

ASSIGNMENT # 1

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FA23-BCS-251

SECTION: E

SUBMITTED TO

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Programming Fundamentals



Q#1 Program for volume of circle from area and radius of circle.

```
#include <iostream>
using namespace std;
int main () {
    int r;
    cout << "Enter the radius";
    cin >> r;
    float radius area = 4 * 3.14 * r * r;
    cout << "The area of sphere is" << area << endl;
    float volume = 1.33 * 3.14 * r * r * r; // 1.33 = 4/3
    cout << "The volume of circle is" << volume << endl;
    return 0; }
```

Q#2 Program to find area of triangle.

```
#include <iostream>
#include <cmath>
using namespace std;
int main () { int a, b, c, s, area;
    cout << "Enter value of a\n";
    cin >> a;
    cout << "Enter value of b\n";
    cin >> b;
    cout << "Enter value of c\n";
    cin >> c;
    s =  $\frac{a + b + c}{2}$  ;
```

```

area = (s * (s - a) * (s - b) * (s - c));
double Area = sqrt(area);
cout << "The area of triangle is" << Area;
return 0; }

```

Q#3 Program to calculate the volume

Formula:  $V = \text{length} \times \text{width} \times \text{height}$ .

```

#include <iostream>
using namespace std;
int main () {
    float l, w, h;
    cout << "Enter the length of cube \n";
    cin >> l;
    cout << "Enter the width of cube \n";
    cin >> w;
    cout << "Enter the height of cube \n";
    cin >> h;
    cout << "The volume of cube is" << l * w * h;
    return 0; }

```

Q#4 Program that input x, y coordinates of two points and compute using formula  $((x_2 - x_1)^2 + (y_2 - y_1)^2)$

```

#include <iostream>
using namespace std;
int main () {

```



```

double x1, y1, x2, y2;
cout << "Enter the coordinates of 1st point (x, y): ";
cin >> x1 >> y1;
cout << "Enter the coordinates of 2nd point (x, y): ";
cin >> x2 >> y2;
double distance = sqrt(pow(x2 - x1, 2) + pow(y2 - y1, 2));
cout << "Distance b/w two points: " << distance;
return 0; }

```

Q#5 program which swap the values of variables using fourth variable.

```

#include <iostream>
using namespace std;
int main () {
    int a, b, c;
    cout << "Enter value of variable a\n";
    cin >> a;
    cout << "Enter value of variable b\n";
    cin >> b;
    cout << "Enter value of variable c\n";
    cin >> c;
    cout << "Original values are" << a << b << c;
    int temp = a;
    a = b;
    b = c;
    c = temp;
}

```

```
    cout << "Values after swapping" << a << "b=" << b  
    << "c=" << c ;  
    return 0 ; } }
```

Q#6 Program that input a letter and display next two letters.

```
#include <iostream>  
using namespace std;  
int main() {  
    char letter;  
    cout << "Enter a letter";  
    cin >> letter;  
    char letter1 = letter + 1, letter2 = letter + 2;  
    if (letter >= 'a' && letter < 'z') {  
        cout << "Next letters are" << letter1 << letter2 ; }  
    else { cout << "Invalid Input"; }  
    return 0 ; }
```

Q#7 Program that input a number and displays corresponding ASCII code.

```
#include <iostream>  
using namespace std;  
int main() {  
    char letter;  
    cout << "Enter a letter\n";  
    cin >> letter;
```



```

cout << "The ASCII code for " << letter << " is " <<
int (letter) << endl;
return 0; }

```

Q#8 Program that input principal amount, rate of interest & total time and calculate the compound amount and displays it

```

# include <iostream>
# include <cmath>
using namespace std;

int main ( ) {
    float A, P, r, n, t, x;
    cout << "Enter the initial amount \n";
    cin >> P;
    cout << "Enter the interest rate \n";
    cin >> r;
    cout << "How many times interest applied \n";
    cin >> n;
    cout << "Enter the number of time period \n";
    cin >> t;
    x = (1 + r/n) * P;
    A = pow(x, n * t);
    cout << "The final amount is " << A;
    return 0; }

```

Q#9 Program that enters a 5 digit number and calculate sum of digits

```
# include <iostream>
```

```
using namespace std;
```

```
int main () {
```

```
    int number, sum = 0;
```

```
    cout << "Enter a 5 digit number \n";
```

```
    cin >> number;
```

```
    if (number < 10000 || number > 99999) {
```

```
        cout << "Enter a valid 5 digit number";
```

```
        return 1; }
```

```
    while (number > 0) { sum += number % 10;
```

```
        number /= 10; }
```

```
    cout << "sum of digits is" << sum << endl;
```

```
    return 0; }
```

