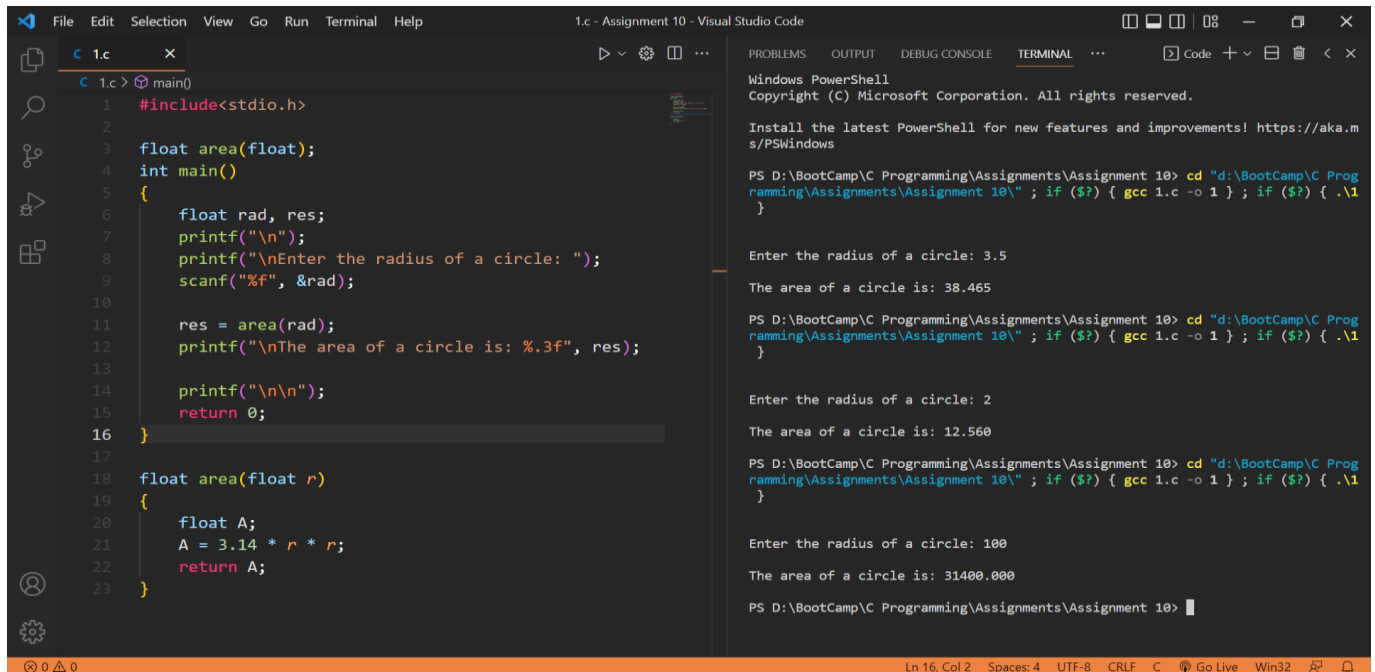


ASSIGNMENT – 10

Q1.



```
1.c - Assignment 10 - Visual Studio Code
1.c > main()
1 #include<stdio.h>
2
3 float area(float);
4 int main()
5 {
6     float rad, res;
7     printf("\n");
8     printf("\nEnter the radius of a circle: ");
9     scanf("%f", &rad);
10
11     res = area(rad);
12     printf("\nThe area of a circle is: %.3f", res);
13
14     printf("\n\n");
15     return 0;
16 }
17
18 float area(float r)
19 {
20     float A;
21     A = 3.14 * r * r;
22     return A;
23 }
```

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if (\$?) { gcc 1.c -o 1 }; if (\$?) { .\1 }

Enter the radius of a circle: 3.5

The area of a circle is: 38.465

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if (\$?) { gcc 1.c -o 1 }; if (\$?) { .\1 }

