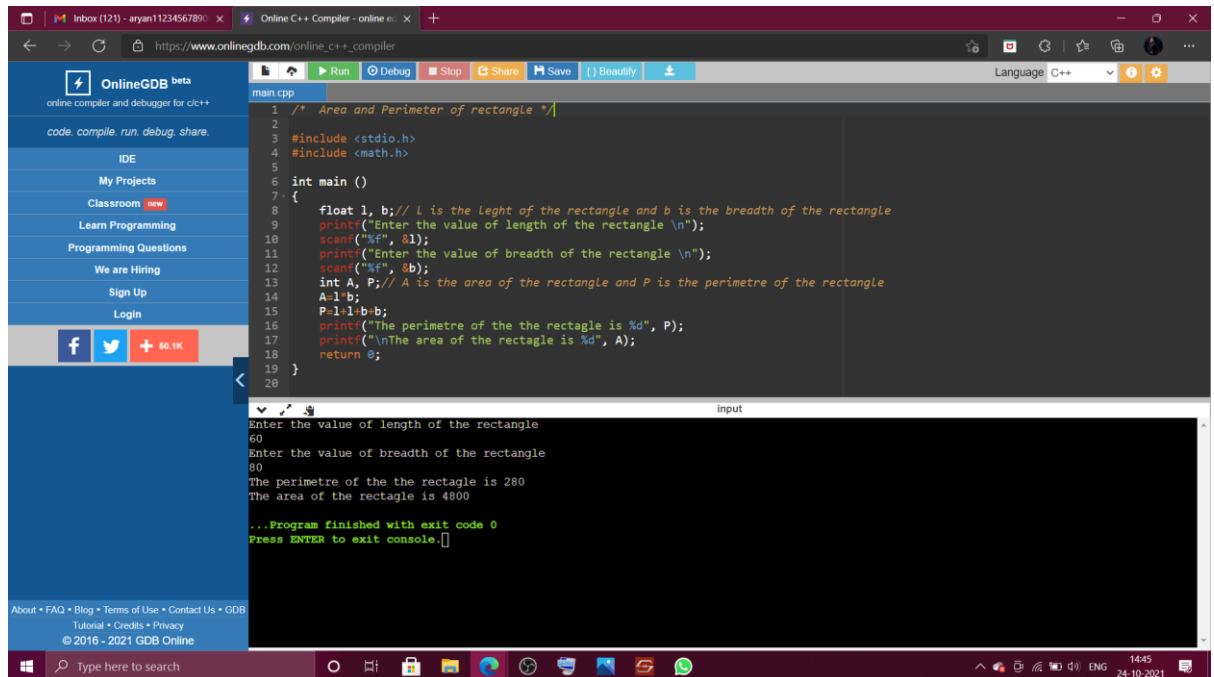


Computer Practice assignment-2

1. *To calculate the area and perimeter of a rectangle...*



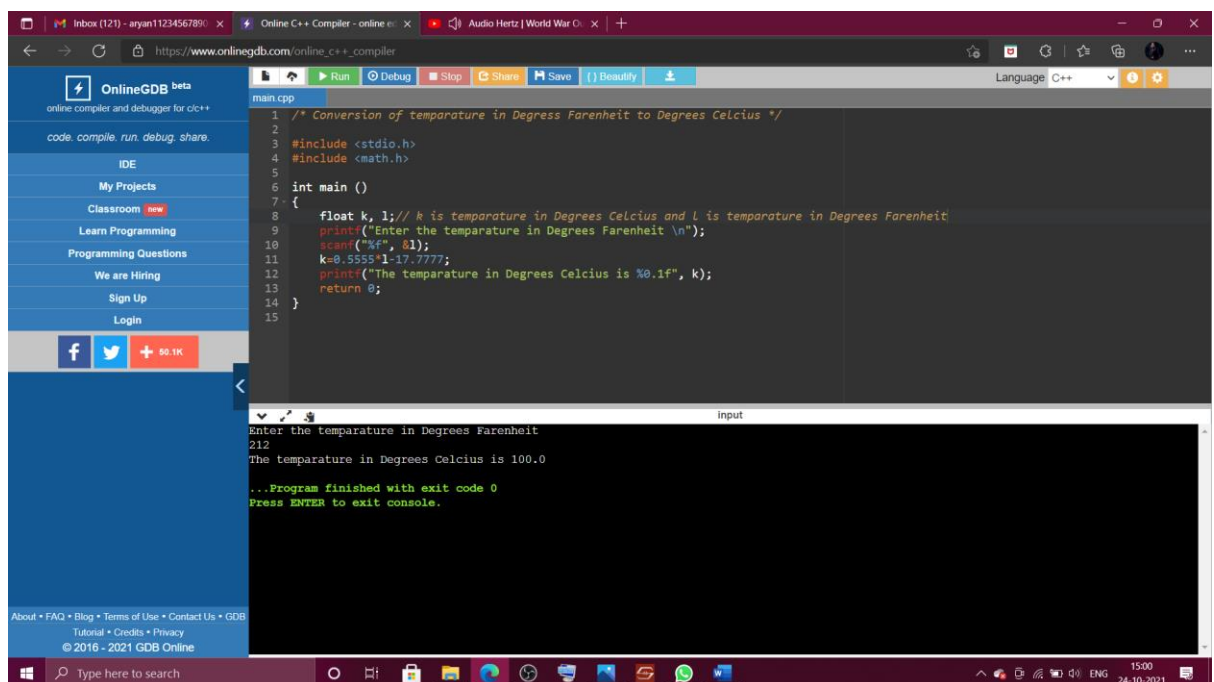
The screenshot shows the OnlineGDB interface. The code in main.cpp is as follows:

```
1  /* Area and Perimeter of rectangle */
2
3  #include <stdio.h>
4  #include <math.h>
5
6  int main ()
7  {
8      float l, b; // l is the length of the rectangle and b is the breadth of the rectangle
9      printf("Enter the value of length of the rectangle \n");
10     scanf("%f", &l);
11     printf("Enter the value of breadth of the rectangle \n");
12     scanf("%f", &b);
13     int A, P; // A is the area of the rectangle and P is the perimeter of the rectangle
14     A=l*b;
15     P=2*l+b;
16     printf("The perimeter of the rectangle is %d", P);
17     printf("\nThe area of the rectangle is %d", A);
18     return 0;
19 }
```

The input/output window shows the following execution:

```
Enter the value of length of the rectangle
60
Enter the value of breadth of the rectangle
80
The perimeter of the rectangle is 280
The area of the rectangle is 4800
...Program finished with exit code 0
Press ENTER to exit console.
```

