

# Computer Science

Assignment

(BCSG-0002)

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Course – B. Tech (C.S.E.)

Section – AC (1)

Roll No – 26

Set No – C

Q1)

The screenshot shows the VS Code editor with the 'library.c' file open. The code defines a function `main()` that prompts the user to enter the type of book (A/B) and the number of days borrowed. It then calculates the late fee based on the input. The terminal output shows the program being executed, with the user entering 'A' for book type and '56' for days, resulting in a late fee of 236.00.

```
1 #include <stdio.h>
2
3 int main() {
4     char type;
5     int days;
6     float fee;
7
8     printf("\nEnter the type of book (A/B): ");
9     scanf("%c", &type);
10
11     printf("Enter the number of days the book is borrowed: ");
12     scanf("%d", &days);
13
14     if (type == 'A') {
15         if (days <= 7) {
16             fee = 0;
17         } else if (days <= 10) {
18             fee = (days - 7) * 2;
19         } else {
20             fee = (days - 10) * 5 + 6;
21         }
22     } else if (type == 'B') {
23         if (days <= 5) {
24             fee = 0;
25         } else if (days <= 10) {
26             fee = (days - 5) * 5;
27         } else {
28             fee = (days - 10) * 10 + 25;
29         }
30     }
31
32     printf("The late fee for the borrowed book is = %.2f\n", fee);
33 }
```