10) Program that input salary and calculate 35%

dearness allowance, 25% house rent and display gross salary

```
# include <iostream>
```

```
using namespace std;
```

```
int main () { int salary, rent, allowance, per;
```

```
    cout << "Enter your salary"; cin >> salary;
```

```
    per = salary / 100; allowance = per * 35; rent = per * 25;
```

```
    cout << "The 35% dearness allowance is" << per * 35;
```

```
    cout << "The 25% house rent" << per * 25;
```

```
    cout << "The total salary is" << salary + allowance + rent;
```

```
    return 0; }
```



*//1)Write a program that inputs radius of sphere from  
//the user and then Calculates its volume and surface area using  
//the formula Area =  $4pR^2$  and circumference =  $4/3pr^2$  where  $p = 3.14$*

```
#include<iostream>
using namespace std;
int main(){
int r;
cout<<"Enter the Radius of sphere\n";
cin>>r;
float area=4*3.14*r*r;
cout<<"The area of sphere is "<<area<<endl;
float volume = 1.33 * 3.14 * r * r * r; //1.33== 4/3
cout<<"The Volume of circle is "<<volume;
return 0;
}
```





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Enter the Radius of sphere

33

The area of sphere is 13677.8

The Volume of circle is 150080

-----

Process exited after 26.27 seconds with return value 0

Press any key to continue . . .

//2)Write a program to find out the area of triangle when the sides  
//and of the triangle are given. Use appropriate statements to input  
//the values of a, b, and c from the keyboard. Formula for the area  
//of triangle is area =

```
#include<iostream>
#include<cmath>
using namespace std;
int main(){
    int a,b,c,s,area;
    cout<<"Enter the value of a \n";
    cin>>a;
    cout<<"Enter the value of b \n";
    cin>>b;
    cout<<"Enter the value of c \n";
    cin>>c;
    s=a+b+c/2;
    area = (s * (s - a) * (s - b) * (s - c));
    double Area=sqrt(area);
    cout<<"The area of traingle is "<<Area;
    return 0;}
```

Enter the value of a

6

Enter the value of b

7

Enter the value of c

8

The area of traingle is 129.73

---

Process exited after 17.67 seconds with return value 0

Press any key to continue . . .



*//3)Write a program to calculate the volume (V) of a cube by taking  
//asures from the user. (Formula:  $V = \text{length} * \text{width} * \text{height}$ ).*

```
include<iostream>
using namespace std;
int main(){
    float l,w,h;
    cout<<"Enter the lenght of cube\n";
    cin>>l;
    cout<<"Enter the width of cube\n";
    cin>>w;
    cout<<"Enter the height of cube\n";
    cin>>h;
    cout<<"The volume of cube is "<<l*w*h;
    return 0;
```

```
}
```



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Enter the lenght of cube

50

Enter the width of cube

45

Enter the height of cube

30

The volume of cube is 67500

-----

Process exited after 17.14 seconds with return value 0

Press any key to continue . . .

*/\* 4)Write a program that inputs the x, y coordinates for two points and the distance between two points using the formula.*

*Distance =  $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$  .\*/*

```
#include <iostream>
```

```
#include <cmath>
```

```
using namespace std;
```

```
int main() {
```

```
    double x1, y1, x2, y2;
```

```
    cout << "Enter the coordinates of the first point (x1 y1): ";
```

```
    cin >> x1 >> y1;
```

```
    cout << "Enter the coordinates of the second point (x2 y2): ";
```

```
    cin >> x2 >> y2;
```

```
    double distance = sqrt(pow(x2 - x1, 2) + pow(y2 - y1, 2));
```

```
    cout << "Distance between the two points: " << distance << endl;
```

```
    return 0;
```

```
}
```





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Enter the coordinates of the first point (x1 y1): 3

4

Enter the coordinates of the second point (x2 y2): 5

6

Distance between the two points: 2.82843

-----

Process exited after 7.657 seconds with return value 0

Press any key to continue . . . |

*//5)Write a program in c++ to swap the values of three variables with using  
//fourth variable*

```
#include <iostream>
using namespace std;
int main() {
int a, b, c;
cout << "Enter the value of variable a: ";
cin >> a;
cout << "Enter the value of variable b: ";
cin >> b;
cout << "Enter the value of variable c: ";
cin >> c;
cout << "Original values: a = " << a << ", b = " << b << ", c = " << c << endl;
int temp = a;
a = b;
b = c;
c = temp;
cout << "Values after swapping: a = " << a << ", b = " << b << ", c = " << c << endl;

return 0;}
```