Enter the radius of a circle: 2

The area of a circle is: 12.560

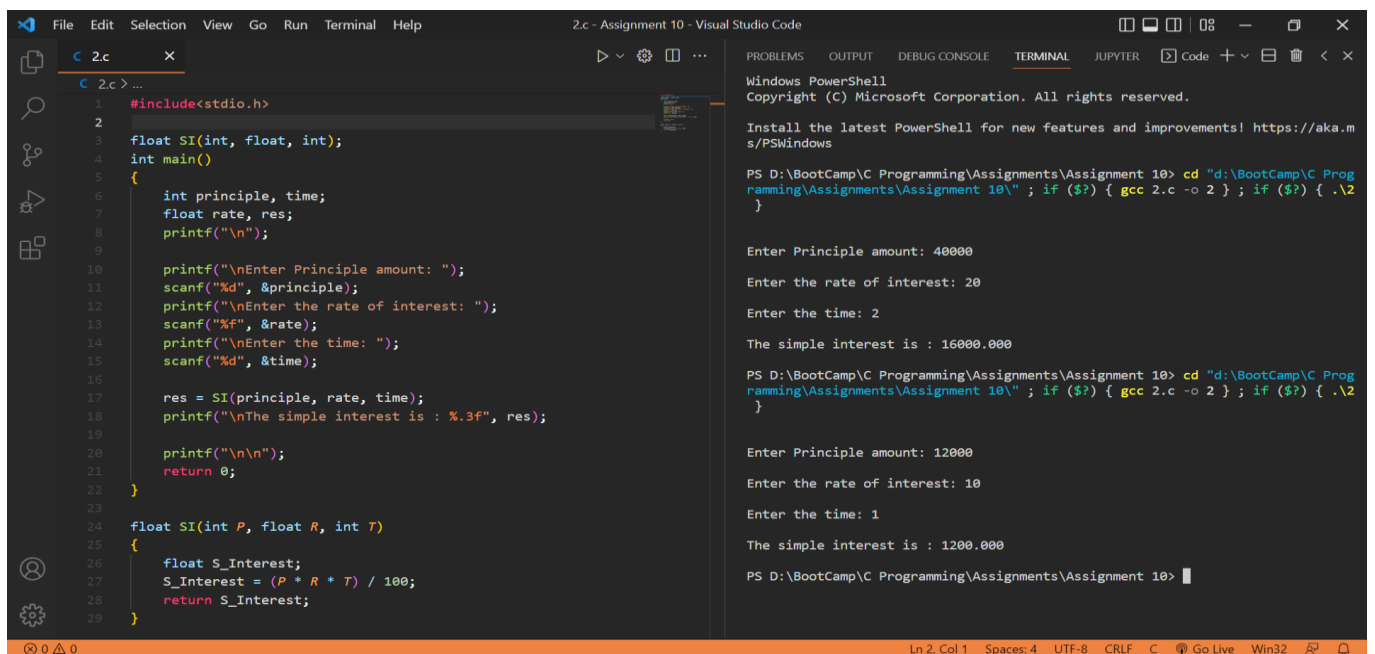
PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if (\$?) { gcc 1.c -o 1 }; if (\$?) { .\1 }

Enter the radius of a circle: 100

The area of a circle is: 31400.000

PS D:\BootCamp\C Programming\Assignments\Assignment 10>

Q2.



```
2.c - Assignment 10 - Visual Studio Code
2.c > ...
1 #include<stdio.h>
2
3 float SI(int, float, int);
4 int main()
5 {
6     int principle, time;
7     float rate, res;
8     printf("\n");
9
10    printf("\nEnter Principle amount: ");
11    scanf("%d", &principle);
12    printf("\nEnter the rate of interest: ");
13    scanf("%f", &rate);
14    printf("\nEnter the time: ");
15    scanf("%d", &time);
16
17    res = SI(principle, rate, time);
18    printf("\nThe simple interest is : %.3f", res);
19
20    printf("\n\n");
21    return 0;
22 }
23
24 float SI(int P, float R, int T)
25 {
26     float S_interest;
27     S_interest = (P * R * T) / 100;
28     return S_interest;
29 }
```

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if (\$?) { gcc 2.c -o 2 }; if (\$?) { .\2 }

Enter Principle amount: 40000

Enter the rate of interest: 20

Enter the time: 2

The simple interest is : 16000.000

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if (\$?) { gcc 2.c -o 2 }; if (\$?) { .\2 }

