

# Homework 06

## Peanut Butter and Jelly Sandwich

### Due 11/10/2023 by 11:55pm

**Objective:**

Practice object-oriented principles by making two Peanut Butter and Jelly Sandwiches. The program must create two sandwiches based on user input. The sandwich information for both must then print out their details and determine if the two sandwiches are equal.

**Requirements:**

- Functionality. (80pts)
  - No Syntax Errors. (80pts\*)
    - \*Code that cannot be compiled due to syntax errors is nonfunctional code and will receive no points for this entire section.
  - Write a class called **Bread** with the following: (20pts)
    - Instance Variables
      - Name: The name brand of the bread. This value should not be null, and its default value is “none”.
      - Calories: The number of calories per slice assumed to be between 50 and 250 inclusively, and its default value is 50.
      - Type: The kind of bread. This can either be “Honey Wheat”, “White”, “Whole Grain”, or “Whole Wheat”, and its default value is “Whole Grain”.
    - Methods
      - Accessors and Mutators for the instance variables
        - Make sure in the mutators check for valid values named in the “Instance Variables” Section.
        - If the value that is being set is not valid, then set the instance variable to its default value.
      - Equals: This method takes in another instance of Bread and only returns true if all of the instance variables match. For name and type case should be ignored.
      - ToString: This method returns a string with all of the instance variable values concatenated together.
    - All above must apply for full credit.
  - Write a class called **PeanutButter** with the following: (20pts)
    - Instance Variables
      - Name: The name brand of peanut butter. This value should not be null, and its default value is “none”.
      - Calories: The number of calories per serving assumed to be between 100 and 300 inclusively, and its default value is 100.

- IsCrunchy: True if the peanut butter is crunchy and false otherwise, and its default value is false.
- Methods
  - Accessors and Mutators for the instance variables
    - Make sure in the mutators check for valid values named in the “Instance Variables” Section.
    - If the value that is being set is not valid, then set the instance variable to its default value.
  - Equals: This method takes in another instance of Peanut Butter and only returns true if all of the instance variables match. For name case should be ignored.
  - ToString: This method returns a string with all of the instance variable values concatenated together.
- All above must apply for full credit.
- Write a class called **Jelly** with the following: (20pts)
  - Instance Variables
    - Name: The brand name of the Jelly. This value should not be null, and its default value is “none”.
    - Calories: The number of calories per serving assumed to be between 50 and 200 inclusively, and its default value is 50.
    - FruitType: The type of fruit the jelly is made from and can only be “Apple”, “Blackberry”, “Grape”, “Blueberry”, or “Tomato”. Its default value is “Grape”.
  - Methods
    - Accessors and Mutators for the instance variables
      - Make sure in the mutators check for valid values named in the “Instance Variables” Section.
      - If the value that is being set is not valid, then set the instance variable to its default value.
    - Equals: This method takes in another instance of Jelly and only returns true if all of the instance variables match. For name and fruit type case should be ignored.
    - ToString: This method returns a string with all of the instance variable values concatenated together.
  - All above must apply for full credit.
- Write a class called **PBJSandwich** with the following: (10pts)
  - Instance Variables
    - TopSlice: An instance of type Bread representing the top slice of bread. This type refers to the one that was described above, and its default value is the default Bread.
    - PeanutButter: An instance of type PeanutButter representing the peanut butter. This type refers to the one that was described above, and its default value is the default PeanutButter.
    - Jelly: An instance of type Jelly representing the jelly. This type refers to the one that was described above, and its default value is the default Jelly.

- BottomSlice: Another instance of type Bread representing the bottom slice of bread. This type refers to the one that was described above, and its default value is the default Bread.
- Methods
  - Accessors and Mutators for the instance variables
    - Make sure in the mutators check for valid values named in the Instance Variable Section.
    - Each of the instance variables must not be null.
  - Equals: This method takes in another instance of PBJSandwich and only returns true if all of the instance variables match by calling their Equals methods.
  - ToString: This method returns a string with all of the instance variable values.
- All above must apply for full credit.
- Write a class called **PBJFrontEnd** with the following: (10pts)
  - Methods
    - Main Method
      - The program must create two instances of type PBJSandwich.
      - User must be able to enter all the properties of the sandwiches which include all the properties of the top slice of bread, bottom slice of bread, jelly, and peanut butter.
      - The program must then print out the values of the two sandwiches which include all the properties of the top slice of bread, bottom slice of bread, jelly, and peanut butter.
      - The program must then determine if they are the same sandwich.
      - The program must then ask the user if they would like to restart or quit.
  - All above must apply for full credit.
- Coding Style. (10pts)
  - Code functionality organized within multiple methods other than the main method, and methods organized within multiple classes where appropriate. (5pts)
  - Readable Code. (5pts)
    - Meaningful identifiers for data and methods.
    - Proper indentation that clearly identifies statements within the body of a class, a method, a branching statement, a loop statement, etc.
    - All the above must apply for full credit.
- Comments. (10pts)
  - Your name in every file. (5pts)
  - At least 5 meaningful comments in addition to your name. These must describe the function of the code it is near. (5pts)

**Example Dialog:**

\*The following Example Dialog demonstrates the interactions between a user and ONE possible implementation of the required software's front-end / user interface. The software's front-end / user interface may be implemented in MANY different ways and will receive full credit as long as it meets the most minimal of the above requirements. While you may use the example dialog as a guide, it is strongly encouraged to create the front-end / user interface in your own way. \*

