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| ../Pictures/N-Horiz-Full.jpg  **CSIS 44-542 Object-Oriented Programming**  **Spring 2017**  **Lab 03: Control Structures Lab Activity** |

**Objective:** Covers the usage of **Conditions, Operators**, **Selections, and Repetitions.**

**NOTE:**

* Do not hard code any values.
* Check the sample output to know how the results need to be printed.
* Read every instruction carefully and follow them strictly.
* Do not change the name of the attributes, method given below.

1. Create a New Project and name it as **Lastname\_Lab03ControlStructures** where **Lastname** is your last name.
2. Create a new package in the project created and name it as my**sonic.**
3. Create a new Java class in **mysonic** package and name it as **SonicOrder**.
4. Write statements to declare the following attributes.

**Note:** Do not add any instance variables beyond those shown here. Access specifiers must be private for all the given instance variables.

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| **Attribute** | **Type** | **Attribute Description** |
| **milkshakeName** | **String** | Name of milkshake ordered |
| **orderType** | **String** | Order type of customer. It is either “Dine In” or “Take Away”. |
| **contactNumber** | **String** | Contact number of the customer |
| **size** | **String** | Size of the milkshake. It is either “Mini” or “Small” or “Regular” or “Large”. |
| **CLASSIC\_SHAKE** | **double** | It’s a constant (final) with value 3.0, defines cost of the milk shake |
| **MASTER\_SHAKE** | **double** | It’s a constant (final) with value 3.5, defines cost of the milk shake |
| **MASTER\_BLAST** | **double** | It’s a constant (final) with value 3.75, defines cost of the milk shake |
| **WAFFLECONE\_SUNDAE** | **double** | It’s a constant (final) with value 4.0, defines cost of the milk shake |
| **shakeToppings** | **String** | Toppings on the milkshake separated by a comma. |
| **extraIceCream** | **String** | Flavor of ice cream scoops added to milk shake separated by comma. |

1. Constructor:
   1. Create a constructor with parameters. The parameters are used to set the values of the instance variables.

**public SonicOrder(String milkshakeName, String orderType, String contactNumber, String size)**

* 1. Create a constructor with one parameter initializing attribute contactNumber and initialize the attributes milkshakeName, orderType and size with “Chocolate MilkShake”, “Dine In” and “Regular” respectively.
  2. Create a no-arg constructor without initializing attributes.

1. Methods:
   1. Write **getter and setter** methods for each of the instance variables declared.
   2. Create a method named as getTotalNumberToppings(),this method will return a Double value. This method will use the attribute shakeToppings and will return the total number of toppings. For example, “oreo, M&M”, this method returns a number 2.
   3. Create a method named as getTotalNumberScoops(),this method will return a Double value. This method will use the attribute extraIceCream and will return the total number of scoops of ice-cream. For example, “Vanilla, Chocolate”, this method returns a number 2.
   4. Create a method named as getTotalScoopsCost(), this method will return a Double value. This method will use the attribute extraIceCream and use a switch case for calculating total cost of scoops and return the total cost.

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| **Type** | **Cost of each scoop($)** |
| **Vanilla** | **1.0** |
| **Chocolate** | **1.25** |
| **Butterscotch** | **2.5** |
| **Strawberry** | **2.75** |
| **Blackberry** | **2.25** |
| **Caramel** | **2.5** |
| **Others** | **3.0** |

* 1. Create a method named as getTotalToppingsCost(), this method will return a Double value. This method will use the attribute shakeToppings and use a if-else case for calculating total cost of toppings and return the total cost.

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| **Type** | **Cost of each scoop($)** |
| **M&M** | **0.75** |
| **Oreo** | **0.65** |
| **ChocolateChips** | **0.99** |
| **Others** | **1.00** |

* 1. Create a method named as getTotalCost(), this method will return a Double value, which is the total cost of the order. Create attribute totalCost of type Double. Use only if condition and if the milkshakeName is “MilkShake” use the value of CLASSIC\_SHAKE, if the milkshakeName is “MasterShake” use the value of MASTER\_SHAKE, if the milkshakeName is “MasterBlast” use the value of MASTER\_BLAST, if the milkshakeName is “Wafflecone” use the value of WAFFLECONE\_SUNADE. If the milkshakeName is anything else then use the value of CLASSIC\_SHAKE.
     1. If the order has total toppings greater than two then, add 1$ to totalCost.
     2. If the order has total scoops greater than one then, add 10% extra to totalCost.
     3. Call the method getTotalScoopsCost() and add the returned value to totalCost.
     4. Call the method getTotalToppingsCost() and add the returned value to totalCost.
     5. If the order type is “Dine In”, then add 10% of Discount to totalCost. else add 10% extra to totalCost.
     6. And return totalCost.
  2. Write a **toString()** method which should be used to display the values for each attribute. This method should return a String. See the sample output to know the pattern.

