6     scanf("%d", &a);
7     printf("Enter the value of b: ");
8     scanf("%d", &b);
9     printf("Enter the value of c: ");
10    scanf("%d", &c);
11
12    D = b*b - 4*a*c;
13
14    if(D > 0)
15        printf("\nThe roots of given QE are real and distinct");
16
17    else if (D == 0)
18        printf("\nThe roots of given QE are real and equal");
19
20    else
21        printf("\nThe roots of given QE are imaginary");
22
23    return 0;
24 }
```

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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Programming\Assignments\Assignment 3\" ; if (\$?) { gcc 7.c -o 7 } ; if (\$?) { .\7 }

Enter the value of a: 2
Enter the value of b: 5
Enter the value of c: 2

The roots of given QE are real and distinct
PS D:\BootCamp\C Programming\Assignments\Assignment 3> |

Ln 5, Col 38 Spaces: 4 UTF-8 CRLF C Go Live Win32

Q8.

The screenshot shows a Visual Studio Code editor with a C program named `8.c` open. The program prompts the user to enter a year and checks if it is a leap year based on the rules: a year is a leap year if it is divisible by 4 and not by 100, or if it is divisible by 400. The terminal window on the right shows the execution of the program, where the user enters `3000`, resulting in the output: "3000 is not a leap year".

```
8.c - Assignment 3 - Visual Studio Code

C 8.c x
C 8.c > main()
1 #include<stdio.h>
2 int main()
3 {
4     int year;
5     printf("Enter a year: ");
6     scanf("%d", &year);
7
8     if (year % 100 != 0)
9     {
10        if (year % 4 == 0)
11            printf("\n%d is a leap year", year);
12
13        else
14            printf("\n%d is not a leap year", year);
15    }
16
17    else
18    {
19        if (year % 400 == 0)
20            printf("\n%d is a leap year", year);
21
22        else
23            printf("\n%d is not a leap year", year);
24    }
25
26    return 0;
27 }
```

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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Programming\Assignments\Assignment 3\" ; if (\$?) { gcc 8.c -o 8 } ; if (\$?) { .\8 }

Enter a year: 3000

3000 is not a leap year
PS D:\BootCamp\C Programming\Assignments\Assignment 3> |

Ln 11, Col 30 Spaces: 4 UTF-8 CRLF C Go Live Win32

Q9.

The screenshot shows a Visual Studio Code editor with a C program named `9.c`. The program prompts the user to enter three numbers and then determines the greatest one using nested if-else statements. The terminal window on the right shows the execution of the program, where the user enters 34, 55, and 55, resulting in the output "55 is a greatest number".

```
9.c - Assignment 3 - Visual Studio Code

1  #include<stdio.h>
2  int main()
3  {
4      int a, b, c;
5      printf("Enter the first number: ");
6      scanf("%d", &a);
7      printf("Enter the second number: ");
8      scanf("%d", &b);
9      printf("Enter the third number: ");
10     scanf("%d", &c);
11
12     if (a > b)
13     {
14         if (a > c)
15             printf("\n%d is a greatest number", a);
16         else
17             printf("\n%d is a greatest number", c);
18     }
19     else
20     {
21         if (b > c)
22             printf("\n%d is a greatest number", b);
23         else
24             printf("\n%d is a greatest number", c);
25     }
26     return 0;
27 }
```

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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Programming\Assignments\Assignment 3\" ; if (\$?) { gcc 9.c -o 9 } ; if (\$?) { .\9 }
Enter the first number: 34
Enter the second number: 55
Enter the third number: 55

55 is a greatest number
PS D:\BootCamp\C Programming\Assignments\Assignment 3>

Q10.

The screenshot shows a Visual Studio Code editor with a C program named `10.c`. The program prompts the user to enter the cost price (CP) and selling price (SP) of a product. It then calculates the profit or loss percentage based on the relationship between CP and SP. The terminal window on the right shows the execution of the program, where the user enters 5000 for CP and 2500 for SP, resulting in the output "The loss percentage is: 50.000 %".