Enter Principle amount: 12000

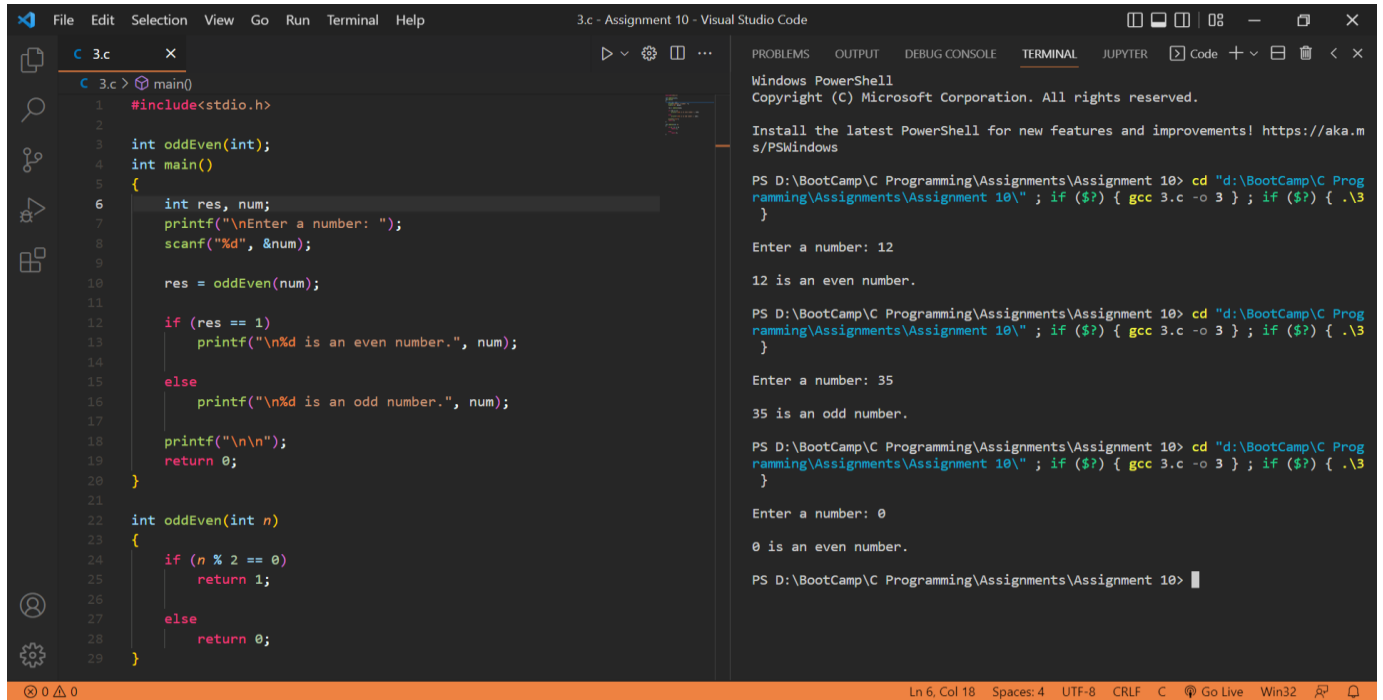
Enter the rate of interest: 10

Enter the time: 1

The simple interest is : 1200.000

PS D:\BootCamp\C Programming\Assignments\Assignment 10>

Q3.



```
File Edit Selection View Go Run Terminal Help
3.c - Assignment 10 - Visual Studio Code

C 3.c > main()
1 #include<stdio.h>
2
3 int oddEven(int);
4 int main()
5 {
6     int res, num;
7     printf("\nEnter a number: ");
8     scanf("%d", &num);
9
10    res = oddEven(num);
11
12    if (res == 1)
13        printf("\n%d is an even number.", num);
14    else
15        printf("\n%d is an odd number.", num);
16
17    printf("\n\n");
18    return 0;
19 }
20
21
22 int oddEven(int n)
23 {
24     if (n % 2 == 0)
25         return 1;
26     else
27         return 0;
28 }
29

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER Code
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if ($?) { gcc 3.c -o 3 }; if ($?) { .\3 }

Enter a number: 12

12 is an even number.

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if ($?) { gcc 3.c -o 3 }; if ($?) { .\3 }

Enter a number: 35

35 is an odd number.

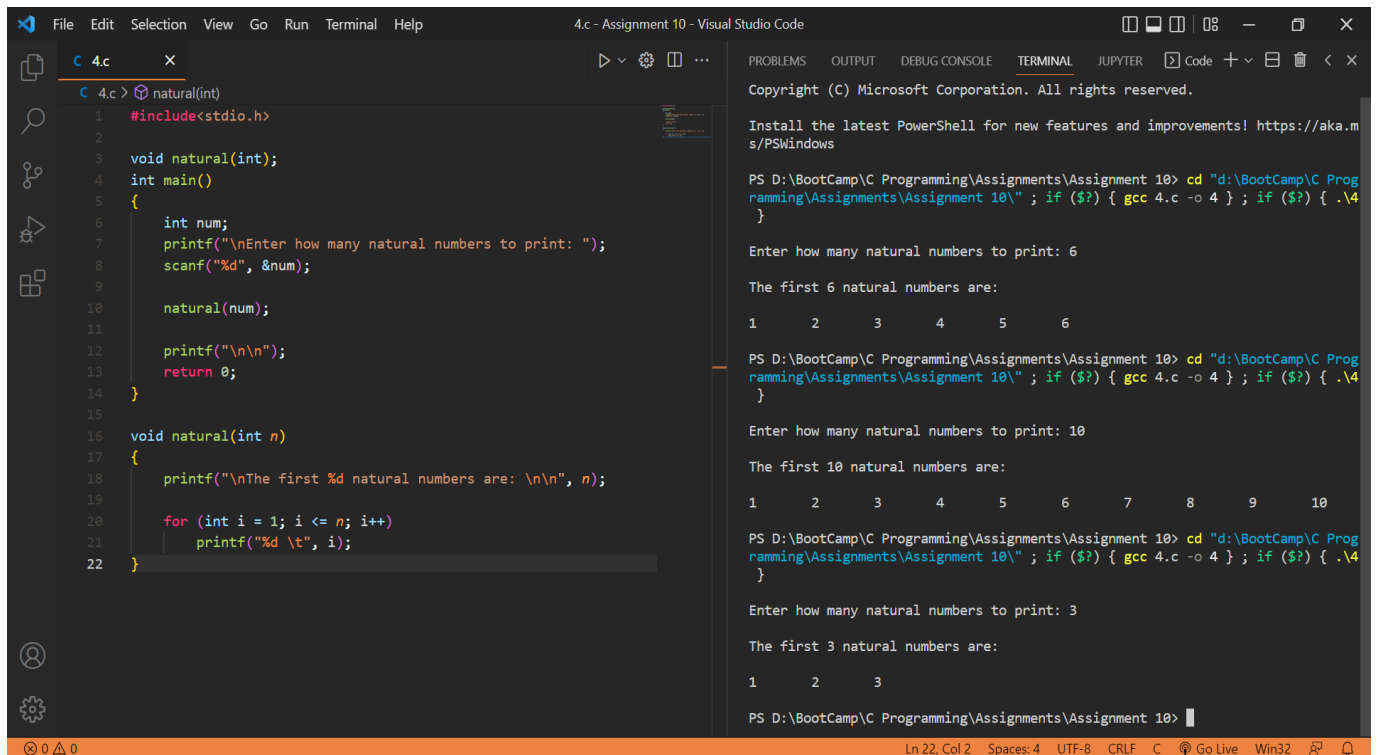
PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if ($?) { gcc 3.c -o 3 }; if ($?) { .\3 }

Enter a number: 0

0 is an even number.

PS D:\BootCamp\C Programming\Assignments\Assignment 10> |
```

