

Programming Languages

HW 3, November 26, 2008

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Due: 12/15/08

Problem 1 - C++

1) Consider this class:

```
class StringPrinter {
protected:
    string text1;

public:
    StringPrinter(string text): text1(text) {}
    virtual ~StringPrinter() {}

    void print() { cout << "The text is: " << text1 << endl; }
};
```

Write a derived class with a print method outputting "Here's the secret message: `_the_text_`".

2) Consider this class:

```
class Integer {
private:
    int number;
public:
    Integer(int number): number(number) {}
    virtual ~Integer() {}

    int getValue() { return number; }
};
```

Write the + and * operators for this class (e.g. `Integer(5) + Integer(6) = Integer(11)`, `Integer(8) * Integer(2) = Integer(16)`).

Problem 2 - ADA

Write a program to encode a message with a substitution table.

First the program asks the user a key. Let's say HELLOWORLD. The substitution table will look like:

```
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
H E L O W R D Z Y X V U T S Q P N M K J I G F C B A
```

Note that the key is transformed into HELOWRD.

Then the user can enter the text to encode. To quit the program, the user have to type `quit<ENTER>`. When the user decides to quit the program, the ciphered text will be outputted in groups of eight letters, all in upper case.