CSCI 111
Midterm
Spring 2014

Question Number	Point Value	Points Awarded
1	40	
2	20	
3	15	
4	25	
Total	100	

Name _____

Student Id _____

Lab Section_____

- 50 Minutes
- If I can't read your handwriting I have to count it wrong
- Keep short answers short
- You do not need to put comments in any code you write.
- NO NOTES, PARTNERS, ELECTRONIC DEVICES…

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Question one - (40 points) Implement a Book class for a book store as described: A Book has a title, cost, and number in stock. Set the title and cost to values passed to the constructor. Create a "get method" for each instance variable. Create a method that will increase the number in stock by an amount provided. Finally, create a method that will return the total value of the given book in stock (do not worry about formatting this output to a normal currency value). You do not need to provide any comments in your code.

Here is sample code and output from a Driver for your Book class:

```
Book book1 = new Book("Extreme Alpinism", 19.95);
book1.increaseStock(5);
book1.increaseStock(2);
System.out.println(book1.getNumInStock() + " copies of " + book1.getName() + " in stock.");
System.out.println("The value of " + book1.getName() + " in stock is $" + book1.calcStockValue());
```

Output:
7 copies of Extreme Alpinism in stock.
The value of Extreme Alpinism in stock is $139.65

```java
public class Book
{
   private int numInStock;
   private String title;
   private double cost;

   public Book(String inTitle, double inCost)
   {
      title = inTitle;
      cost = inCost;
   }

   public String getTitle()
   {
      return title;
   }

   public int getNumInStock()
   {
      return numInStock;
   }

   public double getCost()
   {
      return cost;
   }

   public void increaseStock(int newAmount)
   {
      numInStock += newAmount;
   }
```

```java
    public double calcStockValue()
    {
        return numInStock * cost;
    }
}
```

Question Two (20 points) – Given the Driver below, create the classes and method headers needed to get that Driver to compile. Note: You do not need to create any instance variables, nor do you need to put anything in the method bodies EXCEPT a bogus return value (ex: return 0;), if one is required. If I put your code into a computer, it should compile. Just make the classes, and make the correct method headers. You do not need to provide any comments in your code.

```
public class Driver
{
  public static void main(String[] args)
  {
    Marker m1 = new Marker("red");
        Marker m2 = new Marker("blue");

        m1.drawLine(7.3);
        int val = m2.getUses();
  }
}
```

Write your class(es) here:

```
public class Marker
{
        public Marker(String s)
        {

        }

        public void drawLine(double d)
        {

        }

        public int getUses()
        {
                return 0;
        }
}
```

Question Three (15 points) – Convert the following switch statement to an if-else statement. You do not need to provide any comments in your code.

```
switch (size)
{
   case 6:
      price = 44.99;
      break;
   case 7:
      price = 49.99;
      break;
   case 8:
      price = 54.99;
      break;
   case 9:
      price = 59.99;
      break;
   case 10:
      price = 64.99;
      break;
   default:
      price = -1;
      System.out.println("size error");
      break;
}
```

```
if (size == 6)
{
   price = 44.99;
}
else if (size == 7)
{
   price = 49.99;
}
else if (size == 8)
{
   price = 54.99;
}
else if (size == 9)
{
   price = 59.99;
}
else if (size == 10)
{
   price = 64.99;
```

```
}
else
{
    price = -1;
    System.out.println("size error");
}
```

Question Four (25 points) – Answer the following short answer questions. If it asks for the method declaration, no method body is needed, just the first line: public…

a. (3 points) Write the method declaration for a public method that takes two integers as parameters and returns a boolean value.
    ```
    public boolean method(int n1, int n2)
    ```

b. (2 points) Call your method from above on instance1 with any input and store the result in a variable you declare.
    ```
    boolean var = instance1.method(3, 2);
    ```

c. (2 points) What is the maximum value that the following line of code could print?
    ```
    System.out.println((int) (Math.random() * 10 + 1));
        10
    ```

d. (4 points) In the University class below, write the method declaration for the following getCost method:
    ```
    double tuition = University.getCost(782.42, new Student(int credits));
    ```

    ```
    public class University
    {
        public static double getCost(double val, Student student);
    }
    ```

e. (2 points) In general, should instance variables be public or private? Why?
    ```
    private, so users cannot access/modify information without permission.
    ```

f. (3 points) Create an instance of the SpringBreak class using a constructor that takes a string as the only parameter (use any string). Also assign your instance to a variable you declare.
    ```
    SpringBreak sb = new SpringBreak("s");
    ```

g. (2 points) What does n equal after this switch statement is executed?
    ```
    int n;
    int x = 1;
    switch(x)
    {
        case 2:
          n = 2;
        case 1:
          n = 1;
        default:
          n = 0;
    }
    0
    ```

h. (4 points) What does the following code print?
    ```
    int n = 7;
    System.out.println(n++);        7
    System.out.println(n);          8
    System.out.println(--n);        7
    System.out.println(n);          7
    ```

i. (3 points) What does a constructor do (they do at least two things)?

Creates a new instance of the class in memory and initializes the variables to their desired initial values.