Q4.



```
File Edit Selection View Go Run Terminal Help
4.c - Assignment 10 - Visual Studio Code

C 4.c > natural(int)
1 #include<stdio.h>
2
3 void natural(int);
4 int main()
5 {
6     int num;
7     printf("\nEnter how many natural numbers to print: ");
8     scanf("%d", &num);
9
10    natural(num);
11
12    printf("\n\n");
13    return 0;
14 }
15
16 void natural(int n)
17 {
18     printf("\nThe first %d natural numbers are: \n\n", n);
19
20     for (int i = 1; i <= n; i++)
21         printf("%d\t", i);
22 }

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER Code
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if ($?) { gcc 4.c -o 4 }; if ($?) { .\4 }

Enter how many natural numbers to print: 6

The first 6 natural numbers are:

1 2 3 4 5 6

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if ($?) { gcc 4.c -o 4 }; if ($?) { .\4 }

Enter how many natural numbers to print: 10

The first 10 natural numbers are:

1 2 3 4 5 6 7 8 9 10

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if ($?) { gcc 4.c -o 4 }; if ($?) { .\4 }

Enter how many natural numbers to print: 3

The first 3 natural numbers are:

1 2 3

PS D:\BootCamp\C Programming\Assignments\Assignment 10> |
```

Q5.

```
File Edit Selection View Go Run Terminal Help
5.c - Assignment 10 - Visual Studio Code

C 5.c x
C 5.c > main()
1 #include<stdio.h>
2
3 void oddNatural(int);
4 int main()
5 {
6     int num;
7     printf("\nEnter how many odd natural numbers to print: ");
8     scanf("%d", &num);
9
10    oddNatural(num);
11
12    printf("\n\n");
13    return 0;
14 }
15
16 void oddNatural(int n)
17 {
18     printf("\nThe first %d odd natural numbers are: \n\n", n);
19
20     for (int i = 1; i <= n; i++)
21         printf("%d\t", 2*i-1);
22 }
```

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if (\$?) { gcc 5.c -o 5 } ; if (\$?) { .\5 }

Enter how many odd natural numbers to print: 5

The first 5 odd natural numbers are:

1 3 5 7 9

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if (\$?) { gcc 5.c -o 5 } ; if (\$?) { .\5 }

Enter how many odd natural numbers to print: 12

The first 12 odd natural numbers are:

1 3 5 7 9 11 13 15 17 19 21 23

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if (\$?) { gcc 5.c -o 5 } ; if (\$?) { .\5 }

Enter how many odd natural numbers to print: 8

The first 8 odd natural numbers are:

1 3 5 7 9 11 13 15

PS D:\BootCamp\C Programming\Assignments\Assignment 10>

Ln 7, Col 26 Spaces: 4 UTF-8 CRLF C Go Live Win32

Q6.

```
File Edit Selection View Go Run Terminal Help
6.c - Assignment 10 - Visual Studio Code

C 8.c C 6.c x
C 6.c > main()
1 #include <stdio.h>
2
3 int fact(int);
4 int main()
5 {
6     int num, res;
7     printf("\nEnter a number: ");
8     scanf("%d", &num);
9
10    res = fact(num);
11
12    if (num < 0)
13        res;
14
15    else
16        printf("\nThe factorial of %d is: %d", num, res);
17
18    printf("\n\n");
19    return 0;
20 }
21
22 int fact(int n)
23 {
24     if (n == 0 || n == 1)
25         return 1;
26
27     else if (n < 0)
28     {
29         int c;
30         c = printf("\nThe factorial of %d is not defined.", n);
31         return c;
32     }
33
34     else
35     {
36         int fac = 1;
37         for (int i = 1; i <= n; i++)
38             fac = fac * i;
39
40         return fac;
41     }
42 }
```

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if (\$?) { gcc 6.c -o 6 } ; if (\$?) { .\6 }

Enter a number: 6

The factorial of 6 is: 720

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if (\$?) { gcc 6.c -o 6 } ; if (\$?) { .\6 }

Enter a number: 0

The factorial of 0 is: 1

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if (\$?) { gcc 6.c -o 6 } ; if (\$?) { .\6 }

Enter a number: -3

The factorial of -3 is not defined.