2. *Conversion of temperatures in various units of temperature...*



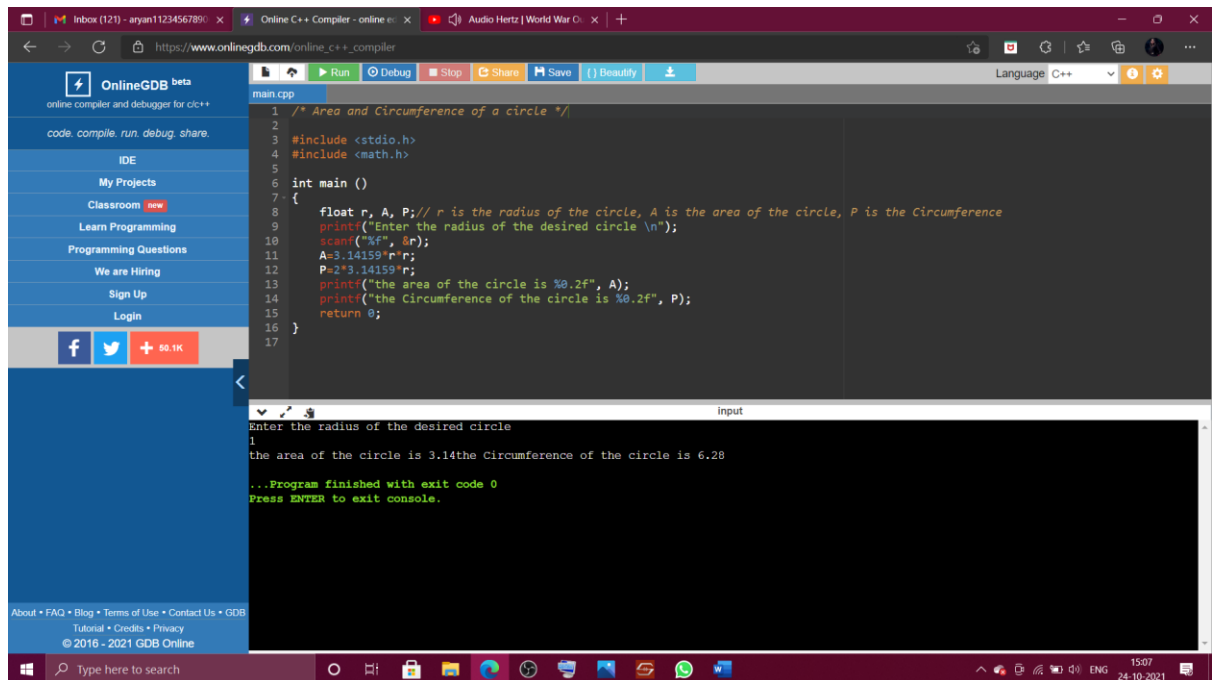
The screenshot shows the OnlineGDB interface. The code in main.cpp is as follows:

```
1  /* Conversion of temperature in Degrees Fahrenheit to Degrees Celcius */
2
3  #include <stdio.h>
4  #include <math.h>
5
6  int main ()
7  {
8      float k, l; // k is temperature in Degrees Celcius and l is temperature in Degrees Fahrenheit
9      printf("Enter the temperature in Degrees Fahrenheit \n");
10     scanf("%f", &l);
11     k=0.5555*l-17.7777;
12     printf("The temperature in Degrees Celcius is %0.1f", k);
13     return 0;
14 }
```

The input/output window shows the following execution:

```
Enter the temperature in Degrees Fahrenheit
212
The temperature in Degrees Celcius is 100.0
...Program finished with exit code 0
Press ENTER to exit console.
```

3. *To calculate area and circumference of a circle in real time...*



The screenshot shows the OnlineGDB web interface. The code editor contains the following C++ code:

```
1  /* Area and Circumference of a circle */
2
3  #include <stdio.h>
4  #include <math.h>
5
6  int main ()
7  {
8      float r, A, P; // r is the radius of the circle, A is the area of the circle, P is the Circumference
9      printf("Enter the radius of the desired circle \n");
10     scanf("%f", &r);
11     A=3.14159*r*r;
12     P=2*3.14159*r;
13     printf("the area of the circle is %0.2f", A);
14     printf("the Circumference of the circle is %0.2f", P);
15     return 0;
16 }
17
```

The output window shows the following text:

```
input
Enter the radius of the desired circle
1
the area of the circle is 3.14the Circumference of the circle is 6.28
...Program finished with exit code 0
Press ENTER to exit console.
```

4. *Use of mathematical operators like sin, cos, log and power of a number...*

Here 1.570795 is $\pi/2$ that is 90 degrees.

Output of question no. 4 is in the next page due to space constraints...