```
10.c - Assignment 3 - Visual Studio Code

1  #include<stdio.h>
2  int main()
3  {
4      float CP, SP, profit, profit_percent, loss, loss_percent;
5      printf("Enter Cost Price of a product(in Rupees): ");
6      scanf("%f", &CP);
7      printf("Enter Selling Price of a product(in Rupees): ");
8      scanf("%f", &SP);
9
10     if (SP > CP)
11     {
12         profit = SP - CP;
13         profit_percent = (profit / CP) * 100;
14         printf("\nThe profit percentage is: %.3f %%", profit_percent);
15     }
16
17     else
18     {
19         loss = CP - SP;
20         loss_percent = (loss / CP) * 100;
21         printf("\nThe loss percentage is: %.3f %%", loss_percent);
22     }
23
24     return 0;
25 }
```

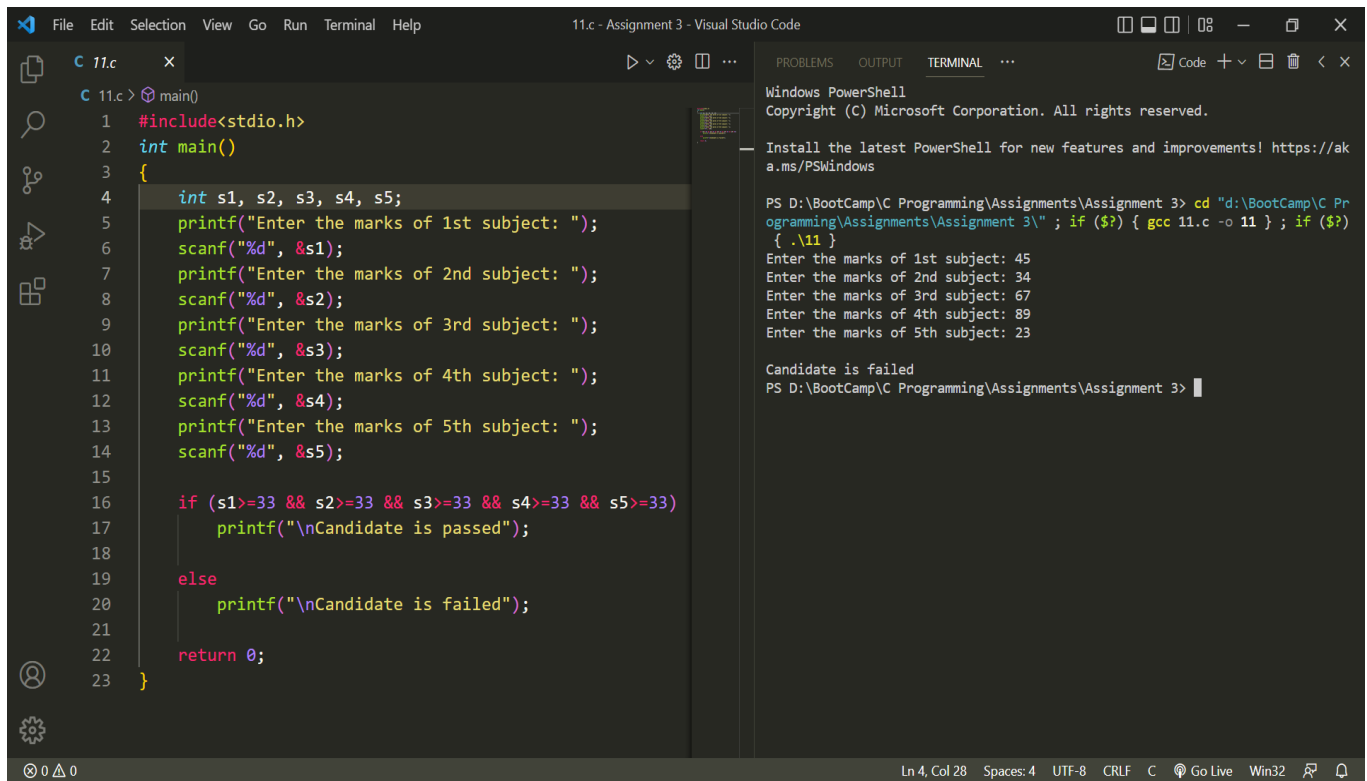
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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\Bo
otCamp\C Programming\Assignments\Assignment 3\" ; if (\$?) { gcc
10.c -o 10 } ; if (\$?) { .\10 }
Enter Cost Price of a product(in Rupees): 5000
Enter Selling Price of a product(in Rupees): 2500

The loss percentage is: 50.000 %
PS D:\BootCamp\C Programming\Assignments\Assignment 3>

Q11.



The screenshot shows a Visual Studio Code window with a C file named 11.c. The code prompts the user to enter marks for five subjects. It then checks if all marks are greater than or equal to 33. If yes, it prints "Candidate is passed"; otherwise, it prints "Candidate is failed". The terminal shows the program's execution with sample input marks and the resulting output.