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```
Enter the value of variable a: 4
Enter the value of variable b: 5
Enter the value of variable c: 6
Original values: a = 4, b = 5, c = 6
Values after swapping: a = 5, b = 6, c = 4
```

```
-----
Process exited after 4.339 seconds with return value 0
Press any key to continue . . .
```



*//6)Write a C++ program to enter a letter and display the next two letters.*

```
#include<iostream>
```

```
using namespace std;
```

```
int main(){
```

```
    char letter;
```

```
    cout<<"Enter a letter\n";
```

```
    cin>>letter;
```

```
    char letter1=letter+1;
```

```
    char letter2=letter+2;
```

```
    if((letter>='a' && letter<'z') || (letter>='A' && letter<'Z')){
```

```
        cout<<"The next letters are "<<letter1<<" "<<letter2;
```

```
    }
```

```
    else{
```

```
        cout<<"Your input is invalid";
```

```
    }
```

```
    return 0;
```

```
}
```



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Enter a letter

l

The next letters are m n

-----

Process exited after 1.46 seconds with return value 0

Press any key to continue . . .

*//7)Write a program that inputs a number and displays its corresponding ASCII code.*

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    char character;
```

```
    cout << "Enter a character: ";
```

```
    cin >> character;
```

```
    cout << "The ASCII code for '" << character << "' is " << (int)character << endl;
```

```
    return 0;
```

```
}
```





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Enter a character: m

The ASCII code for 'm' is 109

-----

Process exited after 3.007 seconds with return value 0

Press any key to continue . . .

```

//8)Write a program that inputs principal amount, rate of interest and
//total time
//. It calculates the compound interest and displays it.
#include<iostream>
#include<cmath>
using namespace std;
int main(){
    float A,p,r,n,t,x;
    //A= final amount | p=initial amount | r= interest rate | t= time period
    cout<<"Enter the initial amount \n";
    cin>>p;
    cout<<"Enter the interest rate\n";cin>>r;
    cout<<"How many times interest applied per time period\n";
    cin>>n;
    cout<<"Enter the number of time period elapsed\n";
    cin>>t;
    x=(1+r/n)*p;
    A=pow(x , n*t);
    cout<<"The final amount is "<<A;
    return 0;
}

```

F:\DEV C++\LAB ASSIGN 1.exe X

+ v

Enter the initial amount

10000

Enter the interest rate

2

How many times interest applied per time period

1

Enter the number of time period elapsed

1

The final amount is 30000

-----

Process exited after 11.84 seconds with return value 0

Press any key to continue . . . |

```
//9)Write a program that inputs five-digit number through the keyboard and
#include <iostream>
int main() {
    int number, sum = 0;
    cout << "Enter a five-digit number: ";
    cin >> number;
    // Check if the number has exactly five digits
    if (number < 10000 || number > 99999) {
        cout << "Please enter a valid five-digit number.\n";
        return 1; // Exit the program with an error code
    }
    // Calculate the sum of digits
    while (number > 0) {
        sum += number % 10; // Add the last digit to the sum
        number /= 10;       // Remove the last digit
    }
    // Display the result
    cout << "Sum of digits: " << sum << endl;
    return 0; // Exit the program successfully
}
```





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Enter a five-digit number: 10000

Sum of digits: 1

-----

Process exited after 6.823 seconds with return value 0

Press any key to continue . . .

*//10)Write a program that inputs Basic Salary and calculates 35% dearness allowance,  
//25% house rent and then displays the gross salary.*

```
#include<iostream>
using namespace std;
int main(){
    int salary,rent,allowance,percentage;
    cout<<"Enter the amount of your salary\n";
    cin>>salary;
    percentage=salary/100;
    allowance=percentage*35;
    rent=percentage*25;
    cout<<"The 35% dearness allowance of your salary is "<<percentage*35<<endl;
    cout<<"The 25% house rent according to your salary is "<<percentage*25<<endl;
    cout<<"your Total salary is "<<salary+allowance+rent;
    return 0;
}
```



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Enter the amount of your salary

10000

The 35% dearness allowance of your salary is 3500

The 25% house rent according to your salary is 2500

your Total salary is 16000

-----

Process exited after 2.781 seconds with return value 0

Press any key to continue . . .