**C++ Assignment| Fundamentals of Programming -1 | Week2**

Q1. Take 2 integers input and print the greatest of them

Input 1: a = 5 b = 7

Output 1: second number 7 is the largest.

ANS. **#include <iostream>**

**using namespace std;**

**int main() {**

**int num1, num2;**

**cout << "Enter first number:";**

**cin >> num1;**

**cout << "Enter second number:";**

**cin >> num2;**

**if (num1 > num2) {**

**cout << "First number " << num1 << " is the largest";**

**} else {**

**cout << "Second number " << num2 << " is the largest";**

**}**

**return 0;**

**}**

**Q2.** Given the radius of the circle, predict whether numerically the area of this circle is larger than the  circumference or not.

ANS. #include <iostream>

using namespace std;

int main() {

 int radius;

 cout << "Enter the radius : ";

 cin >> radius;

 float area = 3.14 \* radius \* radius;

 float circumference = 2 \* 3.14 \* radius;

 if (area > circumference) cout << "Area is greater than circumference." << endl;

else cout << "Circumference is greater than area." << endl;

 return 0;

}

Q3. Any year is input through the keyboard. Write a program to determine whether the year is a leap year  or not. (Considering leap year occurs after every 4 years)

ANS. #include <iostream>

using namespace std;

int main() {

 int year;

 cout << "Enter a year: ";

 cin >> year;

 // leap year if perfectly divisible by 400

 if (year % 400 == 0) {

 cout << year << " is a leap year.";

 }

 // not a leap year if divisible by 100

 // but not divisible by 400

 else if (year % 100 == 0) {

 cout << year << " is not a leap year.";

 }

 // leap year if not divisible by 100

 // but divisible by 4

 else if (year % 4 == 0) {

 cout << year << " is a leap year.";

 }

 // all other years are not leap years

 else {

 cout << year << " is not a leap year.";

 }

 return 0;

}

Q4. Given the length and breadth of a rectangle, write a program to find whether numerically the area of  the rectangle is greater than its perimeter. .

ANS. #include <iostream>

using namespace std;

int main() {

 int length, breadth;

 cout << "Enter the length and breadth of the rectangle respectively : ";  cin >> length >> breadth;

 int area = length \* breadth;

 int perimeter = 2 \* (length + breadth);

 if (area > perimeter) cout << "Area is greater than perimeter.";  else cout << "Perimeter is greater than area.";

 return 0;

}

Q5.Write a program to input sides of a triangle and check whether a triangle is equilateral, scalene or  isosceles triangle.

ANS.#include<iostream>

using namespace std;

int main() {

 int side1, side2, side3;

 cout << "Please Enter Three Sides of a Triangle = ";

 cin >> side1 >> side2 >> side3;

 if (side1 == side2 && side2 == side3) {

 cout << "This is an Equilateral Triangle";

 } else if (side1 == side2 || side2 == side3 || side1 == side3) {  cout << "This is an Isosceles Triangle";

 } else

 cout << "This is a Scalene Triangle";

 return 0;

}

Q 6. If the marks of A, B and C are input through the keyboard, write a program to determine the student  scoring least marks.

Ans.#include< iostream>

using namespace std;

int main() {

 cout << "Enter marks of the students : ";

 int a, b, c;

 cin >> a >> b >> c;

 if (a <= b && a <= c)

 cout << "A scores the least marks";

 else if (b <= a && b <= c)

 cout << "B scores the least marks";

 else

 cout << "C scores the least marks";

 return 0;

}

Q7.Given a point (x, y), write a program to find out if it lies on the x-axis, y-axis or at the origin, viz. (0, 0). Input 1: 2 0

Output 1: the point lies on the x - axis.

ANS.#include<iostream>

using namespace std;

int main() {

 float x, y;

 printf("Enter the x-y coordinates of the point : ");

 cin >> x >> y;

 if (x == 0 && y == 0)

 cout << "The point is on the origin.";

 if (x == 0 && y != 0)

 cout << "The point lie on the y-axis.";

 if (x != 0 && y == 0)

 cout << "The points lie on the x-axis.";

 if (x != 0 && y != 0)

 cout << "The points lie on the plane.";

 return 0;

}

Q,8 .Given three points (x1, y1), (x2, y2) and (x3, y3), write a program to check if all the three points fall on one straight line. Input 1: x1 = 1 , y1 = 2 , x2 = 2 , y2 = 3 , x3 = 3 , y3 = 4

ANS:

#include <iostream>

using namespace std;

int main() {

 float x1, y1, x2, y2, x3, y3, slope1, slope2;

 cout << "Enter points (x1, y1)" << endl;

 cin >> x1 >> y1;

 cout << "Enter points (x2, y2)" << endl;

 cin >> x2 >> y2;

 cout << "Enter points (x3, y3)" << endl;

 cin >> x3 >> y3;

 slope1 = (y2 - y1) / (x2 - x1);

 slope2 = (y3 - y2) / (x3 - x2);

 if (slope1 == slope2) {

 cout << "All 3 points lie on the same line";

 } else {

 cout << "All 3 points do not lie on the same line";

 }

 return 0;

}

Q9.Write a C++ program to input any character and check whether it is the alphabet, digit or special  character.

ANS:

#include<iostream>

using namespace std;

int main() {

 char ch;

 cout << "Enter any character : ";

 cin >> ch;

 // Alphabet checking condition

 if ((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z')) {  cout << ch << " is an Alphabet";

 } else if (ch >= '0' && ch <= '9') {

 cout << ch << " is a Digit";

 } else {

 cout << ch << " is a Special Character";

 }

 return 0;

}

Q10 .Predict the output of below code

#include<iostream>

using namespace std;

int main() {

 int a = 500, b, c;

 if (a >= 400)

 b = 300;

 c = 200;

 cout << "value of b and c are respectively " << b << " and " << c;  return 0;

}

ANS. B=300

C=200