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## CS201 Introduction to Programming

### Final Term Examination - February 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: 100  
Questions: 13

Total

**Question No. 1**

**Marks : 2**

A function declaration has the same relationship to a function definition that

- 1 a class definition has to an object definition
- 2 an object declaration has to an object
- 3 a variable has to a variable declaration
- 4 a variable declaration has to the variable itself
- 5 they have no relationship

**Question No. 2**

**Marks : 12**

Write a function to overload subtraction operator for Class Order, which you created in previous question. The class has following attributes/ data members

- i) OrderID
- ii) Items
- iii) PricesOfItems

Write the main () to call the - operator and print the result also. This operator should subtract the items of one object from the other.

**Question No. 3**

**Marks : 4**

What is the difference between an array and a structure?

**Question No. 4**

**Marks : 2**

When we write a class template the first line must be:

- 1 template < class *class\_type*>
- 2 template < class *data\_type*>
- 3 template < class T >, Here T can be replaced with any name but it is preferable.
- 4 class class-name()
- 5 class template< *class\_name*>

**Question No. 5**

**Marks : 2**

A friend function of a class has access

- 1 To all data member and functions of the class
- 2 Only to other friend functions of the class
- 3 Only to private data of the class
- 4 Only to public data of the class
- 5 To private data declared in main()

**Question No. 6**

**Marks : 5**

Briefly describe the role of each of the following within a class:

1. Instance variables
2. Instance methods
3. Constructors

**Question No. 7**

**Marks : 20**

Create a class named **Order**. This class has the following attributes/ data members

- i) **OrderID**
- ii) **Items**
- iii) **PricesOfItems**

- a) Create the object of this class using parameterized constructor in order to initialize **OrderID** and **Items** data members. Default values of both the data members must be equal to 1.
- b) Write the following member functions of this class;
- i) **OrderBill ( )**, this function will calculate the invoice of an order and display the result. The formula to calculate the invoice is  
**invoice=SumPrices();**
  - ii) **SumPrices( )**, this function will sum the prices of the items entered by the user from keyboard in **PricesOfItems** array and returns the result.
- c) Write the setter functions for **OrderID**, **Items**, and **PricesOfItems**. And getter functions for **OrderID** and **Items**.

Also write the main ( ) to create the object of class **Order**.

**Question No. 8**

**Marks : 2**

The *new* operator

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

**Question No. 9**

**Marks : 15**

Write a program that inputs one string of max length of 10. If the string is identical to "Virtual", output the message "Correct Password"; otherwise, output the first four characters in the message and the length of the message.

**Question No. 10**

**Marks : 2**

If we open a file stream *myfile* for reading, what will give us the current position of the file pointer?

- 1 tellg()
- 2 tellp()
- 3 seekg()
- 4 seekp()
- 5 fstream.h

**Question No. 11**

**Marks : 2**

There is a class Student, Which one of the following is a valid destructor for this class.

- 1 Student();

```
2 Student(int);  
3 ~ Student();  
4 int~ Student();  
5 ~ Student(int);
```

**Question No. 12****Marks : 5**

What is a friend function? Explain with example?

**Question No. 13****Marks : 6**

Write code that will declare, initialize, and fill in an array of objects of type int. After your code executes, the array should look as follows.

**0 2 4 6 8 10 12 14 16 18**

