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ECE1301.04

9/7/2023

Homework 02

Q1: 2.15 (*Order of Evaluation)* State the order of evaluation of the operators in each of the following C++ statements and show the value of x after each statement is performed.

1. x = 7 + 3 \* 6 / 2 – 1;
   * x = 7 + 3 \* 3 – 1;
   * x = 7 + 9 – 1;
   * x = 16 – 1;
   * x = 15;
2. x = 2 % 2 + 2 \* 2 – 2 / 2;
   * x = 0 + 2 \* 2 – 2 / 2;
   * x = 4 – 2 / 2;
   * x = 4 – 1;
   * x = 3;
3. x = ( 3 \* 9 \* ( 3 + 9 \* 3 / ( 3 ) ) ) );
   * x = ( 3 \* 9 \* ( 3 + 9 \* 1 ) );
   * x = (3 \* 9 \* (3 + 9));
   * x = (3 \* 9 \* 12);
   * x = 27 \* 12;
   * x = 324;

Q2: 2.16 *(Arithmetic)* Write a program that asks the user to enter two numbers, obtains the two numbers from the user and prints the sum, product, difference, and quotient of the two numbers.

A computer screen with text on it

Description automatically generated

//Main Function

using namespace std;

int main(int argc, char\*\* argv)

{

// define variables

double num1, num2, sum, product, difference, quotient = 0;

//prompt user input

cout << "Input first number here: ";

cin >> num1;

cout << endl << "Input second number here: ";

cin >> num2;

//calculate values based on input

sum = num1 + num2;

product = num1 \* num2;

difference = num1 - num2;

quotient = num1 / num2;

//output results to user

cout << "The sum is " << sum << endl

<< "The product is " << product << endl

<< "The difference is " << difference << endl

<< "The quotient is " << quotient << endl;

return 0;

}

Q3: 2.20 *(Diameter, Circumference and Area of a Circle)* Write a program that reads in the radius of a circle as an integer and prints the circle’s diameter, circumference, and area. Use the constant value 3.14159 for π. Do all calculations in output statements.

A computer screen shot of a black and purple screen

Description automatically generated

//Main Function

using namespace std;

int main(int argc, char\*\* argv)

{

//define variables and constants

const double pi = 3.14159;

int radius = 0;

//prompt user input

cout << "Enter the radius of the circle here: ";

cin >> radius;

//output calculations to user

cout << "The diameter of the circle is " << radius \* 2 << endl

<< "The circumference of the circle is " << 2 \* pi \* radius << endl

<< "The area of the circle is " << pi \* radius \* radius << endl;

return 0;

}

Q4: 2.26 *(Checkerboard Pattern)* Display the following checkerboard pattern with eight output statements, then display the same pattern using as few statements as possible.

A computer screen with white text

Description automatically generated

//Main Function

using namespace std;

int main(int argc, char\*\* argv)

{

//eight output statements

cout << "eight output statements: \n\n";

cout << "\* \* \* \* \* \* \* \* " << endl;

cout << " \* \* \* \* \* \* \* \*" << endl;

cout << "\* \* \* \* \* \* \* \* " << endl;

cout << " \* \* \* \* \* \* \* \*" << endl;

cout << "\* \* \* \* \* \* \* \* " << endl;

cout << " \* \* \* \* \* \* \* \*" << endl;

cout << "\* \* \* \* \* \* \* \* " << endl;

cout << " \* \* \* \* \* \* \* \*" << endl;

//as few as possible

cout << "as few statements as possible: \n\n";

cout << "\* \* \* \* \* \* \* \* \n \* \* \* \* \* \* \* \*\n\* \* \* \* \* \* \* \* \n \* \* \* \* \* \* \* \*\n"

<< "\* \* \* \* \* \* \* \* \n \* \* \* \* \* \* \* \*\n\* \* \* \* \* \* \* \* \n \* \* \* \* \* \* \* \*\n" << endl;

return 0;

}

% is modulus – remainder of the integer division