PS C:\Users\Divyansh\OneDrive\VScode\Assignment> cd "c:\Users\Divyansh\OneDrive\VScode\Assignment\" ; if (\$?) { gcc library.c -o library } ; if (\$?) { .\library }

Enter the type of book (A/B): A  
Enter the number of days the book is borrowed: 56  
The late fee for the borrowed book is = 236.00  
PS C:\Users\Divyansh\OneDrive\VScode\Assignment>

Q2)

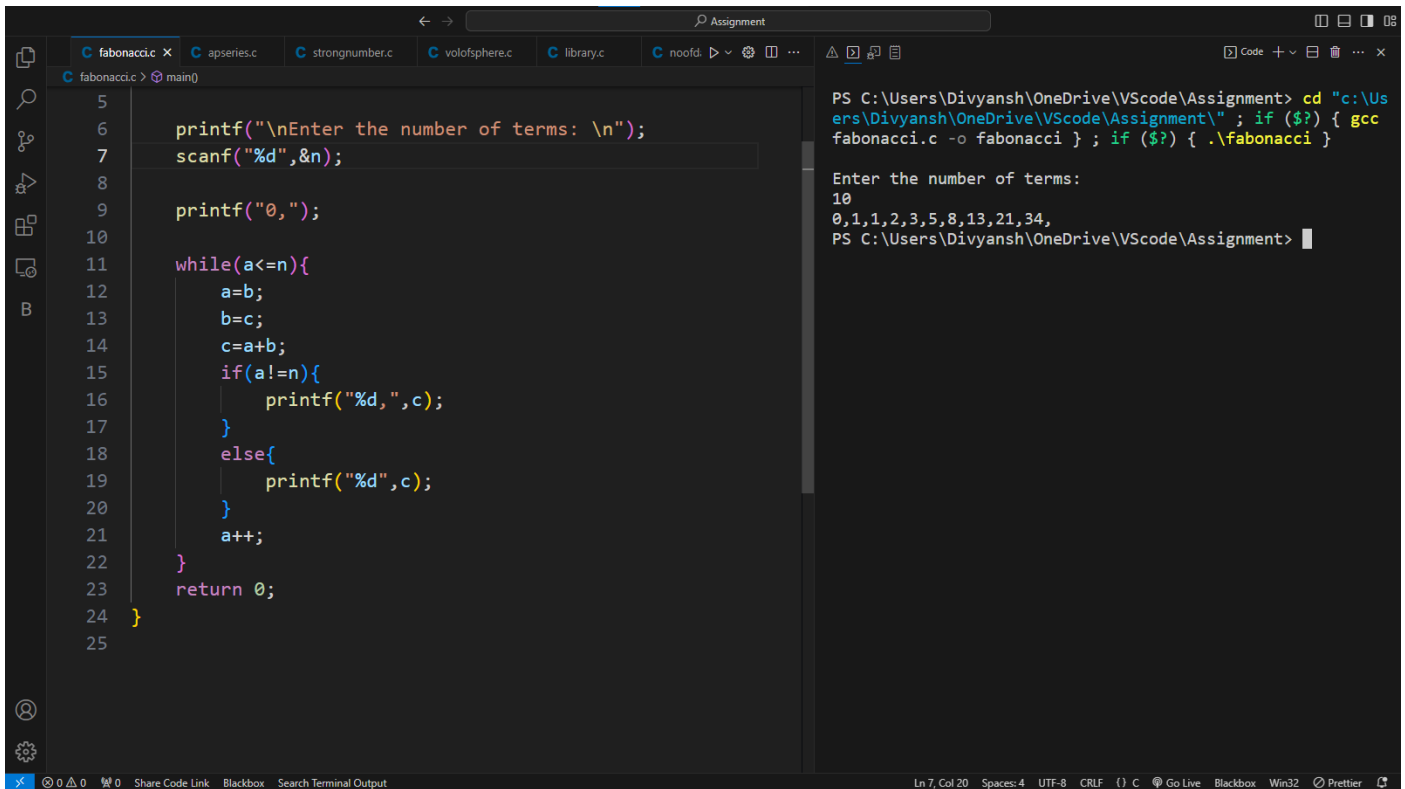
The screenshot shows the VS Code editor with the 'realroots.c' file open. The code defines a function `main()` that prompts the user to enter the coefficients (a, b, c) of a quadratic equation. It then calculates the discriminant `d` and prints the real roots if `d` is non-negative. The terminal output shows the program being executed, with the user entering coefficients 1, -6, and 8, resulting in real roots of 4.00 and 2.00.

```
1 #include <stdio.h>
2
3 #include <stdio.h>
4 #include <math.h>
5
6 int main() {
7     float a, b, c;
8     printf("\nEnter the coefficients(a, b, c): ");
9     scanf("%f %f %f", &a, &b, &c);
10
11     float d = b * b - 4 * a * c;
12
13     if (d < 0) {
14         printf("The equation has complex roots.\n");
15     } else {
16         float root1 = (-b + sqrt(d)) / (2 * a);
17         float root2 = (-b - sqrt(d)) / (2 * a);
18         printf("The real roots of the equation are: %.2f and %.2f",
19             root1, root2);
20     }
21
22     return 0;
23 }
```