PS D:\BootCamp\C Programming\Assignments\Assignment 10>

Ln 14, Col 9 Spaces: 4 UTF-8 CRLF C Go Live Win32

Q7.

The image shows a Visual Studio Code editor window with a C program named `7.c` open. The program calculates the number of combinations of `items` selected `at a time` using a recursive `comb` function and a `fact` function for factorial calculation.

```
#include<stdio.h>

int comb(int, int);
int main()
{
    int items, selections, res;
    printf("\nEnter the number of total items: ");
    scanf("%d", &items);
    printf("\nEnter the number of selections: ");
    scanf("%d", &selections);

    res = comb(items, selections);

    if (items < selections)
        res;
    else
        printf("\nThe number of combinations of %d items selected %d
        at a time is: %d", items, selections, res);

    printf("\n\n");
    return 0;
}

int fact(int n)
{
    if (n == 0 || n == 1)
        return 1;

    if (n < 0)
    {
        int c;
        c = printf("\nThe factorial of %d is not defined.", n);
    }
}
```

The terminal window on the right shows the execution of the program in Windows PowerShell. The user enters the number of total items as 10 and the number of selections as 2. The program outputs the number of combinations as 45.

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if ($?) { gcc 7.c -o 7 } ; if ($?) { . \7 }

Enter the number of total items: 10

Enter the number of selections: 2

The number of combinations of 10 items selected 2 at a time is: 45

PS D:\BootCamp\C Programming\Assignments\Assignment 10>
```

The image shows a Visual Studio Code editor window with a C program and a terminal window.

Editor Content:

```
7.c 7.c ×
C 7.c > main()
22 }
23
24 int fact(int n)
25 {
26     if (n == 0 || n == 1)
27         return 1;
28
29     if (n < 0)
30     {
31         int c;
32         c = printf("\nThe factorial of %d is not defined.", n);
33         return c;
34     }
35
36     else
37     {
38         int fac = 1;
39         for (int i = 1; i <= n; i++)
40             fac = fac * i;
41
42         return fac;
43     }
44 }
45
46 int comb(int no, int r)
47 {
48     if (no < r)
49     {
50         int c;
51         c = printf("\nNumber of total items cannot be less than number
of selections.", no, r);
52         return c;
53     }
```

Terminal Content:

```
Windows PowerShell
Copyright (c) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if ($?) { gcc 7.c -o 7 }; if ($?) { . \7 }

Enter the number of total items: 10

Enter the number of selections: 2

The number of combinations of 10 items selected 2 at a time is: 45

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\"; if ($?) { gcc 7.c -o 7 }; if ($?) { . \7 }

Enter the number of total items: 12

Enter the number of selections: 3

The number of combinations of 12 items selected 3 at a time is: 220

PS D:\BootCamp\C Programming\Assignments\Assignment 10> |
```

Status Bar: Ln 7, Col 5 Spaces: 4 UTF-8 CRLF C Go Live Win32

The image shows a Visual Studio Code editor with a file named `7.c`. The code implements a factorial function `fact` and a combination function `comb`. The `main` function calls `fact` and `comb` with various inputs. The terminal on the right shows the output of the program, including the calculation of combinations for 10 items selected 2 at a time (45), 12 items selected 3 at a time (220), and 4 items selected 4 at a time (1).

```
7.c
1 // Copyright (C) Microsoft Corporation. All rights reserved.
2 //
3 // This code is licensed under the MIT license. See the LICENSE file in the
4 // root directory of this source tree for more details.
5
6 #include <stdio.h>
7
8 int fact(int n)
9 {
10     if (n == 0 || n == 1)
11         return 1;
12
13     if (n < 0)
14     {
15         int c;
16         c = printf("\nThe factorial of %d is not defined.", n);
17         return c;
18     }
19
20     else
21     {
22         int fac = 1;
23         for (int i = 1; i <= n; i++)
24             fac = fac * i;
25
26         return fac;
27     }
28 }
29
30 int comb(int no, int r)
31 {
32     if (no < r)
33     {
34         int c;
35         c = printf("\nNumber of total items cannot be less than number of
36         selections.", no, r);
37         return c;
38     }
39
40     else
41     {
42         int num;
43         num = ( fact(no) ) / ( fact(r) * fact(no - r) );
44         return num;
45     }
46 }
47
48 int main()
49 {
50     int items, selections, res;
51     printf("\nEnter the number of total items: ");
52     scanf("%d", &items);
53     printf("\nEnter the number of selections: ");
54     scanf("%d", &selections);
55
56     res = comb(items, selections);
57
58     if (items < selections)
59         res;
60
61     else
62         printf("\nThe number of combinations of %d items selected %d
63         at a time is: %d", items, selections, res);
64
65     printf("\n\n");
66     return 0;
67 }
```

Terminal Output:

