

UNIVERSITY OF CENTRAL FLORIDA
Department of Computer Science

COP 4020 - PROGRAMMING LANGUAGES
MID TERM EXAM II (Fall 2001)
OPEN NOTES AND BOOKS
DURATION: 75 mins

NAME & SSN : _____

QUESTION (115 points) [15 points for BOUNS part]

Determine the output of the given C++ program by finding the output after the * symbol. Note that some outputs have already been printed as a hint. For example the first line in the output corresponds to the execution of the operator `cout << a` is also given. There are total 30 lines that you have to fill.

BOUNS PART(15 points): Describe the objects deleted for each one of the lines "DEL A" in the output.
Some information about the program:

1. There are 3 classes, namely **A**, **B** and **C**. Two classes (**B** and **C**) are composite classes and they have member fields from class **A**. Class **C** is a subclass of class **B**.
2. There are three overloaded << operators defined for all three classes. One of them prints the value of **count** field of the objects in class **A**, and the result of the **sum** member function after * symbol. The other two prints all the fields of **B** and **C** after printing the name of the class, << and * symbol.
3. The operator > is overloaded twice in class **A** to assign left hand side **A** object or **int** into right hand side **A** object.
4. Function **print** has been defined for the classes **B** and **C** as member function and they work similar to << operator. They first print the class name, followed by the function name **print** and followed by * symbol, before printing the contents of the objects.

```
* 1 0
B<<*
*
C<<*
*
*
ASSIGN 2
*
*
ASSIGN 1
*
DEL A
Bprint*
*
Cprint*
*
*
---- f1 ----
B<<*
*
Bprint*
*
---- f1 ----
B<<*
*
Cprint*
*
*
---- f2 ----
B<<*
*
Bprint*
*
DEL A
---- f2 ----
B<<*
*
Bprint*
*
DEL A
DEL A
DEL A
DEL A
DEL A
```

Note: The output format does not directly reflect the real format.