PS C:\Users\Divyansh\OneDrive\VScode\Assignment> cd "c:\Users\Divyansh\OneDrive\VScode\Assignment\" ; if (\$?) { gcc realroots.c -o realroots } ; if (\$?) { .\realroots }

Enter the coefficients(a, b, c): 1  
-6  
8  
The real roots of the equation are: 4.00 and 2.00  
PS C:\Users\Divyansh\OneDrive\VScode\Assignment>

Q3)

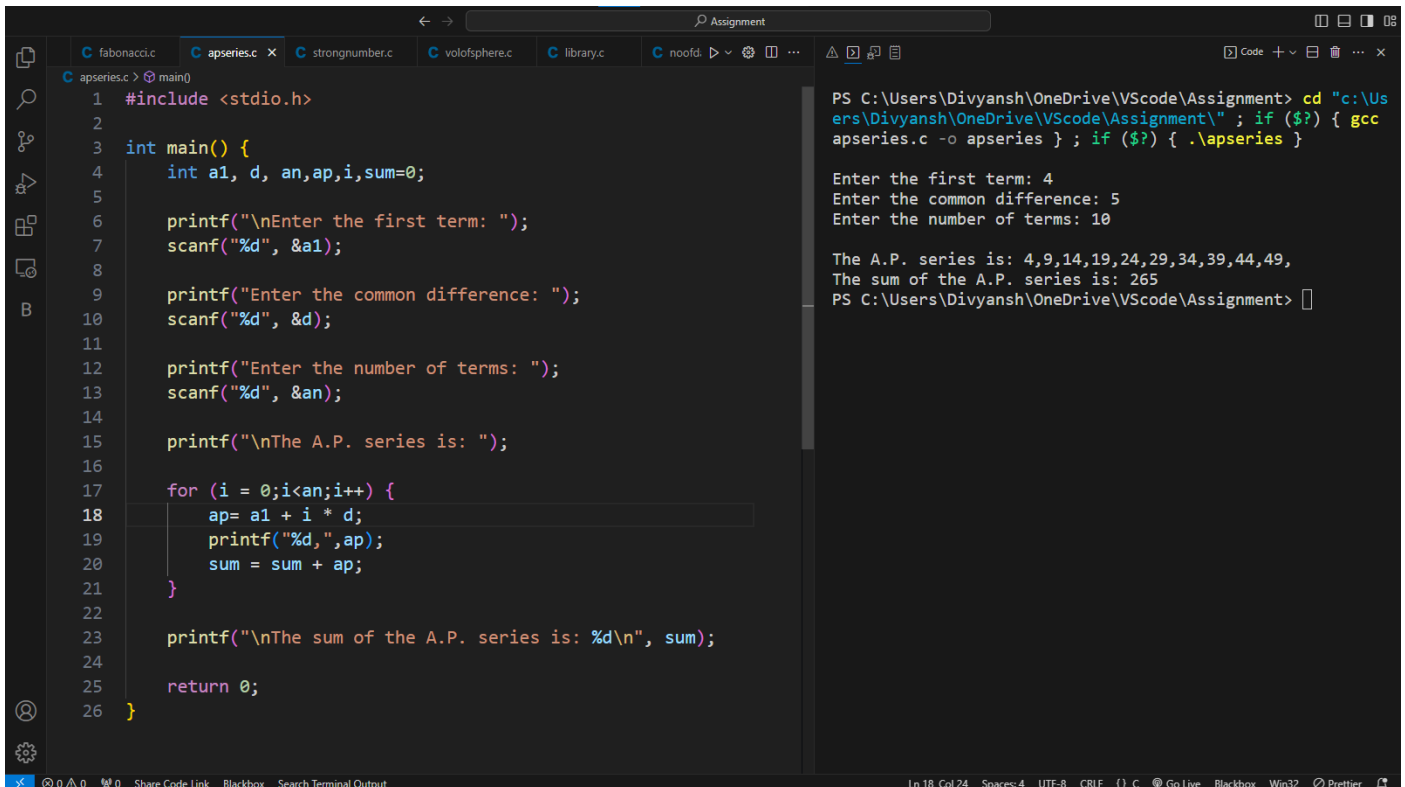


```
5
6     printf("\nEnter the number of terms: \n");
7     scanf("%d",&n);
8
9     printf("0,");
10
11    while(a<=n){
12        a=b;
13        b=c;
14        c=a+b;
15        if(a!=n){
16            printf("%d,",c);
17        }
18        else{
19            printf("%d",c);
20        }
21        a++;
22    }
23    return 0;
24 }
25
```

PS C:\Users\Divyansh\OneDrive\VScode\Assignment> cd "c:\Users\Divyansh\OneDrive\VScode\Assignment\" ; if (\$?) { gcc fabonacci.c -o fabonacci } ; if (\$?) { .\fabonacci }

Enter the number of terms:  
10  
0,1,1,2,3,5,8,13,21,34,  
PS C:\Users\Divyansh\OneDrive\VScode\Assignment> |

Q4)