```
Copyright (C) Microsoft Corporation. All rights reserved.
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if ($?) { gcc 7.c -o 7 } ; if ($?) { . 7 }
Enter the number of total items: 10
Enter the number of selections: 2
The number of combinations of 10 items selected 2 at a time is: 45
PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if ($?) { gcc 7.c -o 7 } ; if ($?) { . 7 }
Enter the number of total items: 12
Enter the number of selections: 3
The number of combinations of 12 items selected 3 at a time is: 220
PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if ($?) { gcc 7.c -o 7 } ; if ($?) { . 7 }
Enter the number of total items: 4
Enter the number of selections: 4
The number of combinations of 4 items selected 4 at a time is: 1
PS D:\BootCamp\C Programming\Assignments\Assignment 10>
```

Q8.

The image shows a Visual Studio Code editor with a file named `8.c`. The code implements a permutation function `perm` and a factorial function `fact`. The `main` function calls `perm` and `fact` with various inputs. The terminal on the right shows the output of the program, including the calculation of permutations for 10 items selected 4 at a time (5040).

```
8.c
1 // Copyright (C) Microsoft Corporation. All rights reserved.
2 //
3 // This code is licensed under the MIT license. See the LICENSE file in the
4 // root directory of this source tree for more details.
5
6 #include <stdio.h>
7
8 int perm(int, int);
9 int main()
10 {
11     int items, selections, res;
12     printf("\nEnter the number of total items: ");
13     scanf("%d", &items);
14     printf("\nEnter the number of selections: ");
15     scanf("%d", &selections);
16
17     res = perm(items, selections);
18
19     if (items < selections)
20         res;
21
22     else
23         printf("\nThe number of arrangements of %d items selected %d
24         at a time is: %d", items, selections, res);
25
26     printf("\n\n");
27     return 0;
28 }
29
30 int fact(int n)
31 {
32     if (n == 0 || n == 1)
33         return 1;
34
35     if (n < 0)
36     {
37         int c;
38         c = printf("\nThe factorial of %d is not defined.", n);
39         return c;
40     }
41
42     else
43     {
44         int fac = 1;
45         for (int i = 1; i <= n; i++)
46             fac = fac * i;
47
48         return fac;
49     }
50 }
51
52 int main()
53 {
54     int items, selections, res;
55     printf("\nEnter the number of total items: ");
56     scanf("%d", &items);
57     printf("\nEnter the number of selections: ");
58     scanf("%d", &selections);
59
60     res = perm(items, selections);
61
62     if (items < selections)
63         res;
64
65     else
66         printf("\nThe number of arrangements of %d items selected %d
67         at a time is: %d", items, selections, res);
68
69     printf("\n\n");
70     return 0;
71 }
```

Terminal Output:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if ($?) { gcc 8.c -o 8 } ; if ($?) { . 8 }
Enter the number of total items: 10
Enter the number of selections: 4
The number of arrangements of 10 items selected 4 at a time is: 5040
PS D:\BootCamp\C Programming\Assignments\Assignment 10>
```

```
File Edit Selection View Go Run Terminal Help
8.c - Assignment 10 - Visual Studio Code

C 8.c
C 8.c > main()
22 }
23
24 int fact(int n)
25 {
26     if (n == 0 || n == 1)
27         return 1;
28     if (n < 0)
29     {
30         int c;
31         c = printf("\nThe factorial of %d is not defined.", n);
32         return c;
33     }
34 }
35
36 else
37 {
38     int fac = 1;
39     for (int i = 1; i <= n; i++)
40         fac = fac * i;
41     return fac;
42 }
43 }
44 }
45
46 int perm(int no, int r)
47 {
48     if (no < r)
49     {
50         int c;
51         c = printf("\nNumber of total items cannot be less than number
of selections.", no, r);
52         return c;
53     }
54 }
55
56 else
57 {
58     int num;
59     num = fact(no) / fact(no - r);
60     return num;
61 }
```

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if (\$?) { gcc 8.c -o 8 } ; if (\$?) { . \8 }

Enter the number of total items: 10

Enter the number of selections: 4

The number of arrangements of 10 items selected 4 at a time is: 5040

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if (\$?) { gcc 8.c -o 8 } ; if (\$?) { . \8 }

Enter the number of total items: 5

Enter the number of selections: 3

The number of arrangements of 5 items selected 3 at a time is: 60

PS D:\BootCamp\C Programming\Assignments\Assignment 10>

Ln 9, Col 50 Spaces: 4 UTF-8 CRLF C Go Live Win32

```
File Edit Selection View Go Run Terminal Help
8.c - Assignment 10 - Visual Studio Code

C 8.c
C 8.c > main()
34 }
35
36 else
37 {
38     int fac = 1;
39     for (int i = 1; i <= n; i++)
40         fac = fac * i;
41     return fac;
42 }
43 }
44 }
45
46 int perm(int no, int r)
47 {
48     if (no < r)
49     {
50         int c;
51         c = printf("\nNumber of total items cannot be less than number
of selections.", no, r);
52         return c;
53     }
54 }
55
56 else
57 {
58     int num;
59     num = fact(no) / fact(no - r);
60     return num;
61 }
```

Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if (\$?) { gcc 8.c -o 8 } ; if (\$?) { . \8 }

Enter the number of total items: 10

Enter the number of selections: 4

The number of arrangements of 10 items selected 4 at a time is: 5040

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if (\$?) { gcc 8.c -o 8 } ; if (\$?) { . \8 }

Enter the number of total items: 5

Enter the number of selections: 3

The number of arrangements of 5 items selected 3 at a time is: 60

PS D:\BootCamp\C Programming\Assignments\Assignment 10> cd "d:\BootCamp\C Programming\Assignments\Assignment 10\" ; if (\$?) { gcc 8.c -o 8 } ; if (\$?) { . \8 }

Enter the number of total items: 3

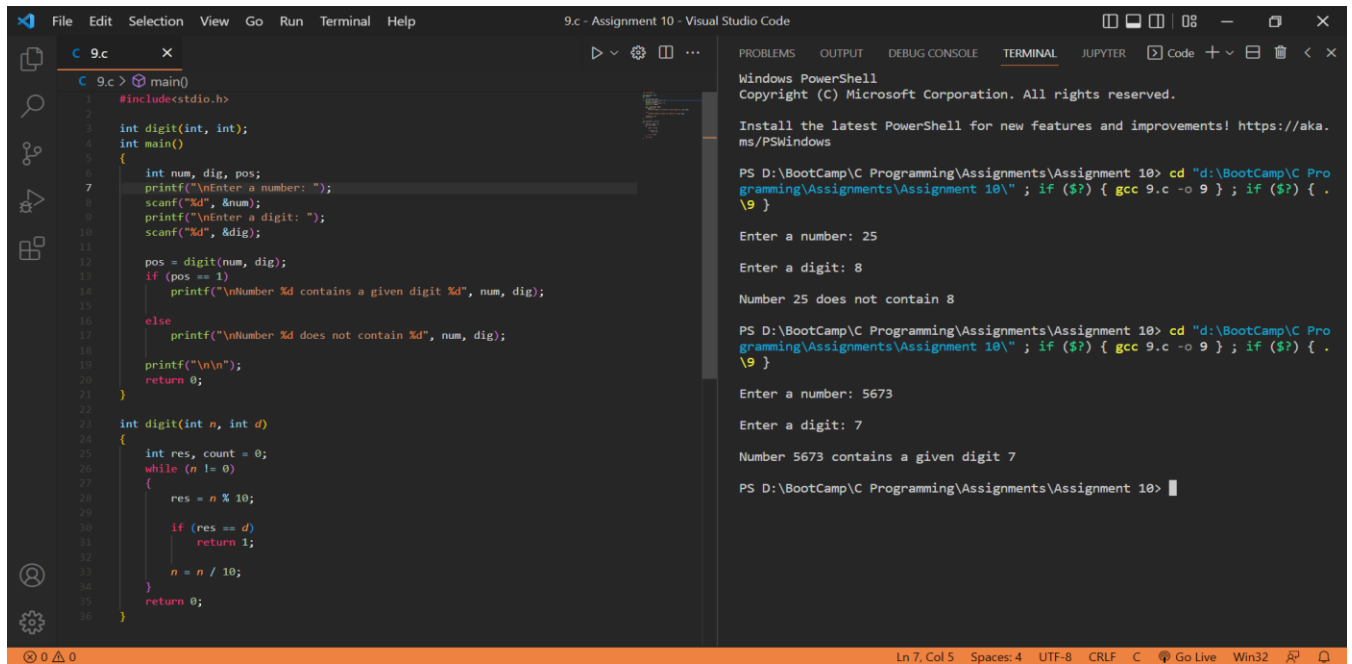
Enter the number of selections: 6

Number of total items cannot be less than number of selections.

PS D:\BootCamp\C Programming\Assignments\Assignment 10>

Ln 9, Col 50 Spaces: 4 UTF-8 CRLF C Go Live Win32

Q9.

