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CS201 Introduction to Progra.....g

Final Term Examination – Spring 2005

Time Allowed: 150 Minutes

Please read the following instructions carefully before attempting any of the questions:

1. Attempt all questions. Marks are written adjacent to each question.
2. Do not ask any questions about the contents of this examination from anyone.
 - a. If you think that there is something wrong with any of the questions, attempt it to the best of your understanding.
 - b. If you believe that some essential piece of information is missing, make an appropriate assumption and use it to solve the problem.
 - c. Write all steps, missing steps may lead to deduction of marks.
 - d. All coding questions should be answered using the C ++

syntax.

You are allowed to use the Dev-C++ compiler to write and test your code. If you do so please remember to copy and paste your code into the examination solution area. **(Do NOT share your code; your colleague could get higher marks than you!!)**

****WARNING: Please note that Virtual University takes serious note of unfair means. Anyone found involved in cheating will get an 'F' grade in this course.**

Total Marks: 70

Total Questions: 10

Question No. 1

Marks : 02

A friend function

- must be having a prototype with no arguments
- must be invoked by the class that declares it a friend
- must be invoked by an object of the class that declares it a friend
- can access the private data of the class that declares it a friend
- cannot access the data members of a class

Question No. 2

Marks : 02

Which one of the following operators is a unary operator?

- OR (||)
- AND (&&)
- XOR (^)
- Complement operator (~)
- Insertion operator (>>)

Question No. 3

Marks : 10

Write a program that uses a function **multiple(int,int)** that determines for a pair of integers whether the second integer is a multiple of the first. The function should take two integer arguments and return 1 (true) if the second is a multiple of the first and 0 (false) otherwise. Use this function in a program that inputs a series of pairs of integers.

Question No. 4

Marks : 02

The *new* operator

- is used to declare objects or variables
- can not create and initialize an object
- names an object or variable
- returns an address to an object or variable
- can allocate an appropriate amount of memory for an object or variable

Question No. 5

Marks : 08

Write a program that uses a **function template** called **min** to determine the smaller of two arguments. Test the program using integer, character and floating point number pairs in main ().

Question No. 6

Marks : 20

Create a class named **Account**, its data members are

- i. **Account NO**
- ii. **Account Title**
- iii. **Balance**

- a) Create the object of this class using parameterized constructor in order to initialize all the three data members i.e. **Account NO. Account Title. Balance**
- b) Write a member function of this class named **deposit ()**, this function will calculate the current balance for the user's account. In **deposit** function user will be prompted to enter the amount to be deposited and displays the incremented balance.
- c) Write an other member function of this class named **addToFile()**, In this function write the values of the data members **Account NO, Account Title** and **Balance** in the file named **Account.txt**.

Also write the getter and setter functions for the data members of this class

Question No. 7

Marks : 02

If the statements

```
int j,k;  
j = 123;  
k= 234;  
int* q, * r;  
cout<<*q<<' '<<*r;
```

are executed, what will be displayed?

- ☐ The values of j and k
- ☐ The addresses of q and r
- ☐ The addresses of j and k
- ☐ 132 , 234
- ☐ garbage values

Question No. 8

Marks : 15

Write a class **Rectangle** that performs the mathematical operations (**Subtraction and Multiplication**) on its height and width with the help of operator overloading.

Class **Rectangle** should have the following **Private data members**

1. height
2. width

- a) Write a parameterized constructor to initialize the data members.
- b) Write **member functions** to **Overload** the following **Operators** and **Display** the Results.

1. -
2. *

Implement the following checks in operator overloading functions:

- i. Check for negative values in subtraction before and after the operation, change them into absolute values or negate them. (If width = -3 its absolute value is width=3.)
- ii. Check for zero values in multiplication. If any value is zero, displays a message" Height or width cannot be zero". And exit from the function.

In **main ()** create the objects of the class and assign values to their data members and then call the overloaded operators

Question No. 9

Marks : 02

A copy constructor

- ☐ takes no arguments
- ☐ copies the data of any two constructors in that class
- ☐ takes an arbitrary number of arguments
- ☐ creates a new object that later may be assigned the data of an existing object
- ☐ creates an object initialized with the same data as an existing object

Question No. 10

Marks : 07

Write the statements that will

a) declare a one-dimensional integer array with 8 elements

b) initialize each element in the array to 0

c) prompt the user for 8 integers and store those integers in the array

d) find the largest value in the array (use a loop)