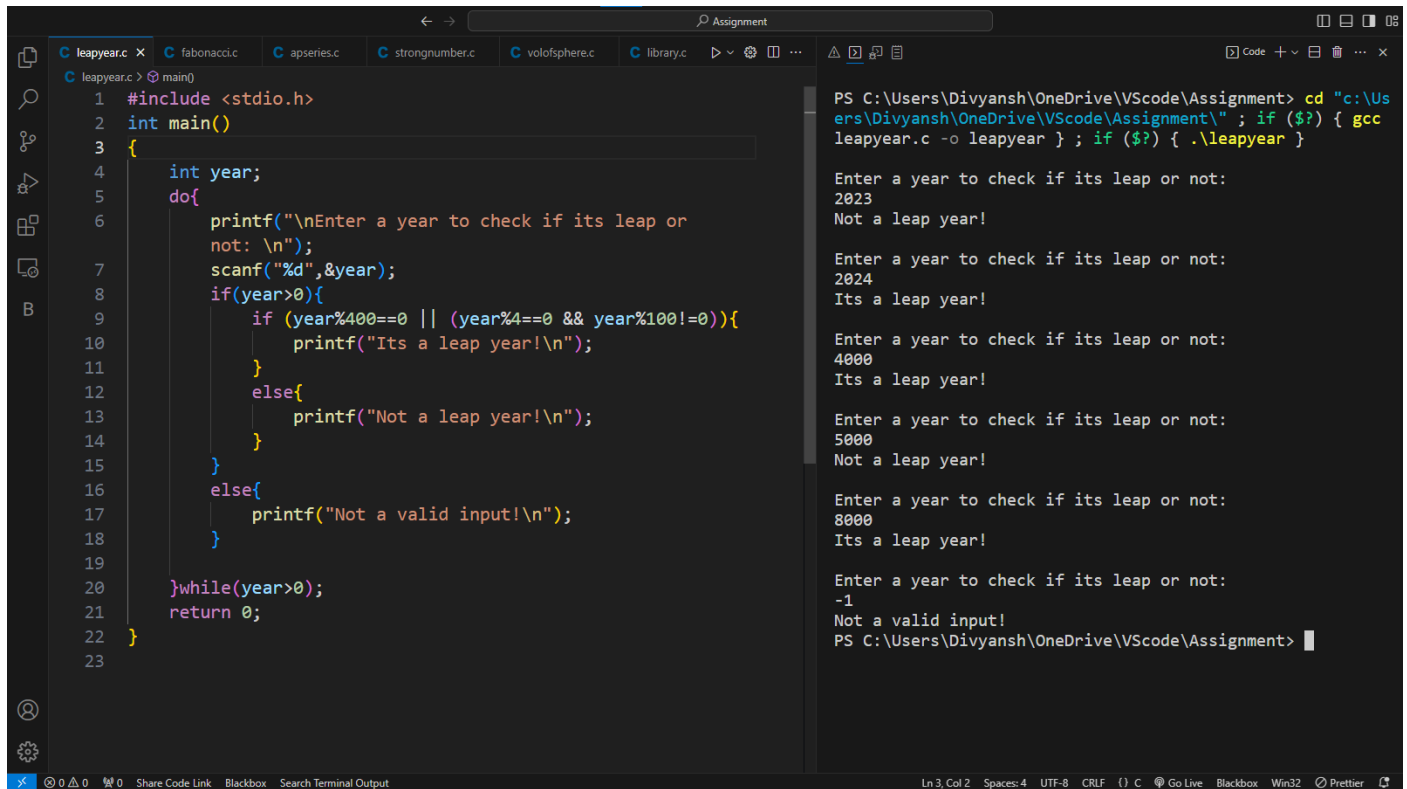
```
1 #include <stdio.h>
2
3 int main() {
4     int a1, d, an, ap, i, sum=0;
5
6     printf("\nEnter the first term: ");
7     scanf("%d", &a1);
8
9     printf("Enter the common difference: ");
10    scanf("%d", &d);
11
12    printf("Enter the number of terms: ");
13    scanf("%d", &an);
14
15    printf("\nThe A.P. series is: ");
16
17    for (i = 0; i < an; i++) {
18        ap = a1 + i * d;
19        printf("%d,", ap);
20        sum = sum + ap;
21    }
22
23    printf("\nThe sum of the A.P. series is: %d\n", sum);
24
25    return 0;
26 }
```

PS C:\Users\Divyansh\OneDrive\VScode\Assignment> cd "c:\Users\Divyansh\OneDrive\VScode\Assignment\" ; if (\$?) { gcc apseries.c -o apseries } ; if (\$?) { .\apseries }

Enter the first term: 4  
Enter the common difference: 5  
Enter the number of terms: 10

The A.P. series is: 4,9,14,19,24,29,34,39,44,49,  
The sum of the A.P. series is: 265  
PS C:\Users\Divyansh\OneDrive\VScode\Assignment> |

Q5)



```
1 #include <stdio.h>
2 int main()
3 {
4     int year;
5     do{
6         printf("\nEnter a year to check if its leap or
7         not: \n");
8         scanf("%d",&year);
9         if(year>0){
10             if (year%400==0 || (year%4==0 && year%100!=0)){
11                 printf("Its a leap year!\n");
12             }
13             else{
14                 printf("Not a leap year!\n");
15             }
16         }
17         else{
18             printf("Not a valid input!\n");
19         }
20     }while(year>0);
21     return 0;
22 }
23
```

PS C:\Users\Divyansh\OneDrive\VScode\Assignment> cd "c:\Users\Divyansh\OneDrive\VScode\Assignment\" ; if (\$?) { gcc leapyear.c -o leapyear } ; if (\$?) { .\leapyear }

Enter a year to check if its leap or not:  
2023  
Not a leap year!

