**Exercises from chapter 2**

1. Write a statement (or comment) to accomplish each of the following:
   * State that a program calculates the product of three integers.
   * Declare the variables x, y, z and result to be of type int.
   * Prompt the user to enter three integers.
   * Read three integers from the keyboard and store them in the variables x, y and z.
   * Compute the product of the three integers contained in variables x, y and z, and assign the result to the variable result.
   * Print "The product is " followed by the value of the variable result.
   * Return a value from main indicating that the program terminated successfully.

**Answer**

// A c++ program that calculates the product of three integers

#include <iostream>

int main() { int x, y, z, result;

// Prompt user to enter three integers

std::cout << "Enter three integers:\n";

// Read three integers from keyboard and store them in variables x, y and z std::cin >> x >> y >> Z;

// Compute the product of variables x, y and z, and assign the result to variable result

result = x y z;

// Print "The product is" followed by the value of variable result

std::cout << "The product is " << result << "\n";

// Returns a value from main indicating that the program terminated successfully

return 0;

}

1. Write a program that accepts two integers and display the sum, difference, product and division of the two numbers. The program should also state the greater and smaller number.

**Answer**

This program uses basic arithmetic operators to calculate the sum, difference, product and division of the two numbers. It also uses conditional statements to determine which number is greater and smaller.

include <iostream>

using namespace std;

int main()

{

int num1, num2, sum, diff,

prod;

float quotient;

cout << "Enter the first

number: ";

cin >> num1;

cout << "Enter the second

number: "

cin >> num2;

sum = num1 + num2; diff = num1 - num2; prod num1 \* num2;

quotient

=

(float)num1 /

num2;

cout << "Sum: << sum <<

11

endl;

11

<<

cout << "Difference:

diff << endl;

cout << "Product: " <<

prod << endl;

cout<<"Quotient:

quotient << endl;

if (num1 > num2)

11

<<

{

cout <<

<<

" isM

cout << num1 <<

greater than " << num2 <<

endl;

cout << num2 << " is

smaller than " << num1 <<

endl;

}

else if (num2 > num1)

"1 cout << num2 << is

{

greater than << num1 << endl;

cout << num1 << is

"1

"1smaller than << num2 <<

endl;

}

else

{

cout << "The two

numbers are equal." << endl;

}

return 0;

}

3.Write a program that calculate and display the circumference of a circle. (C = 2∏r )

**Answer**

Here is a C++ program that calculates and displays the circumference of a circle given its radius:

#include <iostream> using namespace std;

int main() {

double r, c;

const double PI

=

3.14159;

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

cin >> r;

C =

\* 2

PI r;

\*

cout << "The circumference

"I

is << c;

return 0;

}

4. Write a program to solve a quadratic equation.

Hint: y = ax2 + bx + c

root = (-b ± sqrt(b2 -4ac)) / 2a

**Answer**

Sure, here is the program to solve a quadratic equation in C++:

#include <iostream> #include <cmath>

using namespace std;

int main() {

double a, b, c;

double discriminate,

root1, root2;

cout << "Enter coefficients a, b and c: "; cin >> a >> b >> c;

// Calculate the

discriminant

discriminate

=

b\* b-

4 \*a\*c;

// Find the roots of the

quadratic equation

if (discriminate > 0) {

=

(-b +

root1 sqrt(discriminate)) / (2 \* a); root2 = (-b

1

sqrt(discriminate)) / (2 \* a);

cout << "Roots are

real and different." << endl;

cout << "Root 1 =

11

<<

root1 << endl;

cout << "Root 2

11

=

<<root2 << endl;

0) {

\*

} else if (discriminate

(2 a);

root1 = root2 = -b /

cout << "Roots are

||

real and same. << endl;

2

=

cout << "Root 1 << root1 << endl;

} else {

==

=

Root

double realPart

=

-b /(2 \*a);

double imaginaryPart = sqrt(-discriminate) / (2 \* a);

cout << "Roots are

complex and different."

<<

endl;

cout << "Root 1

=

<< realPart << "+" << imaginaryPart << "i" << endl;

cout << "Root 2 =

imaginaryPart << "i" << endl;

<< realPart <<"-" <<

}

return 0;

}