Midterm Exam

St. Name: _____, _____
          Last Name,   **First Name**

Important Notes:

- Please do NOT attempt to run and compile the questions that ask for writing Java code since this will take significant amount of time; provide only code snippets that capture the logic/answer required for every question, provide something similar to the code snippets that we covered during class.

- There are 6 questions in the exam paper

- Type your answers (No Hand-Writing) below every question, and please make sure you distribute your time wisely to cover all questions.

- Your midterm exam is due on D2L as SINGLE PDF document at 11:55am, Tuesday 4/26/16.

[Q1.] **(5 points) What is the difference between Servlets and HTML?**

[Q2.] **(5 points) What is the difference between the Cookie object and Session object?**

[Q3.] **(5 points) Which one is more expensive to load and execute by the container/app server: Servlet or JSP request? Explain**

[Q4.] **(5 points) Explain a scenario where URL Encoding is needed in the implementation of servlet-based application.**

[Q5.] **(20 points) Create an HTML Form that allows the user to guess a number between 1 and 5000. When the user presses the submit button, the Servlet will create a random number and if it is equal to the number the user guessed, the servlet will reward the user $50. If the user guesses right twice in a row, then the user will be reward $100. And if the user guesses right 3 times in a row, the user will be rewarded $500 and the winning counter will be reset. Use session in the servlet implementation.**

[Q6.] **(60 points) Write an application using Servlet/HTML for the WideCast Cable Provider described below.**

Consider the following high-level description for the **WideCast Cable Provider**:

- The intent is to build an Servlet-based application that will be used by the customer to enroll in a plan and/or order services/PPV event
    1. TV plan
        1. Basic - 50 channels
        2. BasicPlus – 100 channels
        3. Ultimate - 200 channels
    2. Internet Plan
        1. SpeedLane – 20/5 Mbps
        2. LightLane – 50/10 MBPS
    3. Phone Lines
        1. Basic – 1000 calls
        2. Freedom – unlimited calls
    4. PPV Live Sports Events (fixed date/time)
        1. Make-up ANY 3 Hard-Coded Events
    5. PPV Movies (Any date/time)
        1. Make-up ANY 3 Hard-Coded Movies

- Assume the Customer has an existing account, the customer must be able to do the following online:
    1. Order a PPV event (Live sports or Movies)
    2. Cancel an ordered PPV event 24 hours before the PPV date
    3. Buy/Change/Cancel any of the services/products listed above like TV , Phone plan, or Internet plan services/products

- A customer must be able to buy (order online) one or many service/product in the same **session**. The customer must be able to add/delete service/product to/from the **shopping cart**, and edit the shopping cart. Once the customer is done with the items selection, the customer will click the **Checkout Button** and the customer will be provided with a page to enter name, address, and credit card number. After that, the user will click the **Submit Button**, and the system shall generate an itemized bill for the total amount to be paid and provide the customer with a confirmation number which is the concatenation of the first 3 characters of the last name and the last 4 digits of the credit card number.

*Your application **(Servlets/HTML)** must implement (only CODE SNIPPETS Required. Do **NOT** spend time to compile your code) the functionalities listed above in order to allow the customer to **perform the different functionalities listed above.***

*Also, best to **Reuse/refactor** the code you wrote for* **Sports Depot store** in the **practice exam**