```
11.c - Assignment 3 - Visual Studio Code

11.c > main()
1  #include<stdio.h>
2  int main()
3  {
4      int s1, s2, s3, s4, s5;
5      printf("Enter the marks of 1st subject: ");
6      scanf("%d", &s1);
7      printf("Enter the marks of 2nd subject: ");
8      scanf("%d", &s2);
9      printf("Enter the marks of 3rd subject: ");
10     scanf("%d", &s3);
11     printf("Enter the marks of 4th subject: ");
12     scanf("%d", &s4);
13     printf("Enter the marks of 5th subject: ");
14     scanf("%d", &s5);
15
16     if (s1>=33 && s2>=33 && s3>=33 && s4>=33 && s5>=33)
17         printf("\nCandidate is passed");
18
19     else
20         printf("\nCandidate is failed");
21
22     return 0;
23 }
```

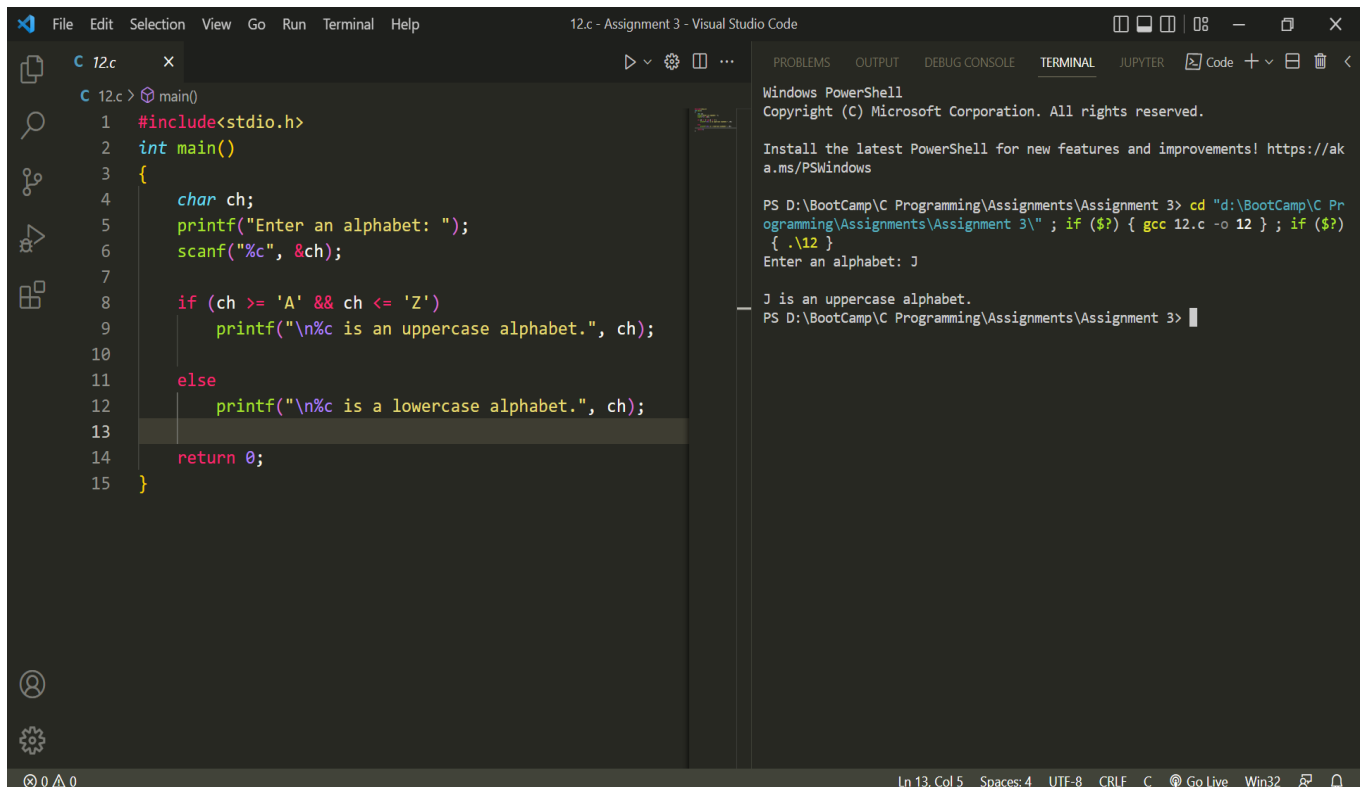
Windows PowerShell
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```
PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Programming\Assignments\Assignment 3\" ; if ($?) { gcc 11.c -o 11 } ; if ($?) { .\11 }
Enter the marks of 1st subject: 45
Enter the marks of 2nd subject: 34
Enter the marks of 3rd subject: 67
Enter the marks of 4th subject: 89
Enter the marks of 5th subject: 23

Candidate is failed
PS D:\BootCamp\C Programming\Assignments\Assignment 3>
```

Q12.



The screenshot shows a Visual Studio Code window with a C file named 12.c. The code prompts the user to enter an alphabet. It then checks if the character is an uppercase letter (A-Z) or a lowercase letter (a-z). The terminal shows the program's execution with the input 'J' and the resulting output.

```
12.c - Assignment 3 - Visual Studio Code

12.c > main()
1  #include<stdio.h>
2  int main()
3  {
4      char ch;
5      printf("Enter an alphabet: ");
6      scanf("%c", &ch);
7
8      if (ch >= 'A' && ch <= 'Z')
9          printf("\n%c is an uppercase alphabet.", ch);
10
11     else
12         printf("\n%c is a lowercase alphabet.", ch);
13
14     return 0;
15 }
```

