**CPSC 1020 FALL 2017**

**EXAM #2**

**This is a Closed Book exam. Please keep your notes and your computers closed. You have 50 minutes to complete the Exam. There is a total of 82 points. Although the points total 82 your grade will reflect 100%. EX. A total score of 82 will result in 100%, a total score of 50 will result in a grade of 61%.**

**Question 1: (4 points)**

Consider the following code:

Class A

{

public:

//This function returns a + b

int add(int a, int b);

};

In class we discussed two examples of how to make the function “add” an inline function.

Provide the code --for both examples-- to make the function “add” inline.

Example 1:

Example 2:

**Question 2 (3 points)**

Briefly, describe what happens, during compile time, when you have an inline function.

**Question 3 ( 2 points each for a total of 6 points)**

**Multiple choice**

Which of the following shows the correct use of the scope resolution operator in a member function definition?

1. InvItem::void setOnHand(int units) { ….. }
2. void InvItem::setOnHand(int units) { ….. }

An object’s private member variables can be accessed from outside the object by

1. public member functions
2. any function
3. the dot operator
4. the scope resolution operator
5. none of the above

Assume that, in main, **soap** is an instance of the **Inventory** class, which of the following is a valid call to the **setOnHand** member function?

1. setOnHand(20);
2. soap::setOnHand(20);
3. soap.setOnHand(20);
4. Inventory.setOnHand(20);

**Question 4 (2 points each for a total of 4 points)**

In class I described two programming **methods** that we will cover in this course. They are:

a.\_\_\_\_\_\_\_\_\_\_ which is centered around functions, or step by step actions.

b.\_\_\_\_\_\_\_\_\_\_ which is centered around classes and instances of that class.

**Question 5 (2 points each for a total of 4 points)**

**Usually** a class’s \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ are declared to be private, and it’s \_\_\_\_\_\_\_\_\_\_\_\_ are declared to be public.

**Question 6 (2 points)**

Bundling together an objects data and procedures is called \_\_\_ \_\_\_\_\_\_\_\_\_\_\_.

**Question 7 (2 points)**

Once a class is declared, how many objects can be created from it?

1. One
2. Two
3. Many
4. None of the above

**Question 8 ( 2 points each for a total of 4)**

A class member function that uses, but does not change, the value of a member variable is called a(n)\_\_\_\_\_\_\_\_\_\_\_\_\_.

A class member function that changes the value of a member variable is called a(n) \_\_\_\_\_\_\_\_\_\_\_\_.

**Question 9 ( 7 points)**

Consider the following class definition:

class Widget{

private:

double price;

int quantity;

public:

/\*Setters\*/

void setPrice(double);

void setQuantity(int);

/\*Getters\*/

double getPrice();

int getQuantity() ;

/\*Member Functions (Methods) The printInfo function prints the price of a widge and the quantity of a widget.\*/

void printInfo();

};

On the following page, implement the above class member functions.

**Question 10 (6 points) This is a continuation of Question 9**

In main below, write the code necessary to set the value and quantity of a widget, then print the information. You can assume all preprocessing information have been included.

int main( )

{

}

**Question 11 (1 point each for a total of 4)**

Indicate whether each of the following enumerated data type definitions is valid or invalid.

\_\_\_\_\_\_\_ enum Holiday {Easter, Halloween, Thanksgiving, Christmas};

\_\_\_\_\_\_\_ Enum Holiday {Easter, Halloween, Thanksgiving, Christmas};

\_\_\_\_\_\_\_ enum Holiday{“EASTER”, “HALLOWEEN”, “THANKSGIVING”, “CHRISTMAS”};

\_\_\_\_\_\_\_ enum Holiday{EASTER, HALLOWEEN, THANKSGIVING, CHRISTMAS};

**Question 12 ( 7 points )**

The following code has several mistakes. Circle and describe the mistakes in this code.

#include <iostream>

using namespace std;

class DumbBell

{

int weight;

public:

void setWeight(int);

}

void setWeight(int w)

{

w = weight;

}

int main()

{

DumbBell bar;

DumbBell.setWeight(200);

cout >> “The weight is “ >> weight << endl;

return 0;

}

**Question 13 (2 points)**

An important concept of object-oriented programming is, \_\_\_\_\_\_\_\_\_\_\_\_\_ which includes general characteristics of something without specific details.

**Question 14 (2 points)**

In class we discussed why Data Hiding is an important and good concept of object-oriented programming. In one sentence what is that reason.

**Question 15 (1 point each for a total of 5 points)**

C++ provides programmers with several formatting output stream manipulators. We discussed several of these in class. Match the following manipulator with the correct description.

\_\_\_\_\_\_\_\_\_\_\_ setw(n)

\_\_\_\_\_\_\_\_\_\_\_ fixed

\_\_\_\_\_\_\_\_\_\_\_ showpoint

\_\_\_\_\_\_\_\_\_\_\_ setprecision(n)

\_\_\_\_\_\_\_\_\_\_\_ left or right

1. Causes a decimal point and trailing zeros to be displayed for floating-point numbers, even if there is no fractional part.
2. Cause the output to all go to one side or another.
3. Sets the size of the print field.
4. Forces a floating-point number to display in a particular point format.
5. Allows us to set the number of significant digits to be printed. This includes numbers before and after the decimal.

**Question 16 (6 points)**

Consider the program below: This is a program we spent extensive time, in class, analyzing.

#include <iostream>

**Explain the problem with this program.**

**Add the code to the program to fix this problem. Your solution must use the method we discussed in class. One line of code is all that is required here.**

using namespace std;

int main(){

char ch;

cout << "Type a character and press Enter: ";

cin >> ch;

cout << "You entered " << ch << endl;

cout << "This program has paused. Press Enter to continue.";

cin.get(ch);

cout << "It has paused a second time. Please press Enter again.";

ch = cin.get();

cout << "It has paused a third time. Please press Enter again.";

cin.get();

cout << "Thank you!\n";

return 0;

}

When I compile and run this program I expect the program to do the following:

Type a character and press Enter: Y

You entered Y

This program has paused. Press Enter to continue.

It has paused a second time. Please press Enter again.

It has paused a third time. Please press Enter again.

Thank you!

However, this program actually ran as follows:

Type a character and press Enter: Y

You entered Y

This program has paused. Press Enter to continue.It has paused a second time. Please press Enter again.

It has paused a third time. Please press Enter again.

Thank you!

**Question 17 (12 points)**

Consider the following C program:

#include <stdio.h>

int main(int argc, char\* argv[]){

FILE\* input = fopen(argv[1], "r" );

int num;

while(fscanf(input, "%d", &num)== 1){

printf("%d\n", num);

}

fclose(input);

return 0;

}

Rewrite this program in C++