C-DAC Mumbai C++ Assignment

1. Write a program in C++ to print welcome text on a separate line.

#include <iostream>

using namespace std;

int main() {

cout<<"w\n";

cout<<"e\n";

cout<<"l\n";

cout<<"c\n";

cout<<"o\n";

cout<<"m\n";

cout<<"e\n";

return 0;

}

2. Write a program in C++ to print the sum of two numbers and swap them as well. Sample Output: Sum: ----------------------------------- The sum of 29 and 30 is : 59 Swap: ----------------------------------- Input 1st number : 25 Input 2nd number : 39 After swapping the 1st number is : 39 After swapping the 2nd number is : 25

#include <iostream>

using namespace std;

int main() {

int a,b;

int sum;

cout<<"enter 1st no\n";

cin >> a;

cout<<"enter second no\n";

cin >>b;

sum=a+b;

cout<<"sum of "<<a<<"And"<<b<<"is"<<sum;

return 0;

}

3. Write a in C++ program to find the size of fundamental data types. Sample Output: ------------------------------------------ The sizeof(char) is : 1 bytes The sizeof(short) is : 2 bytes The sizeof(int) is : 4 bytes The sizeof(long) is : 8 bytes The sizeof(long long) is : 8 bytes The sizeof(float) is : 4 bytes The sizeof(double) is : 8 bytes The sizeof(long double) is : 16 bytes The sizeof(bool) is : 1 bytes C-DAC Mumbai

#include <iostream>

using namespace std;

int main() {

cout<<"size of char is:"<<sizeof(char)<<" "<<"bytes\n";

cout<<"size of int is:"<<sizeof(int)<<" "<<"bytes\n";

cout<<"size of boolean is:"<<sizeof(bool)<<" "<<"bytes\n";

cout<<"size of double is:"<<sizeof(double )<<" "<<"bytes\n";

cout<<"size of long is:"<<sizeof(long)<<" "<<"bytes\n";

cout<<"size of long double is:"<<sizeof(long double)<<" "<<"bytes\n";

return 0;

}

4. Write a in C++ program to check the upper and lower limits of all the valid data types. Expected Output: -------------------------------------------------- The maximum limit of int data type : 2147483647 The minimum limit of int data type : -2147483648 Like wise…

#include <iostream>

#include <climits> // For integer limits

#include <cfloat> // For floating-point limits

using namespace std;

int main(){

cout << "The maximum limit of int data type : " << INT\_MAX << endl;

cout << "The min limit of int data type : " << INT\_MIN << endl;

cout << "The maximum limit of short data type : " << SHRT\_MAX << endl;

cout << "The minimum limit of int data type : " << SHRT\_MIN << endl;

cout << "The maximum limit of float data type : " << FLT\_MAX << endl;

cout << "The minimum limit of float data type : " << FLT\_MIN << endl;

cout << "The maximum limit of double data type : " << DBL\_MAX <<endl;

return 0;

}

5. Write a C++ program that calculates the volume of a sphere, cube & cylinder. Expected Output: Sphere: --------------------------------------- Input the radius of a sphere : 6 The volume of a sphere is : 904.32 Cube: --------------------------------------- Input the side of a cube : 5 The volume of a cube is : 125 Cylinder: ----------------------------------------- Input the radius of the cylinder : 6 Input the height of the cylinder : 8 The volume of a cylinder is : 904.32 C-DAC Mumbai

// Online C++ compiler to run C++ program online

#include <iostream>

#include <climits> // For integer limits

#include <cfloat> // For floating-point limits

using namespace std;

double VolOfSpehere(double radius){

return (4\*3.14\*radius\*radius\*radius)/3;

}

double VolOfCube(double radius){

return(radius\*radius\*radius);

}

double VolOfRect(double length,double width,double height){

return (length\*width\*height);

}

int main(){

int choice;

double side, radius, length, width, height;

cout << "\nMenu:" << endl;

cout << "1. Calculate the volume of a spehre" << endl;

cout << "2. Calculate the volume of a cube" << endl;

cout << "3. Calculate the volume of a rectangular prism" << endl;

cout << "4. Exit" << endl;

cout << "Enter your choice (1-4): ";

cin >> choice;

switch(choice){

case 1:

cout<<"enter radius\n";

cin>>radius;

cout<<"volume of spehere is "<<VolOfSpehere(radius);

break;

case 2:{

cout<<"enter radius\n";

cin>>radius;

cout<<"volume of cube is "<< VolOfCube(radius);

break;

}

case 3:{

cout<<"enter length\n";

cin>> length;

cout<<"enter width\n";

cin>> width;

cout<<"enter height\n";

cin>>height;

cout<<"volume of recatngle is "<<VolOfRect(length,width,height);

break;

}

case 4:

cout << "Exiting program." << endl;

return 0;

default:

cout << "Invalid choice! Please enter a number between 1 and 4." << endl;

break;

}

return 0;

}

6. Write a C++ program to find the i) Area and Perimeter of a Rectangle. ii) Area and Circumference of a Circle. iii) Area of Triangle with Heron's formula. Sample Output: Rectangle: ----------------------------------------- Input the length of the rectangle : 10 Input the width of the rectangle : 15 The area of the rectangle is : 150 The perimeter of the rectangle is : 50 Triangle: ---------------------------------------------------------- Input the length of 1st side of the triangle : 5 Input the length of 2nd side of the triangle : 5 Input the length of 3rd side of the triangle : 5 The area of the triangle is : 10.8253 Circle: ---------------------------------------------------- Input the radius(1/2 of diameter) of a circle : 5 The area of the circle is : 78.5397 The circumference of the circle is : 31.4159