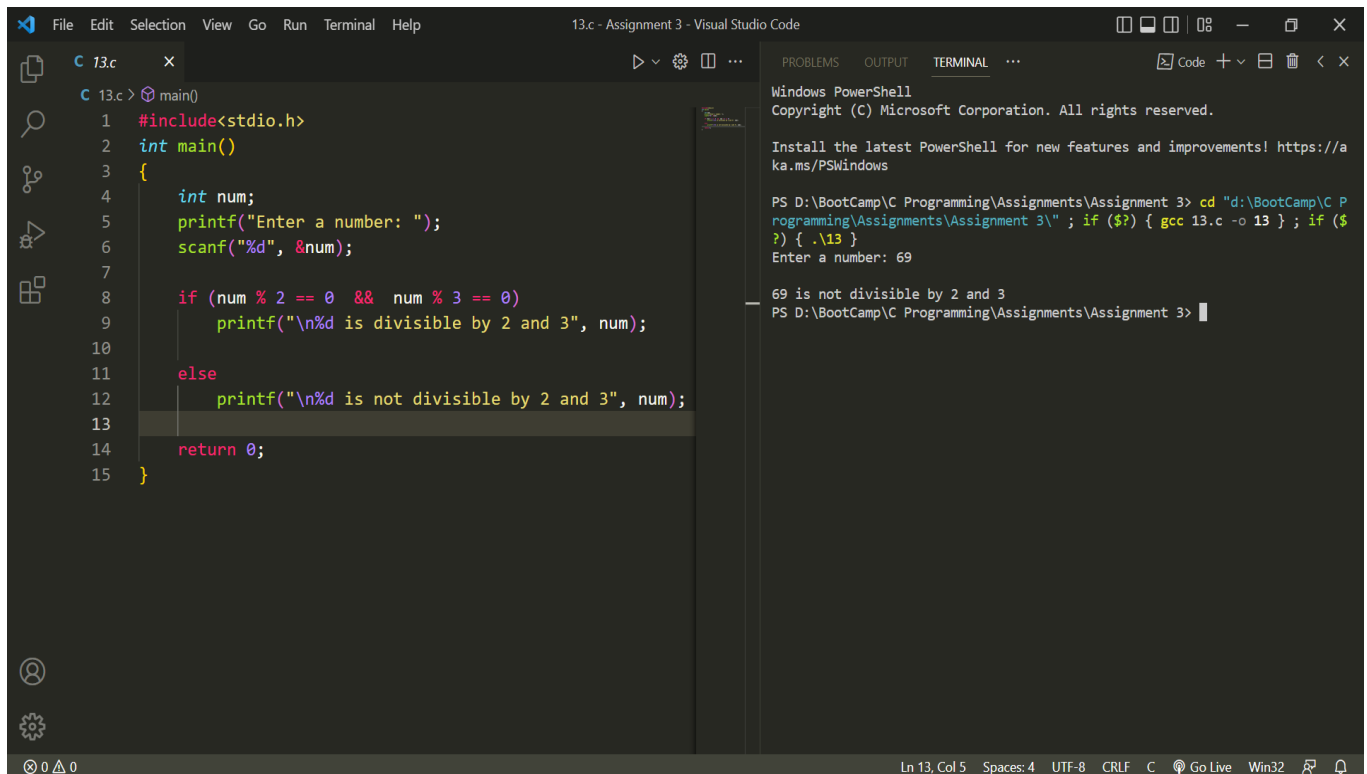
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```
PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Programming\Assignments\Assignment 3\" ; if ($?) { gcc 12.c -o 12 } ; if ($?) { .\12 }
Enter an alphabet: J

J is an uppercase alphabet.
PS D:\BootCamp\C Programming\Assignments\Assignment 3>
```

Q13.

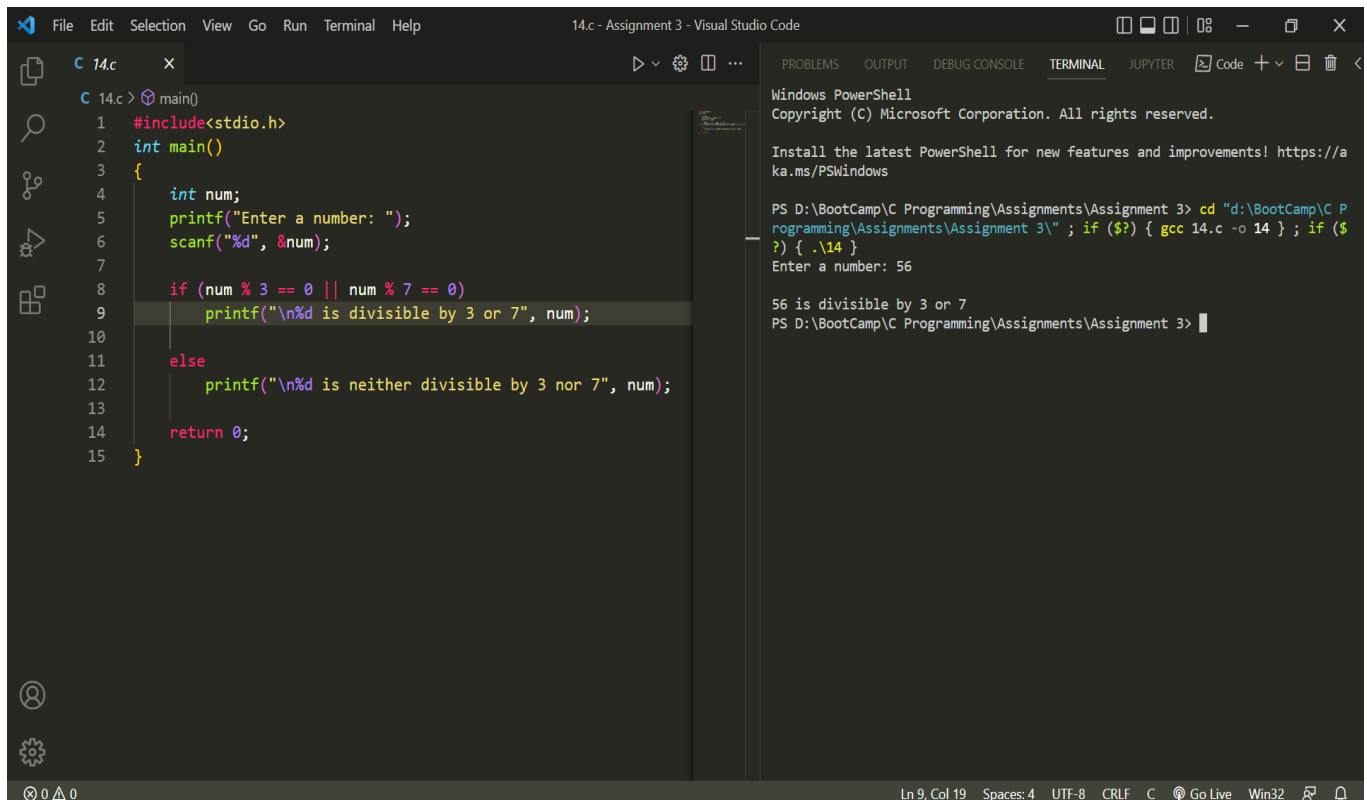


The screenshot shows the Visual Studio Code editor with a C file named 13.c. The code is as follows:

```
1 #include<stdio.h>
2 int main()
3 {
4     int num;
5     printf("Enter a number: ");
6     scanf("%d", &num);
7
8     if (num % 2 == 0 && num % 3 == 0)
9         printf("\n%d is divisible by 2 and 3", num);
10
11    else
12        printf("\n%d is not divisible by 2 and 3", num);
13
14    return 0;
15 }
```

The terminal window on the right shows the execution of the program. The user enters the number 69, and the program outputs: "69 is not divisible by 2 and 3".

Q14.

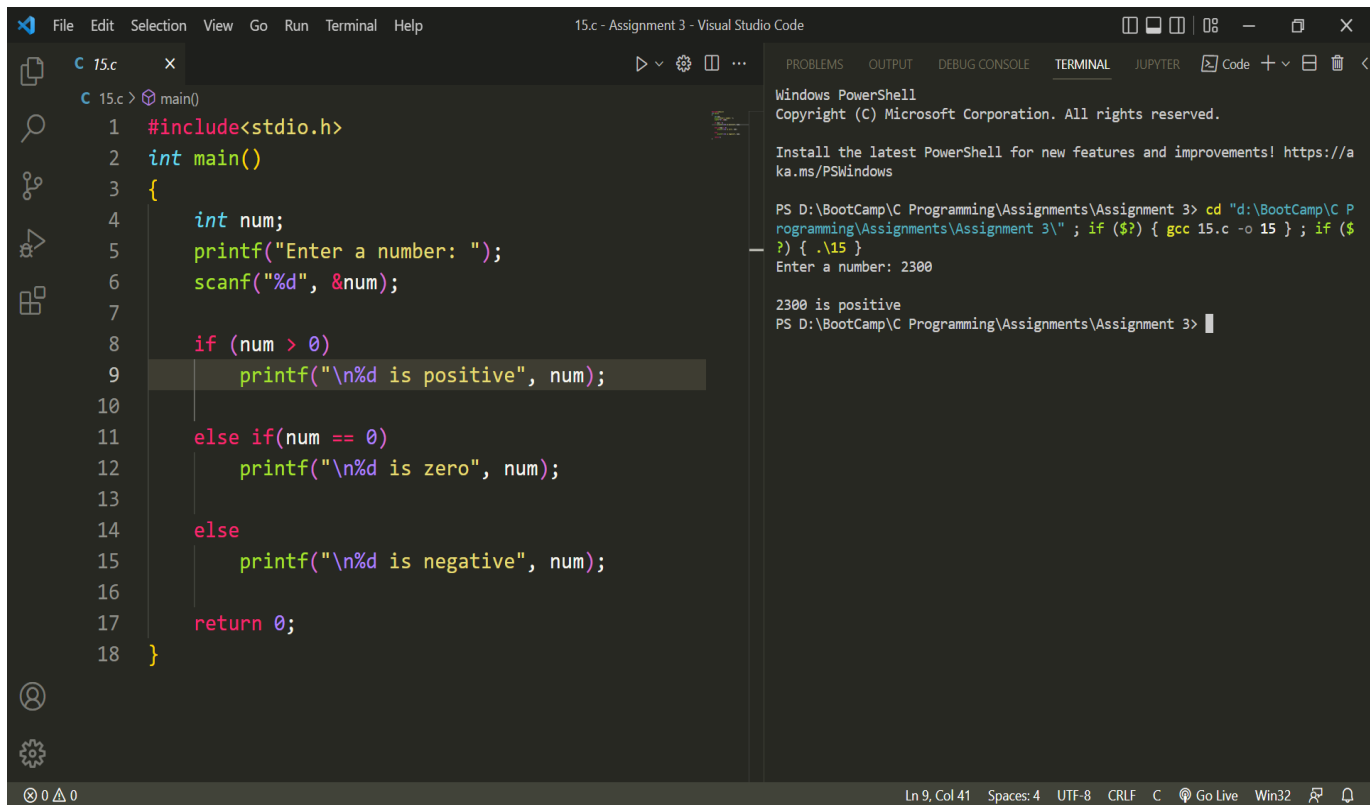


The screenshot shows the Visual Studio Code editor with a C file named 14.c. The code is as follows:

```
1 #include<stdio.h>
2 int main()
3 {
4     int num;
5     printf("Enter a number: ");
6     scanf("%d", &num);
7
8     if (num % 3 == 0 || num % 7 == 0)
9         printf("\n%d is divisible by 3 or 7", num);
10
11    else
12        printf("\n%d is neither divisible by 3 nor 7", num);
13
14    return 0;
15 }
```

The terminal window on the right shows the execution of the program. The user enters the number 56, and the program outputs: "56 is divisible by 3 or 7".

Q15.



The screenshot shows the Visual Studio Code editor with a C program named 15.c. The program is a simple number checker. The terminal on the right shows the execution of the program, where the user enters 2300, and the program outputs "2300 is positive".