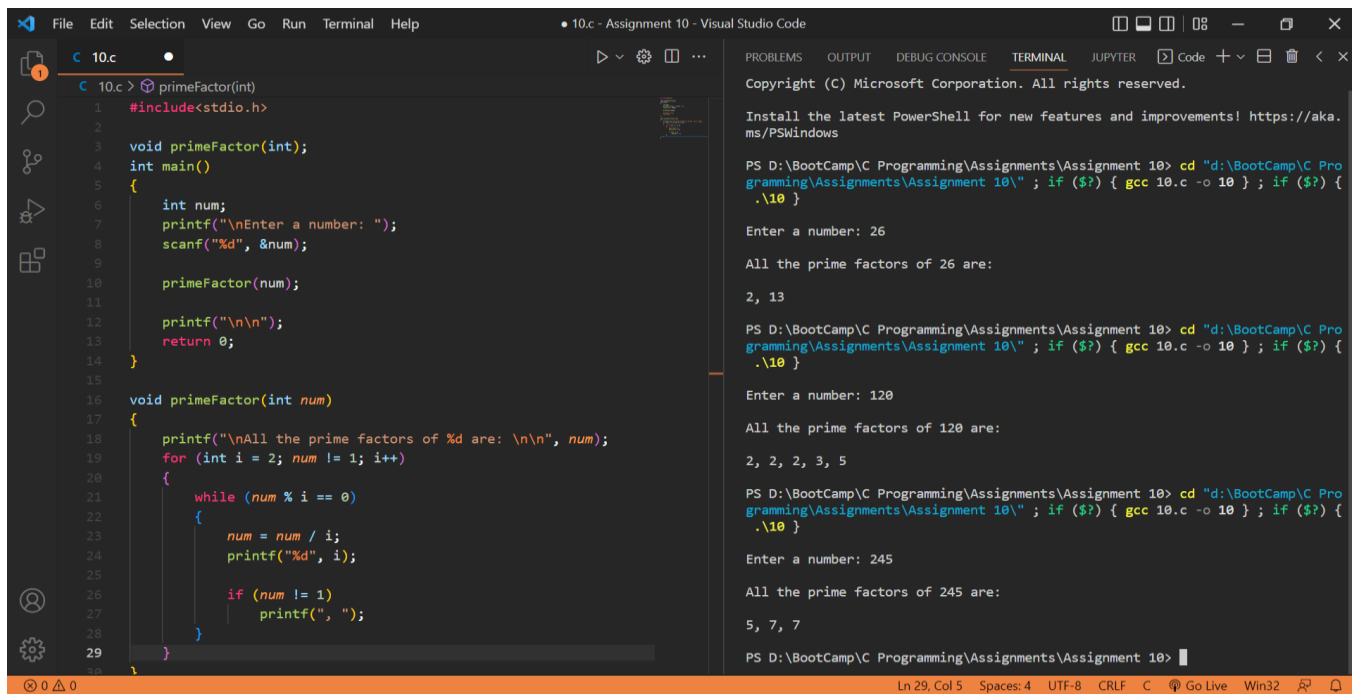


The screenshot shows a Visual Studio Code editor with a C program named `9.c` and its execution output in the terminal. The program defines a `digit` function that checks if a number contains a specific digit, and a `main` function that prompts the user for a number and a digit, then calls `digit` to check for the digit's presence.

```
1 #include<stdio.h>
2
3 int digit(int, int);
4 int main()
5 {
6     int num, dig, pos;
7     printf("\nEnter a number: ");
8     scanf("%d", &num);
9     printf("\nEnter a digit: ");
10    scanf("%d", &dig);
11
12    pos = digit(num, dig);
13    if (pos == 1)
14        printf("\nNumber %d contains a given digit %d", num, dig);
15
16    else
17        printf("\nNumber %d does not contain %d", num, dig);
18
19    printf("\n\n");
20    return 0;
21 }
22
23 int digit(int n, int d)
24 {
25     int res, count = 0;
26     while (n != 0)
27     {
28         res = n % 10;
29
30         if (res == d)
31             return 1;
32
33         n = n / 10;
34     }
35     return 0;
36 }
```

The terminal output shows the program being executed in a Windows PowerShell environment. The user enters the number 25 and the digit 8. The program outputs "Number 25 does not contain 8". The user then enters the number 5673 and the digit 7. The program outputs "Number 5673 contains a given digit 7".

Q10.



The screenshot shows a Visual Studio Code editor with a C program named `10.c` and its execution output in the terminal. The program defines a `primeFactor` function that prints all the prime factors of a given number, and a `main` function that prompts the user for a number and calls `primeFactor`.

```
1 #include<stdio.h>
2
3 void primeFactor(int);
4 int main()
5 {
6     int num;
7     printf("\nEnter a number: ");
8     scanf("%d", &num);
9
10    primeFactor(num);
11
12    printf("\n\n");
13    return 0;
14 }
15
16 void primeFactor(int num)
17 {
18     printf("\nAll the prime factors of %d are: \n\n", num);
19     for (int i = 2; num != 1; i++)
20     {
21         while (num % i == 0)
22         {
23             num = num / i;
24             printf("%d", i);
25
26             if (num != 1)
27                 printf(", ");
28         }
29     }
30 }
```

The terminal output shows the program being executed in a Windows PowerShell environment. The user enters the number 26. The program outputs "All the prime factors of 26 are: 2, 13". The user then enters the number 120. The program outputs "All the prime factors of 120 are: 2, 2, 2, 3, 5". The user then enters the number 245. The program outputs "All the prime factors of 245 are: 5, 7, 7".