The top screenshot displays the OnlineGDB interface with the following C++ code in `main.cpp`:

```
1
2
3 #include <stdio.h>
4 #include <math.h>
5
6 int main ()
7 {
8     float a, n, w, x, y, z;
9     printf("Enter the value of a to calculate it's sine value \n");
10    scanf("%f", &a);
11    w=sin(a);
12    printf("The value of sin of a is %0.4f \n \n", w);
13    printf("Enter the value of a to calculate it's cos value \n");
14    scanf("%f", &a);
15    x=cos(a);
16    printf("the value of cos of a is %0.4f \n \n", x);
17    printf("Enter the value of a to calculate it's logarithm to the base e \n");
18    scanf("%f", &a);
19    y=log(a);
20    printf("The value of log of a is %0.4f \n \n", y);
21    printf("Enter the value of a to calculate it's power \n");
22    scanf("%f", &a);
23    printf("Enter the value of n to calculate a's power\n");
24    scanf("%d", &n);
25    z=pow(a, n);
26    printf(" The value of a to the power of n is %f", z);
27    return 0;
28 }
29
```

The bottom screenshot shows the program's output:

```
1.570795
the value of cos of a is 0.0000
Enter the value of a to calculate it's logarithm to the base e
10
The value of log of a is 2.3026
Enter the value of a to calculate it's power
10
Enter the value of n to calculate a's power
6
The value of a to the power of n is 1000000.000000
...Program finished with exit code 0
Press ENTER to exit console.
```

5. *Roots of Quadratic Equations... PTO for the output and code of this program...*

The screenshot shows the OnlineGDB interface with a C++ program for finding the roots of a quadratic equation. The code is as follows:

```
1 /* Quadratic equation roots */
2 #include <stdio.h>
3 #include <math.h>
4 int main ()
5 {
6     int a, b, c;
7     float D, m, n; // m, n are the roots of the quadratic equation...
8     printf ("Enter the values of Co-efficients of the equation ax^2+bx+c \n");
9     scanf ("%d %d %d", &a, &b, &c);
10    D = b * b - 4 * a * c;
11    if (D > 0 || D == 0)
12    {
13        m = ((-b + sqrt (D)) / (a*a));
14        n = ((-b - sqrt (D)) / (a*a));
15        printf ("the roots are %f and %f", m, n);
16    }
17    else
18        printf ("Roots do not exist");
19    return 0;
20 }
```

The input/output window shows the following interaction:

```
Enter the values of Co-efficients of the equation ax^2+bx+c
1
2
1
the roots are -1.000000 and -1.000000
...Program finished with exit code 0
Press ENTER to exit console.
```

6. Use of left shift and right shift operators...

The screenshot shows the OnlineGDB interface with a C++ program demonstrating the use of left and right shift operators. The code is as follows:

```
1 /* Using Left shift and right shift commands */
2 #include <stdio.h>
3 int main()
4 {
5     int a, b;
6     printf("enter the value of a \n");
7     scanf("%d", &a);
8     printf("a<<1 = %d \n", a<<1);
9     printf("enter the value of b \n");
10    scanf("%d", &b);
11    printf("b>>1 = %d \n", b>>1);
12    return 0;
13 }
```

The input/output window shows the following interaction:

```
enter the value of a
5
a<<1 = 10
enter the value of b
9
b>>1 = 4
...Program finished with exit code 0
Press ENTER to exit console.
```

7. Use of +=, -=, *=, %/, /= operators...

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main.cpp

```
1 /* Use of +=, -=, *=, /= operators... */
2 #include <stdio.h>
3
4 int main ()
5 {
6     int a, b;
7     printf("Enter the value of a\n");
8     scanf("%d", &a);
9     printf("Enter the value of b\n");
10    scanf("%d", &b);
11    a+=b;
12    printf("a=%d \t b=%d", a, b);
13    return 0;
14 }
```

input

Enter the value of a
2
Enter the value of b
3
a=5 b=3
...Program finished with exit code 0
Press ENTER to exit console.

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main.cpp

```
1 /* Use of +=, -=, *=, /= operators... */
2 #include <stdio.h>
3
4 int main ()
5 {
6     int a, b;
7     printf("Enter the value of a\n");
8     scanf("%d", &a);
9     printf("Enter the value of b\n");
10    scanf("%d", &b);
11    a=b;
12    printf("a=%d \t b=%d", a, b);
13    return 0;
14 }
```

input

Enter the value of a
5
Enter the value of b
3
a=2 b=3
...Program finished with exit code 0
Press ENTER to exit console.