```
15.c - Assignment 3 - Visual Studio Code
```

```
1 #include<stdio.h>
2 int main()
3 {
4     int num;
5     printf("Enter a number: ");
6     scanf("%d", &num);
7
8     if (num > 0)
9         printf("\n%d is positive", num);
10
11     else if (num == 0)
12         printf("\n%d is zero", num);
13
14     else
15         printf("\n%d is negative", num);
16
17     return 0;
18 }
```

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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Programming\Assignments\Assignment 3\"; if (\$?) { gcc 15.c -o 15 }; if (\$?) { .\15 }

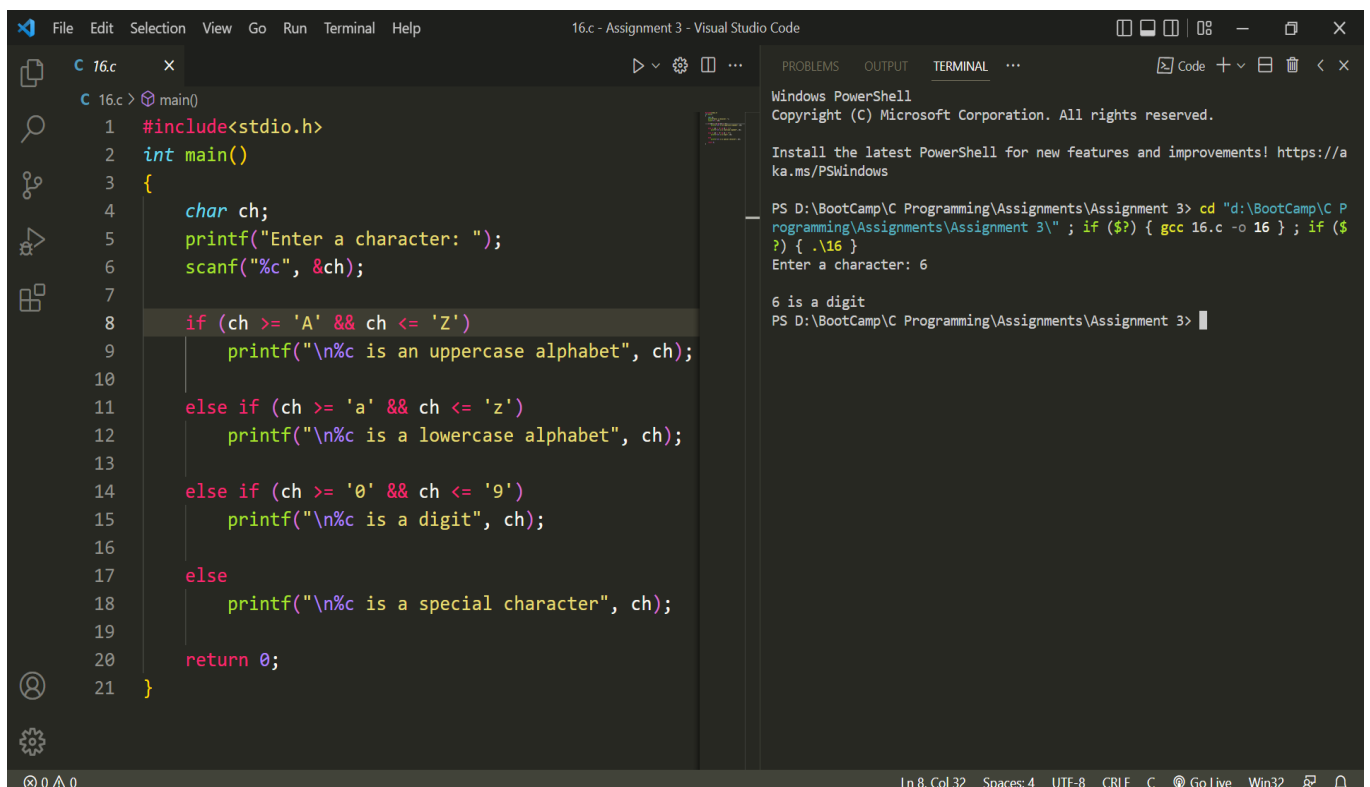
Enter a number: 2300

2300 is positive

PS D:\BootCamp\C Programming\Assignments\Assignment 3> |

Ln 9, Col 41 Spaces: 4 UTF-8 CRLF C Go Live Win32

Q16.



The screenshot shows the Visual Studio Code editor with a C program named 16.c. The program is a character classifier. The terminal on the right shows the execution of the program, where the user enters the character '6', and the program outputs "6 is a digit".

