Exercises – Functions

Exercises:

1. What is the output of this program?

#include <iostream>

void PrintInteger(int variable)  
{

std::cout << variable << std::endl;

}

int main()

{

int the\_variable = 1;

PrintInteger(the\_variable);

{

PrintInteger(the\_variable);

int the\_variable = 2;

PrintInteger(the\_variable);

{

PrintInteger(the\_variable);

int the\_variable = 3;

PrintInteger(the\_variable);

}

PrintInteger(the\_variable);

}

PrintInteger(the\_variable);

}

1. Write a function that returns the smaller of two floats that are passed to it:

You should make a program that asks the user for two different numbers such that it outputs:

Enter value 1: **10.6**

Enter value 2: **-67.8**

Pass the two numbers into a function and output what the function returns:

The smaller number is: **-67.8**

1. Add another function with the same name as the one you wrote in question 2, but with three floats instead of two. What is this language feature called?
2. The following statement calls a function named Half. The Half function returns a value that is half that of the argument. Write the function.

float number = 16.721f;

float result = Half(number); //result is 8.3605

1. Write a function named CoinToss that simulates the tossing of a coin.

The function should use the standard library rand() function in order to generate a display of either “heads” or “tails”.

It returns a random number between 0 and 32767. Demonstrate the function in a program that asks the user how many times they want to toss the coin, and then simulates the tossing of the coin that number of times.

1. Find the error in each of the following functions and explain how to fix them.

int sum (int x, int y)

{

int result;

result = x + y;

}

int sum (int n)

{

if (0 == n)

return 0;

else

n = n + n;

}

#include <iostream>

int main()

{

double x = 13.6;

std::cout << "square of 13.6 = " << square(x) << std::endl;

}

}

int square (int x)

{

return x \* x;

}

1. Write a function called SumTo that accepts an integer parameter N and returns the sum of all integers from 1 to N, including N.

Use this code to test the function:

#include <iostream>

//Your function called SumTo goes here

int main()

{

int result = SumTo(3); //result = 1 + 2 + 3 = 6

std::cout << result << std::endl;

result = SumTo(15); //result should now be 120

std::cout << result << std::endl;

}

}

1. Write a function that calculates and then returns x to the power of y.
2. Write a program that lets the user play the game of Rock, Paper, Scissors against the computer. The program should work as follows:
   1. When the program begins, a random number in the range of 1 - 3 is generated. If the number is 1, then the computer has chosen rock. If the number is 2, then the computer has chosen paper. So if the number is 3 then the computer has chosen scissors.
   2. The user enters their choice of rock, paper or scissors
   3. The computer’s choice is displayed.
   4. A winner is selected according to the following rules:
      1. Rock beats scissors, scissors beats paper, paper beats rock
      2. If there is a tie then the game must be replayed
   5. Make sure to break the game up into functions to perform each task. Make sure to look for any code that is repeated, and break it out into a function.