1. Include Javadoc comments, using the @author, @param, and @return annotations when appropriate.
2. Generate documentation for your project by clicking on **Run** from the NetBeans menu bar and then selecting **Generate Javadoc**. The documentation will be placed in a **javadoc** subfolder of the **dist** subfolder inside your project folder. To view the documentation, open the **index.html** file that is created.
3. Create a java main class named as SonicDriver. This class has a method **main** and uses one **Scanner** object to get input from user console.
4. Here is a pseudocode version of this class. You can use different variable names than those shown here. You do not have to follow these steps exactly, but you must produce the same output (**Look at sample Output**), *including labels*.

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| *do{*  *Declare and initialize a scanner object sc.*  *Scan the milkshakename entered by the user.*  *Scan the contact number of the customer.*  *Scan the size of the milkshake ordered by the customer(Mini/Small/Regular/Large)*  *Scan the toppings ordered by the customer*  *Scan the Ice Cream types ordered by the customer*  *Scan the order type of the customer*  *Invoke the SonicOrder constructor based on the scanned details.*  *Use setters for setting the shakeToppings and extraIceCream.*  *Print the details using toString() method.*  *Test the final price of the milk shake*  *Prompt the customer whether an additional order is required.*  *}*  *While{*  *If he chooses Yes order form must repeat else program must terminate with a Thank you message*  *}* |

**Sample Output may look like this (Input in Red):**

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| Welcome to Sonic!  Enter the Name of MilkShake: MasterShake  Enter Contact Number :6605629001  Enter size of milkshake: Large  Enter toppings you want to add: M&M, Oreo  Enter ice cream type you want to add: Vanilla, Strawberry,Blackberry  Enter order type(Dine In/ Take Away): Dine In  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Your Order :  Contact Number of Customer: 6605629001  Milkshake Ordered by Customer : MasterShake  Size of Milkshake : Large  Toppings for milk shake : M&M, Oreo  Extra Scoops of Ice-Cream : Vanilla, Strawberry,Blackberry  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Total Cost of Your Order : 10.17  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Would you like order again? (Y/N):  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Y  Enter the Name of MilkShake: MasterBlast  Enter Contact Number :6604556544  Enter size of milkshake: Regular  Enter toppings you want to add: ChocolateChips,M&M  Enter ice cream type you want to add: Caramel,Chocolate  Enter order type(Dine In/ Take Away): Take Away  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Your Order :  Contact Number of Customer: 6604556544  Milkshake Ordered by Customer : MasterBlast  Size of Milkshake : Regular  Toppings for milk shake : ChocolateChips,M&M  Extra Scoops of Ice-Cream : Caramel,Chocolate  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Total Cost of Your Order : 9.668999999999999  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Would you like order again? (Y/N):  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Y  Enter the Name of MilkShake: Wafflecone  Enter Contact Number :5234423443  Enter size of milkshake: Mini  Enter toppings you want to add: M&M  Enter ice cream type you want to add: Vanilla  Enter order type(Dine In/ Take Away): Take Away  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Your Order :  Contact Number of Customer: 5234423443  Milkshake Ordered by Customer : Wafflecone  Size of Milkshake : Mini  Toppings for milk shake : M&M  Extra Scoops of Ice-Cream : Vanilla  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Total Cost of Your Order : 6.325  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Would you like order again? (Y/N):  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  N  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Thank You and have a great day! |

**Submit you solution by following the steps below:**

* Save your files in NetBeans.
* Zip your entire Project. (It should be called *Lastname*\_Lab03ControlStructure**s**.zip where Last name is your last name.)
* Submit the Zip file to the Lab03Controlstructures Dropbox.
* Download the Zip file you have submitted.
* Look in the Zip file and verify the class files in the Zip folder are correct. If not re save your project in NetBeans and resubmit.