```
16.c - Assignment 3 - Visual Studio Code
```

```
1 #include<stdio.h>
2 int main()
3 {
4     char ch;
5     printf("Enter a character: ");
6     scanf("%c", &ch);
7
8     if (ch >= 'A' && ch <= 'Z')
9         printf("\n%c is an uppercase alphabet", ch);
10
11     else if (ch >= 'a' && ch <= 'z')
12         printf("\n%c is a lowercase alphabet", ch);
13
14     else if (ch >= '0' && ch <= '9')
15         printf("\n%c is a digit", ch);
16
17     else
18         printf("\n%c is a special character", ch);
19
20     return 0;
21 }
```

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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Programming\Assignments\Assignment 3\"; if (\$?) { gcc 16.c -o 16 }; if (\$?) { .\16 }

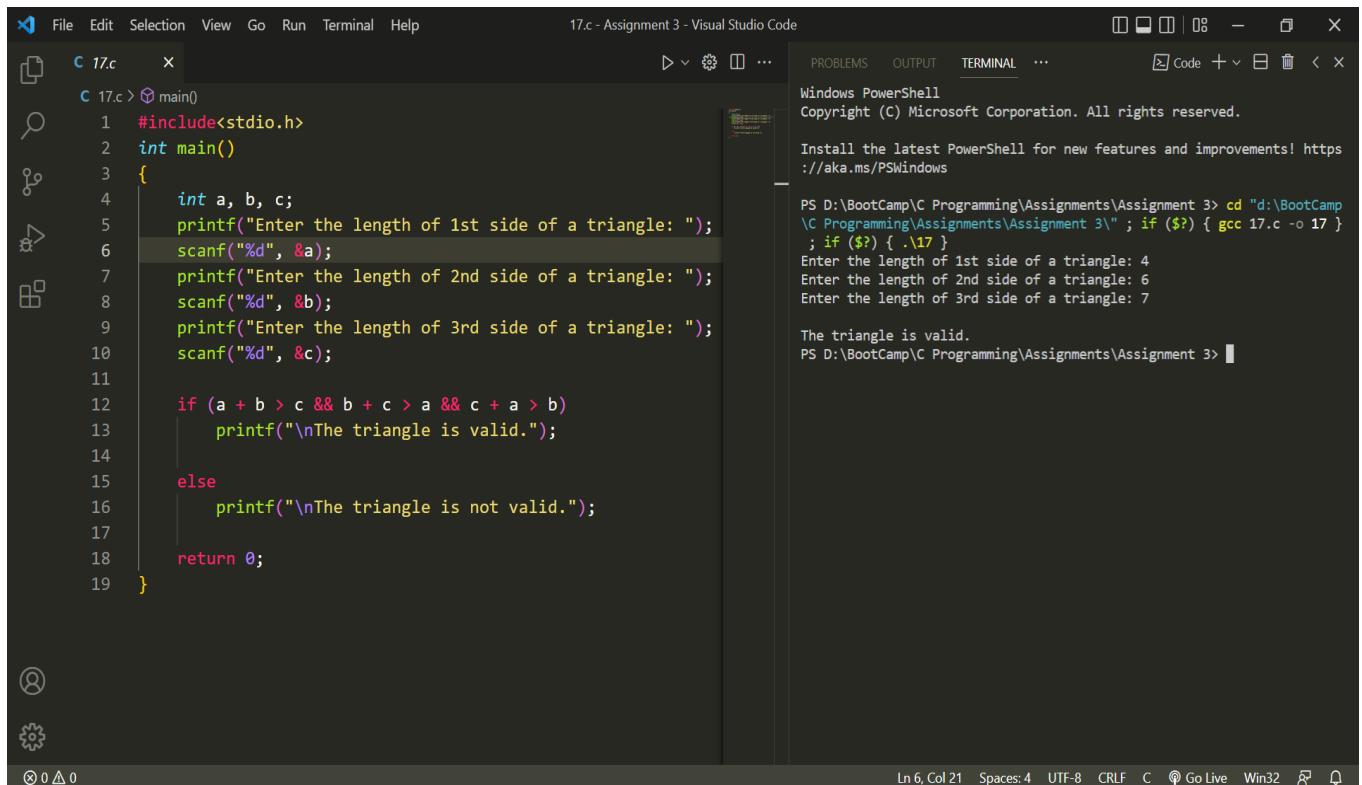
Enter a character: 6

6 is a digit

PS D:\BootCamp\C Programming\Assignments\Assignment 3> |

Ln 8, Col 32 Spaces: 4 UTF-8 CRLF C Go Live Win32

Q17.



The screenshot shows a Visual Studio Code editor with a C file named `17.c`. The code is a program to validate a triangle based on three side lengths. The terminal on the right shows the program being compiled and executed, with input values 4, 6, and 7, resulting in the output "The triangle is valid."