Enter a year to check if its leap or not:  
2024  
Its a leap year!

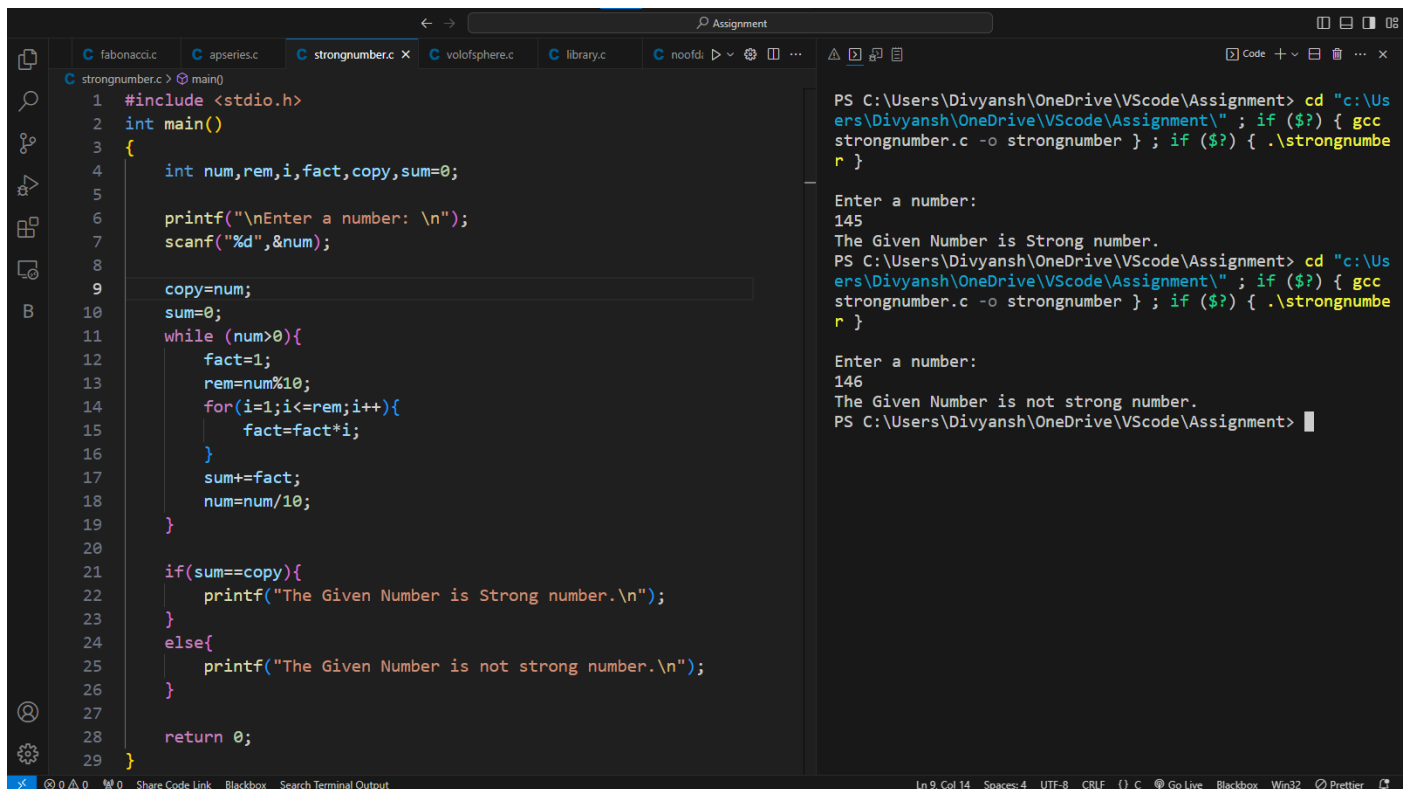
Enter a year to check if its leap or not:  
4000  
Its a leap year!

Enter a year to check if its leap or not:  
5000  
Not a leap year!

Enter a year to check if its leap or not:  
8000  
Its a leap year!

