CoderDojo Programming Exercises

**Name:**

**Date:**

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**Instructions:**

For each question, copy the template code into eclipse. Write your own code to complete the problem, replacing the **// PLACE YOUR CODE HERE** comment in main. Write your own functions if the question specifies to do so.

Check that your output matches with what is provided before moving on (its ok if your variable names are different). When you have completed a question, **copy your finished code back into this document**. That way, you’ll have a record of what you’ve done!

**Questions:**

1. **Variables:**
   1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

// Output your name and age, using the printf function

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output (example):

// My name is Aneeq, and I am 19 years old.

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Declare an int variable with an initial value of 100, and then print it \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// The value of myFirstVar is 100.

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Declare an int variable that is initially 10, and print it. Then, add 15 and print it again. Finally, subtract 30 and print it one last time. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// The value of myVar is 10.

// The value of myVar is 25.

// The value of myVar is -5.

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Declare an int variable with a value of 32, and then a float variable with a value of 692.39. Print both values on separate lines, with one printf statement. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// The value of myIntVar is 32

// The value of myFloatVar is 692.39

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Declare a float variable with a value of 25.2, and then a string variable with a value of “Hello”. Print both values on separate lines, with one printf statement. Then, add 41.35 to the float variable. Print both values again, this time on one line, using two printf statements. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// The value of myFloatVar is 25.2.

// The value of myStringVar is Hello.

// The value of myFloatVar is 66.55; the value of myStringVar is Hello.

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Create two int variables with the values 14 and 33 and print their values on one line. Divide the second variable by 3. Add both variables, and store the result in a new, third variable.

Print the value of this third variable on a new line. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// The value of firstInt is 14; the value of secondInt is 33.

// The value of thirdInt is 25.

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Declare an int array with the following initial values: {15, 19, 52, 246, 12, 392, 10}. Write three printf statements to output the values 15, 19, and 392 on separate lines. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// 15

// 19

// 392

1. **Conditional Statements:**
   1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Create an if statement with the condition 19 == 29. Print “This statement is correct!” if the condition evaluates to true. If it doesn’t, print “This statement is incorrect…”. Run your program.

Change the condition to 19 != 29. Run the program again. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output (first run):

// This statement is incorrect…

//

// Output (second run):

// This statement is correct!

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Create an int variable with the value 58. Then, write an if statement that checks if your variable is equal to 58. Print “That makes sense!” if the condition evaluates to true. If it doesn’t, print “What?”. Run your program.

Change the value of the variable to 85. Run the program again. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output (first run):

// That makes sense!

//

// Output (second run):

// What?

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Create an int variable with a value of 4. Write an if statement checking if the number is divisible by 3 (HINT: Use the modulus operator here). If it is, print the value of the variable. If not, print the message “The number is not divisible by 3.” Run your program.

Change the value of the variable to 9, and run it again. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output (first run):

// The number is not divisible by 3.

//

// Output (second run):

// 9

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Declare a float variable equal to 49.32, and print it. Write a while loop that will subtract 1.38 from the value of the variable seven times. When the loop is complete, print the value again. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// The value of myVar is 49.32.

// The value of myVar is 39.66.

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Declare an int variable equal to 12, and print it. Write a while loop that will multiply the value by 3, until the value is greater than 1000. Print the value of the variable on a new line each time it runs. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// myVar is equal to 12

// myVar is equal to 36

// myVar is equal to 108

// myVar is equal to 324

// myVar is equal to 972

// myVar is equal to 2916

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

// Repeat exercise 2d using a for loop

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// The value of myVar is 49.32.

// The value of myVar is 39.66.

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

// Repeat exercise 2e using a for loop

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// myVar is equal to 12

// myVar is equal to 36

// myVar is equal to 108

// myVar is equal to 324

// myVar is equal to 972

// myVar is equal to 2916

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Create an array with the initial values of {1, 4, 9, 16, 25, 36, 49}. Write a loop that outputs the values of the array one at a time, separated by commas. Then, write another loop the outputs the values of the array on separate lines. HINT: Use the index of the array to get the value of its elements. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// 1, 4, 9, 16, 25, 36, 49

// 1

// 4

// 9

// 16

// 25

// 36

// 49

1. **Functions:**
   1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Declare a function called printText that prints any text you pass to it with three exclamation points before and after.

Test your function by calling it from main three times, passing the following text to it each call:

“This is my first custom function”

“It can make anything very exiting”

“Time to move on!” \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// !!!This is my first custom function!!!

// !!!It can make anything very exiting!!!

// !!!Time to move on!!!!

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Declare a function called printInt that prints any integer value that you pass to it.

Test your function by calling it from main three times, using the following values during each call: 129, -39, and 20.453 (you don’t need to make a variable, just pass the values directly to your function). \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// 129

// -39

// 20

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Declare a function called changeInt that prints any integer value that you pass to it, and then adds 500 to that value. Finally, print the new value. Both the new and old values should be printed on the same line, with a tab between them.

Test your function by calling it from main three times, using the following values during each call: 27, -462, and 860.42 (you don’t need to make a variable, just pass the values directly to your function). \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// Initial Value: 27 New Value: 527

// Initial Value: -462 New Value: 38

// Initial Value: 860 New Value: 1360

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Repeat exercise 3c, moving the printf statements to main

HINT: You will need several printf lines, and you must place a return statement in your function. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// Initial Value: 27 New Value: 527

// Initial Value: -462 New Value: 38

// Initial Value: 860 New Value: 1360

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Create a simple calculator function that can add, subtract, multiply, or divide two float variables. This function should have three parameters: the two numbers to compute, and an operation to conduct.

Use a char variable to hold the type of operation you are conducting. Pass ‘a’ for add, ‘s’ for subtract, ‘m’ for multiply, and ‘d’ for divide.

Test your function by calling it from main four times, passing the following parameters to it each call:

> a, 320.6, 528.534

> s, 32, -3784

> m, 4239.434, -496

> d, -5664.65, 32 \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

// Output:

// 849.134

// 3816

// -2102759.264

// -177.020313

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Modify your function in exercise 3e so that it can take an unspecified number of inputs. Test your code yourself; check the results with the calculator built into your computer.

HINT: You will need to use an array for this. Create it in main, and pass it to your function. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

* 1. **#include** <stdio.h>

**#include** <stdlib.h>

**int** **main**(**void**) {

/\* Modify your code from exercise 3f by creating separate functions for each of the operations (add, subtract, multiply, and divide). These functions should only be called from your calculator function, and not from main.

If you did this correctly, you should have written five functions (not including main).

Test your code yourself; check the results with the calculator built into your computer. \*/

**// PLACE YOUR CODE HERE**

**return** EXIT\_SUCCESS;

} /\* main \*/

Congratulations! If you made it this far, you have completed the challenge. Remember, if you have any questions or comments, you can make a post on the [forum](https://groups.google.com/forum/#!forum/calgary-public-library-coderdojo-summer-2015).