Key	
Unhighlighted Text	Program's Output
Highlighted Text	User's Input

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-----
Welcome to the PBJ Sandwich Maker!
-----
-----Sandwich 1-----
Top Slice of Bread Information
Enter name of the bread
Wonder Bread
Enter the number of calories
80
Enter the type of bread. Must be "Honey
Wheat", "White", "Whole Grain", or "Whole
Wheat"
whole wheat
Peanut Butter Information
Enter name of the peanut butter
JIF
Enter the number of calories
190
Is it crunchy? Enter "true", or "false"
false
Jelly Information
Enter name of the jelly
Smuckers
Enter the number of calories
150

```

Enter the type of bread. Must be "Apple",  
"Blueberry", "Grape", "Strawberry", or  
"Tomato"

Apple

Bottom Slice of Bread Information

Enter name of the bread

Wonder Bread

Enter the number of calories

120

Enter the type of bread. Must be "Honey  
Wheat", "White", "Whole Grain", or "Whole  
Wheat"

honey Wheat

-----Sandwich 2-----

Top Slice of Bread Information

Enter name of the bread

Pepperidge Farm

Enter the number of calories

100

Enter the type of bread. Must be "Honey  
Wheat", "White", "Whole Grain", or "Whole  
Wheat"

Whole grain

Peanut Butter Information

Enter name of the peanut butter

Peter Pan

Enter the number of calories

180

Is it crunchy? Enter "true", or "false"

true

Jelly Information

Enter name of the jelly

Welch's

Enter the number of calories

150

Enter the type of bread. Must be "Apple",  
"Blueberry", "Grape", "Strawberry", or  
"Tomato"

Grape

Bottom Slice of Bread Information

Enter name of the bread

Lender's

Enter the number of calories

150

Enter the type of bread. Must be "Honey  
Wheat", "White", "Whole Grain", or "Whole  
Wheat"

Whole Wheat

-----Sandwich 1-----

PBJ Sandwich

Top Slice:

Bread

Name: Wonder Bread

Calories: 80

Type: whole wheat

Peanut Butter:

Peanut Butter

Name: JIF

Calories: 190

Is Crunchy: true

Jelly:

Jelly

Name: Smuckers

Calories: 100

Fruit Type: Apple

Bottom Slice:

Bread

Name: Wonder Bread

Calories: 120

Type: honey Wheat

-----Sandwich 2-----

PBJ Sandwich

Top Slice:

Bread

Name: Pepperidge Farm

Calories: 100

Type: Whole grain

Peanut Butter:

Peanut Butter

Name: Peter Pan

Calories: 180

Is Crunchy: true

Jelly:

Jelly

Name: Welch's

Calories: 100

Fruit Type: Grape

Bottom Slice:

Bread

Name: Lender's

Calories: 150

Type: Whole Wheat

Are they the same sandwich? false

Example Dialog 2:

-----  
Welcome to the PBJ Sandwich Maker!  
-----

-----Sandwich 1-----

Top Slice of Bread Information

Enter name of the bread

Wonder

Enter the number of calories

100

Enter the type of bread. Must be "Honey  
Wheat", "White", "Whole Grain", or "Whole  
Wheat"

White

Peanut Butter Information

Enter name of the peanut butter

JIF

Enter the number of calories

150

Is it crunchy? Enter "true", or "false"  
false

Jelly Information

Enter name of the jelly

Welchs

Enter the number of calories

150

Enter the type of bread. Must be "Apple",  
"Blueberry", "Grape", "Strawberry", or  
"Tomato"

Grape

Bottom Slice of Bread Information

Enter name of the bread

Wonder

Enter the number of calories

100

Enter the type of bread. Must be "Honey  
Wheat", "White", "Whole Grain", or "Whole  
Wheat"

White

-----Sandwich 2-----

Top Slice of Bread Information

Enter name of the bread



Wonder

Enter the number of calories

100

Enter the type of bread. Must be "Honey Wheat", "White", "Whole Grain", or "Whole Wheat"

white

Peanut Butter Information

Enter name of the peanut butter

JIF

Enter the number of calories

150

Is it crunchy? Enter "true", or "false"

false

Jelly Information

Enter name of the jelly

Welchs

Enter the number of calories

150

Enter the type of bread. Must be "Apple", "Blueberry", "Grape", "Strawberry", or "Tomato"

grape

Bottom Slice of Bread Information

Enter name of the bread

wonder

Enter the number of calories

100

Enter the type of bread. Must be "Honey Wheat", "White", "Whole Grain", or "Whole Wheat"

white

-----Sandwich 1-----

PBJ Sandwich

Top Slice:

Bread

Name: Wonder

Calories: 100

Type: White

Peanut Butter:

Peanut Butter

Name: JIF

Calories: 150

Is Crunchy: true

Jelly:

Jelly

Name: Welch's

Calories: 100

Fruit Type: Grape

Bottom Slice:

Bread

Name: Wonder

Calories: 100

Type: White

-----Sandwich 2-----

PBJ Sandwich

Top Slice:

Bread

Name: Wonder

Calories: 100

Type: white

Peanut Butter:

Peanut Butter

Name: JIF

Calories: 150

Is Crunchy: true

Jelly:

Jelly

Name: Welch's

Calories: 100  
Fruit Type: grape  
Bottom Slice:  
Bread  
Name: wonder  
Calories: 100  
Type: white

Are they the same sandwich? true

**Finally:**

Upload the all Java source files (.JAVA extension) to the CSCE Dropbox