Enter a year to check if its leap or not:  
-1  
Not a valid input!  
PS C:\Users\Divyansh\OneDrive\VScode\Assignment>

Q6)



```
1 #include <stdio.h>
2 int main()
3 {
4     int num,rem,i,fact,copy,sum=0;
5
6     printf("\nEnter a number: \n");
7     scanf("%d",&num);
8
9     copy=num;
10    sum=0;
11    while (num>0){
12        fact=1;
13        rem=num%10;
14        for(i=1;i<=rem;i++){
15            fact=fact*i;
16        }
17        sum+=fact;
18        num=num/10;
19    }
20
21    if(sum==copy){
22        printf("The Given Number is Strong number.\n");
23    }
24    else{
25        printf("The Given Number is not strong number.\n");
26    }
27
28    return 0;
29 }
```

PS C:\Users\Divyansh\OneDrive\VScode\Assignment> cd "c:\Users\Divyansh\OneDrive\VScode\Assignment\" ; if (\$?) { gcc strongnumber.c -o strongnumber } ; if (\$?) { .\strongnumber }

Enter a number:  
145  
The Given Number is Strong number.

PS C:\Users\Divyansh\OneDrive\VScode\Assignment> cd "c:\Users\Divyansh\OneDrive\VScode\Assignment\" ; if (\$?) { gcc strongnumber.c -o strongnumber } ; if (\$?) { .\strongnumber }

Enter a number:  
146  
The Given Number is not strong number.

PS C:\Users\Divyansh\OneDrive\VScode\Assignment>

Q7)

```
1 #include <stdio.h>
2
3 int main() {
4
5     int n1,n2,max;
6
7     printf("Enter two numbers: ");
8     scanf("%d %d", &n1, &n2);
9
10    max=(n1>n2)?n1:n2;
11
12    while (1) {
13        if ((max % n1 == 0) && (max % n2 == 0)) {
14            printf("The LCM of %d and %d is %d.\n", n1, n2,
15                max);
16            break;
17        }
18        ++max;
19    }
20
21    return 0;
22 }
```

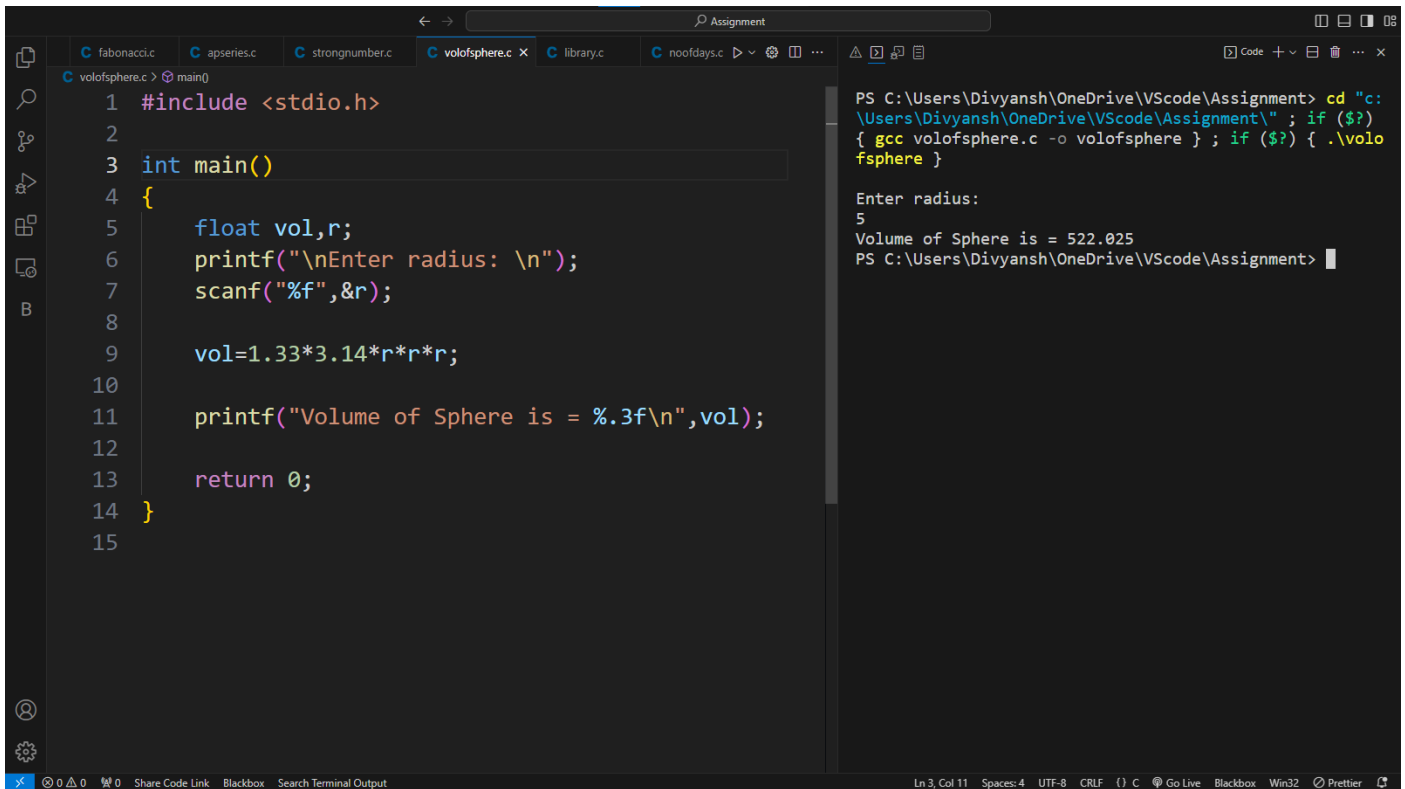
```
PS C:\Users\Divyansh\OneDrive\VScode\Assignment> cd "c:\Users\Divyansh\OneDrive\VScode\Assignment\" ; if ($?) { gcc lcm.c -o lcm } ; if ($?) { .\lcm }
Enter two numbers: 10
5
The LCM of 10 and 5 is 10.
PS C:\Users\Divyansh\OneDrive\VScode\Assignment>
```