```
17.c - Assignment 3 - Visual Studio Code

17.c
1 #include<stdio.h>
2 int main()
3 {
4     int a, b, c;
5     printf("Enter the length of 1st side of a triangle: ");
6     scanf("%d", &a);
7     printf("Enter the length of 2nd side of a triangle: ");
8     scanf("%d", &b);
9     printf("Enter the length of 3rd side of a triangle: ");
10    scanf("%d", &c);
11
12    if (a + b > c && b + c > a && c + a > b)
13        printf("\nThe triangle is valid.");
14
15    else
16        printf("\nThe triangle is not valid.");
17
18    return 0;
19 }
```

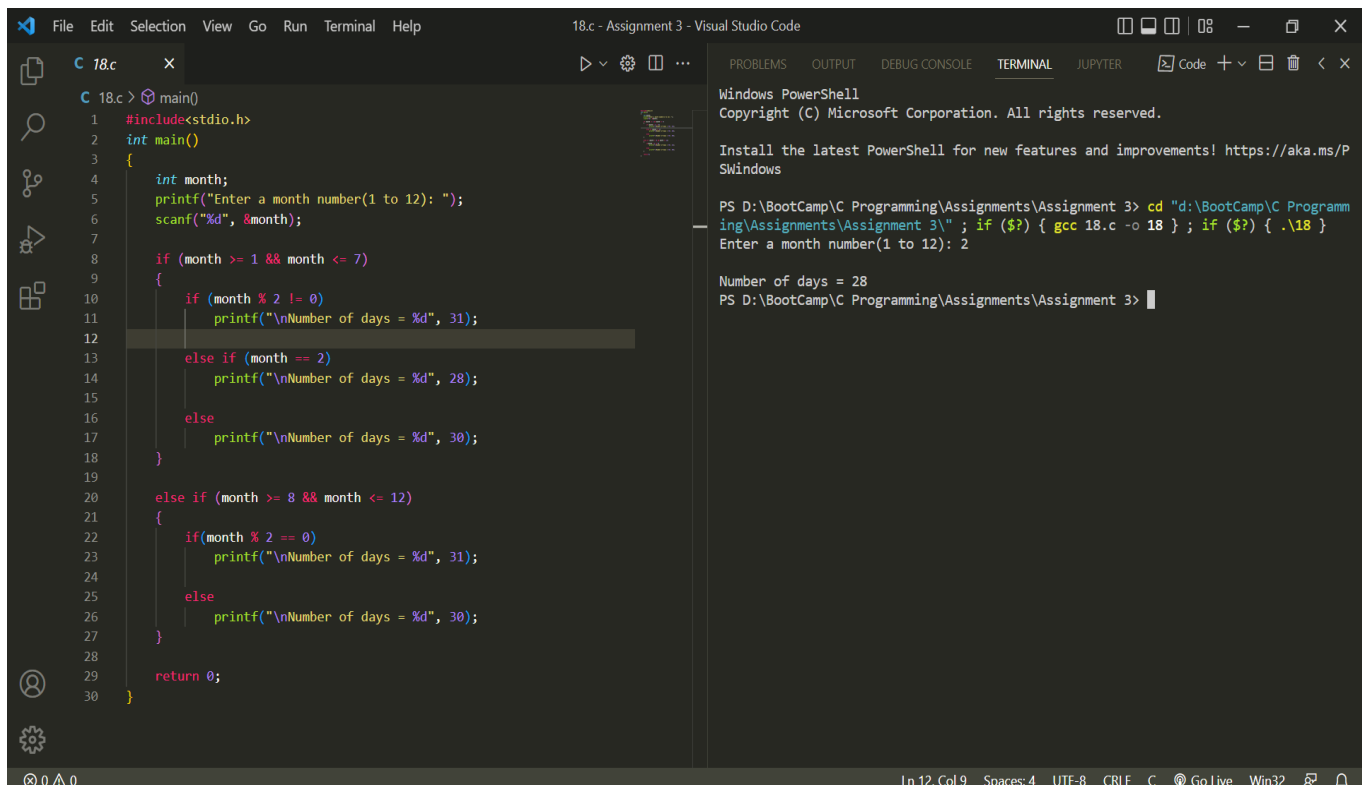
```
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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Programming\Assignments\Assignment 3\"; if ($?) { gcc 17.c -o 17 }
; if ($?) { .\17 }
Enter the length of 1st side of a triangle: 4
Enter the length of 2nd side of a triangle: 6
Enter the length of 3rd side of a triangle: 7

The triangle is valid.
PS D:\BootCamp\C Programming\Assignments\Assignment 3>
```

Q18.



The screenshot shows a Visual Studio Code editor with a C file named `18.c`. The code is a program to calculate the number of days in a given month. The terminal on the right shows the program being compiled and executed, with input value 2, resulting in the output "Number of days = 28".

```
18.c - Assignment 3 - Visual Studio Code

18.c
1 #include<stdio.h>
2 int main()
3 {
4     int month;
5     printf("Enter a month number(1 to 12): ");
6     scanf("%d", &month);
7
8     if (month >= 1 && month <= 7)
9     {
10        if (month % 2 != 0)
11            printf("\nNumber of days = %d", 31);
12
13        else if (month == 2)
14            printf("\nNumber of days = %d", 28);
15
16        else
17            printf("\nNumber of days = %d", 30);
18    }
19
20    else if (month >= 8 && month <= 12)
21    {
22        if (month % 2 == 0)
23            printf("\nNumber of days = %d", 31);
24
25        else
26            printf("\nNumber of days = %d", 30);
27    }
28
29    return 0;
30 }
```

```
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PS D:\BootCamp\C Programming\Assignments\Assignment 3> cd "d:\BootCamp\C Programming\Assignments\Assignment 3\"; if ($?) { gcc 18.c -o 18 } ; if ($?) { .\18 }
Enter a month number(1 to 12): 2

Number of days = 28
PS D:\BootCamp\C Programming\Assignments\Assignment 3>
```