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main.cpp

```
1 /* Use of +=, -=, *=, /= operators... */
2 #include <stdio.h>
3
4 int main ()
5 {
6     int a, b;
7     printf("Enter the value of a\n");
8     scanf("%d", &a);
9     printf("Enter the value of b\n");
10    scanf("%d", &b);
11    a*=b;
12    printf("a=%d \t b=%d", a, b);
13    return 0;
14 }
```

input

Enter the value of a
25
Enter the value of b
10
a=5 b=10
...Program finished with exit code 0
Press ENTER to exit console.

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main.cpp

```
1 /* Use of +=, -=, *=, /= operators... */
2 #include <stdio.h>
3
4 int main ()
5 {
6     int a, b;
7     printf("Enter the value of a\n");
8     scanf("%d", &a);
9     printf("Enter the value of b\n");
10    scanf("%d", &b);
11    a*=b;
12    printf("a=%d \t b=%d", a, b);
13    return 0;
14 }
```

input

Enter the value of a
25
Enter the value of b
4
a=100 b=4
...Program finished with exit code 0
Press ENTER to exit console.

Type here to search

The screenshot shows the OnlineGDB interface. The code in `main.cpp` is as follows:

```
1 /* Use of +=, -=, *=, /= operators... */
2 #include <stdio.h>
3
4 int main ()
5 {
6     int a, b;
7     printf("Enter the value of a\n");
8     scanf("%d", &a);
9     printf("Enter the value of b\n");
10    scanf("%d", &b);
11    a/=b;
12    printf("a=%d \t b=%d", a, b);
13    return 0;
14 }
```

The input window shows the following interaction:

```
< Enter the value of a
15
Enter the value of b
5
a=3    b=5

...Program finished with exit code 0
Press ENTER to exit console.
```

8. *To check whether a year is a leap year or not...*

The screenshot shows the OnlineGDB interface. The code in `main.cpp` is as follows:

```
1 /* to check whether a certain year is a Leap year or not */
2 #include <stdio.h>
3
4 int main ()
5 {
6     int a;
7     printf("Enter the year\n");
8     scanf("%d", &a);
9     if (a%4==0)
10    {
11        printf("\n %d is a leap year", a);
12    }
13    else
14    {
15        printf("\n %d isn't a leap year", a);
16    }
17    return 0;
18 }
```

The input window shows the following interaction:

```
< Enter the year
2019

2019 isn't a leap year

...Program finished with exit code 0
Press ENTER to exit console.
```


The screenshot shows the OnlineGDB interface with a C++ program for checking leap years. The code is as follows:

```
1 /* to check whether a certain year is a Leap year or not */
2 #include <stdio.h>
3
4 int main ()
5 {
6     int a;
7     printf("Enter the year\n");
8     scanf("%d", &a);
9     if (a%4==0)
10    {
11        printf("\n %d is a leap year", a);
12    }
13    else
14        printf("\n %d isn't a leap year", a);
15    return 0;
16 }
```

The console output shows the user entering 2020, and the program outputting "2020 is a leap year". The program finished with exit code 0.

9. *Swapping values of two variables without using a third variable...*

The screenshot shows the OnlineGDB interface with a C++ program for swapping two variables without using a third variable. The code is as follows:

```
1 /* swapping variables without a need of third variable */
2 #include <stdio.h>
3
4 int main ()
5 {
6     int a, b;
7     printf("Enter the value of a\n");
8     scanf("%d", &a);
9     printf("Enter the value of b\n");
10    scanf("%d", &b);
11    a=a+b;
12    b=a-b;
13    a=a-b;
14    printf("\n the final values of and be are a is %d and b is %d", a, b);
15    return 0;
16 }
```

The console output shows the user entering 128 for 'a' and 8957364 for 'b'. The program outputting "the final values of and be are a is 8957364 and b is 128". The program finished with exit code 0.