Q8)

```
1 #include <stdio.h>
2
3 int main()
4 {
5     int days,years,weeks,months;
6     printf("Enter the number of days: ");
7     scanf("%d", &days);
8
9     years=days/365;
10    weeks=days/7;
11    months=days/30;
12
13    printf("No. of years = %d\n",years);
14    printf("No. of months = %d\n",months);
15    printf("No. of weeks = %d",weeks);
16
17    return 0;
18 }
19
```

```
PS C:\Users\Divyansh\OneDrive\VScode\Assignment> cd "c:\Users\Divyansh\OneDrive\VScode\Assignment\" ; if ($?) { gcc noofdays.c -o noofdays } ; if ($?) { .\noofdays }
Enter the number of days: 500
No. of years = 1
No. of months = 16
No. of weeks = 71
PS C:\Users\Divyansh\OneDrive\VScode\Assignment>
```

Q9)



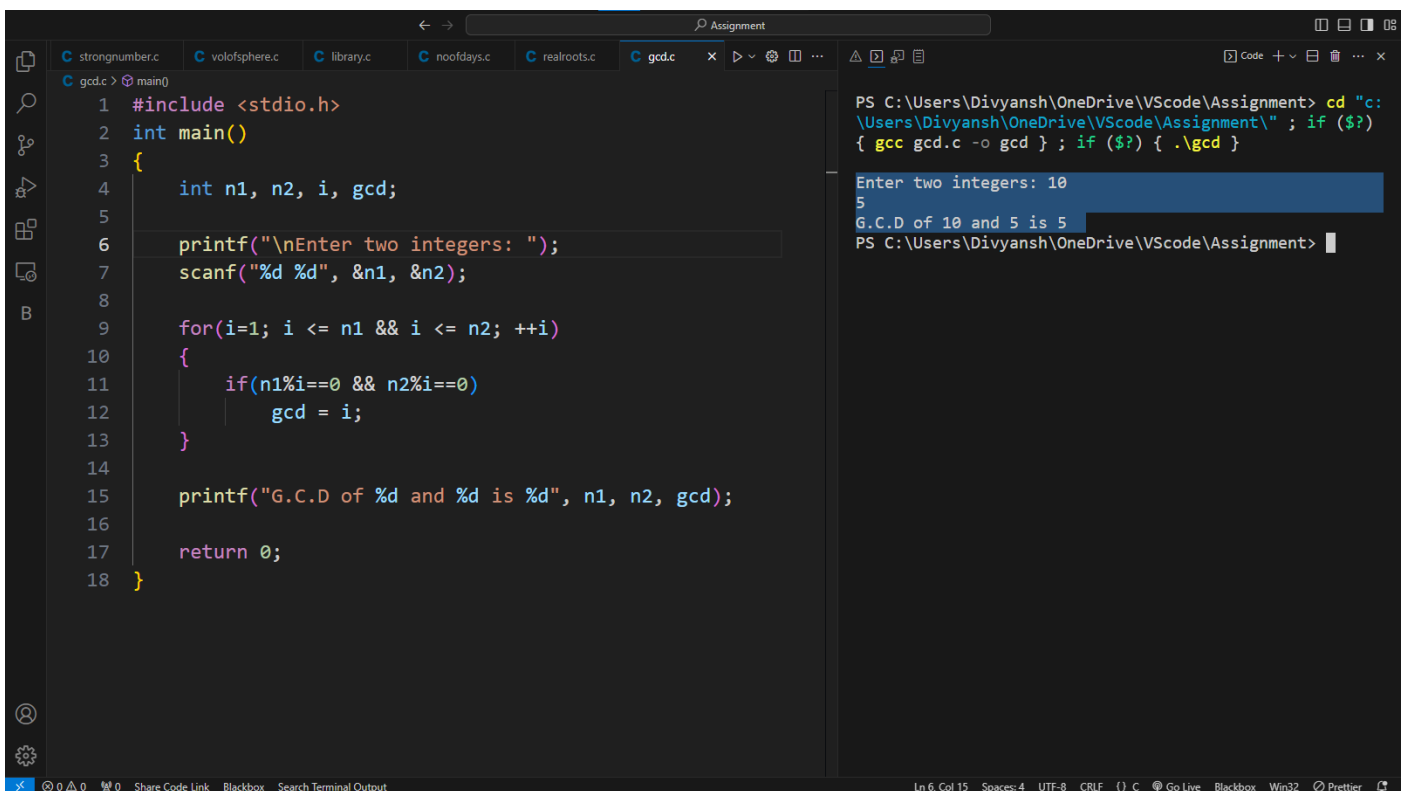
The screenshot shows a VS Code editor with a C file named `volofsphere.c`. The code calculates the volume of a sphere based on a user input radius. The terminal on the right shows the command to compile and run the program, followed by the input '5' and the output 'Volume of Sphere is = 522.025'.

```
1 #include <stdio.h>
2
3 int main()
4 {
5     float vol,r;
6     printf("\nEnter radius: \n");
7     scanf("%f",&r);
8
9     vol=1.33*3.14*r*r*r;
10
11     printf("Volume of Sphere is = %.3f\n",vol);