// Online C++ compiler to run C++ program online

#include <iostream>

using namespace std;

double AreaOfRect(double length,double width){

return (length\*width);

}

double PeriOfRect(double length,double width){

return 2\*(length+width);

}

double AreaOfCircle(double radius){

return(3.14\*radius\*radius);

}

double CircumOfCircle(double radius){

return(2\*3.14\*radius);

}

double areaOfTriangle(double a, double b, double c) {

double s = (a + b + c) / 2; // Calculate semi-perimeter

return sqrt(s \* (s - a) \* (s - b) \* (s - c)); // Heron's formula

}

int main() {

int choice;

double length,width,side1, side2, side3;

cout<<"enter 1 for area of rectangle \n";

cout<<"enter 2 for peri of rectangle \n";

cout<<"enter 3 for area of circle \n";

cout<<"enter 4 for circumference of circle \n";

cout<<"enter 5 for area of trainglel usingherons formula \n";

cout<<"enter 6 for exit \n";

cin>>choice;

switch(choice){

case 1:

cout<<"enter length\n";

cin>>length;

cout<<"enter width\n";

cin>>width;

cout<<"are of rect is "<<AreaOfRect(length,width);

break;

case 2:

cout<<"enter length\n";

cin>>length;

cout<<"enter width\n";

cin>>width;

cout<<"Peri of rect is "<<PeriOfRect(length,width);

break;

case 3:

cout<<"enter radius\n";

cin>>radius;

cout<<"area of circle is "<<AreaOfCircle(radius);

break;

case 4:

cout<<"enter radius\n";

cin>>radius;

cout<<"area of circle is "<<CircumOfCircle(radius);

break;

case 5:

cout << "Enter the lengths of the three sides of the triangle: ";

cin >> side1 >> side2 >> side3;

double area = areaOfTriangle(side1, side2, side3);

cout << "The area of the triangle is: " << area << endl;

break;

case 6:

cout<<"exiting the prog";

default:

cout<<"invalid choice";

}

return 0;

}

7. Write a C++ program to convert temperature in Celsius to Fahrenheit and Kelvin. Sample Output: C -> F --------------------------------------------------- Input the temperature in Celsius : 35 The temperature in Celsius : 35 The temperature in Fahrenheit : 95 C -> K --------------------------------------------------- Input the temperature in Celsius : 26.85 The temperature in Celsius : 26.85 The temperature in Kelvin : 300

// Online C++ compiler to run C++ program online

#include <iostream>

using namespace std;

double celsiusToFahrenheit(double celsius) {

return (celsius \* 9.0 / 5.0) + 32;

}

// Function to convert Celsius to Kelvin

double celsiusToKelvin(double celsius) {

return celsius + 273.15;

}

int main(){

double celsius;

cout << "C -> F" << endl;

cout << "---------------------------------------------------" << endl;

cout << "Input the temperature in Celsius : ";

cin >> celsius;

cout << "The temperature in Celsius : " << celsius << endl;

cout << "The temperature in Fahrenheit : " << celsiusToFahrenheit(celsius) << endl;

double celsius;

cout << "C -> K" << endl;

cout << "---------------------------------------------------" << endl;

cout << "Input the temperature in Celsius : ";

cin >> celsius;

cout << "The temperature in Celsius : " << celsius << endl;

cout << "The temperature in Kelvin : " << celsiusToKelvin(celsius) << endl;

}

8. Write a C++ program to compute the quotient and remainder. Sample Output: ------------------------------------ Input the dividend : 25 Input the divisor : 3 The quotient of the division is : 8 The remainder of the division is : 1 C-DAC Mumbai

#include <iostream>

using namespace std;

int main(){

int divident,divisor;

cout<<"enter divident\n";

cin>>divident;

cout<<"enter diviosr\n";

cin>>divisor;

double quotient=divident/divisor;

double remainder1=divident%divisor;

cout<<"quotient is"<< quotient<<"\n";

cout<<"remainder1 is"<<remainder1<<"\n";

}

9. Write a C++ program that takes a number as input and prints its multiplication table up to 10. Sample Output: -------------------------------------------------------- Input a number: 5 5 x 1 = 5 5 x 2 = 10 5 x 3 = 15 5 x 4 = 20 5 x 5 = 25 5 x 6 = 30 5 x 7 = 35 5 x 8 = 40 5 x 9 = 45 5 x 10 = 50

// Online C++ compiler to run C++ program online

#include <iostream>

using namespace std;

int main(){

int number;

cout<<"input a number\n";

cin>>number;

for (int i = 1; i <= 10; ++i) {

cout << number << " x " << i << " = " << (number \* i) << endl;

}

}

10. Write a program in C++ that converts kilometers per hour to miles per hour before conversion you have to provide a check that the input number should not be zero or negative. Sample Output: ---------------------------------------------------- Input the distance in kilometer : 25 The 25 Km./hr. means 15.5343 Miles/hr.

#include <iostream>

using namespace std;

double kmPerHourToMilesPerHour(double kmPerHour) {

return kmPerHour \* 0.621371;

}

int main() {

double speedInKmPerHour;

cout << "Enter speed in kilometers per hour: ";

cin >> speedInKmPerHour;

double speedInMilesPerHour = kmPerHourToMilesPerHour(speedInKmPerHour);

cout << "Speed in miles per hour: " << speedInMilesPerHour << endl;

return 0;

}