**CIS 252 - Exam 2 – Part 2 – Advanced C++ Programming**

**Instructions section**

**This section is worth 4 points on your grade.**

* Save a private copy of this file (“Save As” function) in your personal directory or flash drive as a Word file with the filename

**CIS\_252\_T2\_firstname\_lastname.doc(x)**

* Click on the Insert tab in MS Word, find the “Header and Footer” group and click on the Footer button. Select the first footer option, which will put you in the footer. **Type the filename in the footer, then double-click back into the text.**
* You can type in the answers now and then print or print your private copy and fill in the answers by hand.

**Short Answer section (4 points each).**

This section contains nine questions.

* You are required to answer any six of your choosing.
* You may answer the remaining three as consideration for possible bonus points between 1 and 3 points.
  + However, you must indicate which are the extra 3 answered by putting the word **BONUS** to the left of the answer to be considered for any bonus. There may be points given for them.

1. For this question, assume that all the prior declarations have been made. You have defined a class name of employeeType which is int. Please write statements to declare two objects of the type employeeType. They will be orgEmpType and deptEmpType and will pass four instance values of 4, 6, 10, 25 and 41, 62, 105, 253, respectively.   
   employeeType orgEmpType(4,6,10,25);

employeeType deptEmpType(41,62,105,253);   
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1. Consider the constructor below.

employeeType employeeType(int = 0, int = 0, int = 0, int = 0);

Please write the instance variables for employeeType, calling it empCode and initialize instance 1 to 0; instance 2 to 8; instance 3 to 9 and 6; instance 4 to 10, 17, and 25; and instance 5 to 7, 24, 10, 19. Please remember correct format.

BONUS employeeType empCode;

employeeType empCode(8);

employeeType empCode(9,6);

employeeType empCode(4,10,17);

employeeType empCode(7,24,10,19);

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1. In a specification file with function prototypes we put in comments to specify any preconditions and/or postconditions. Tell me what both are.

Precondition – BONUS conditions that must be met for the function to operate\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Postcondition – BONUS conditions that are met after the function operates\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What is involved in abstraction, in other words what are we doing when it is used?  
   separating logical operations of a data type from the implementation aspect

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1. Please define below a struct named employeeType that has 6 members. You will need three members of type string to store the first and last names, and the job position; one member of type double to store rate of pay; one member of type char for experience level; and one member of type int for employee paygrade code. Please make sure to include all the parts to satisfy the syntax.   
   struct employeeType{

string name1;

string name2;

string name3;

double rate;

char expLevel;

int payGrade;

}; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. You have defined an enumeration type called orgJobs, please write a statement to declare two variables of the type orgJobs. You can provide the names, just ensure of correct syntax.  
   enum orgJobs {TEACHER, DRIVER, CUSTODIAN} you, me;

OR

orgJobs you, me;  
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1. Relational operators can be used with the enumeration type. Why is that true?

Because its an ordered set of values meaning whatever is declared first is less than what is declared second

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1. Can the enumeration type be used directly for input or output? Please explain your answer.

No, it has to be static casted to the value of the enum value.

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1. Consider the code below:

enum {SPAIN, ITALY, POLAND, JAPAN, RUSSIA, AMERICA, BRAZIL} countries;

What kind of datatype is this, and why is it called this?

BONUS Anonymous type

What do we call countries?

BONUS A variable of an anonymous type

**Code comprehension** (12 points). Required.

Determine whether the following code fragments are 1) missing code, 2) valid code or 3) if the ones given contain errors.

* Where there is missing code, **write it in,**
* where there is an error, **indicate the error and write the correction next to it**.
* Where there is no error, **write “no error**”.
* There are supposed to be 42 statements of code including braces.
  + There are 19 statements in error and 2 that are missing.
  + There should be 21 with no errors.

#include<iostream>

using namespace std;

enum triangleType{scalene, isosceles, equilateral, noTriangle};

triangleType triangleShape(double side1, double side2, double side3);

void printShape(triangleType triangleShape);

int main()

{

double lenSide1, lenSide2, lenSide3;

cout << "Enter the lengths of the three sides of a triangle."

<< endl;

cin >> lenSide1 >> lenSide2 >> lenSide3;

cout << endl;

cout << "The shape of the triangle is: ";

printShape(triangleType triangleShape);

cout << endl;

return 0;

}

triangleType triangleShape(double side1, double side2, double side3)

{

if (side1 = side2 && side2 == side3)

return equilateral;

else if (((side1 + side2) > side3) &&

((side1 + side3) > side2) &&

((side2 + side3) > side1))

return scalene;

else if (side1 == side2 || side2 == side3 && side1 == side3)

return isosceles;

else

return noTriangle;

}

void printShape(triangleType triangleShape)

{

switch (triangleType)

{

case scalene:

cout << "scalene" << endl;

break;

case isosceles:

cout << "isosceles" << endl;

break;

case equilateral:

cout << "equilateral" << endl;

break;

case noTriangle:

cout << "none" << endl;

break;

}

}

**Programming problem** (14 points)

For this portion of the exam, you will need to create a program to output “Taking Exam Two”.

You need to create a class and an object.

You will have two sections of the program the class and the main.

You will call the class (which should contain the output statement) from main.

This will be contained in one .cpp file.

Make sure to have an initial documentation section in the program.

Put description comments by ALL of your code.

When you are finished and have a successful program (that both compiles and runs), submit the .cpp file to this assignment. File name should be named:

**CIS252\_T2\_prog\_<first name\_last name>.cpp**