12
13     return 0;
14 }
15
```

```
PS C:\Users\Divyansh\OneDrive\VScode\Assignment> cd "c:\Users\Divyansh\OneDrive\VScode\Assignment\" ; if ($?) { gcc volofsphere.c -o volofsphere } ; if ($?) { .\volofsphere }

Enter radius:
5
Volume of Sphere is = 522.025
PS C:\Users\Divyansh\OneDrive\VScode\Assignment>
```

Q10)



The screenshot shows a VS Code editor with a C file named `gcd.c`. The code finds the Greatest Common Divisor (G.C.D) of two integers using a loop. The terminal on the right shows the command to compile and run the program, followed by the input '10' and '5', and the output 'G.C.D of 10 and 5 is 5'.

```
1 #include <stdio.h>
2 int main()
3 {
4     int n1, n2, i, gcd;
5
6     printf("\nEnter two integers: ");
7     scanf("%d %d", &n1, &n2);
8
9     for(i=1; i <= n1 && i <= n2; ++i)
10     {
11         if(n1%i==0 && n2%i==0)
12             gcd = i;
13     }
14
15     printf("G.C.D of %d and %d is %d", n1, n2, gcd);
16
17     return 0;
18 }
```

```
PS C:\Users\Divyansh\OneDrive\VScode\Assignment> cd "c:\Users\Divyansh\OneDrive\VScode\Assignment\" ; if ($?) { gcc gcd.c -o gcd } ; if ($?) { .\gcd }

Enter two integers: 10
5
G.C.D of 10 and 5 is 5
PS C:\Users\Divyansh\OneDrive\VScode\Assignment>
```