Homework Week 2:

Don't get overwhelmed by the number of steps. I tried to describe what you need to in detail so that you are not lost. If you complete this homework successfully, you can declare yourself as a novice Java developer :-)

Essentially, you are doing two things:

1) Creating a program to calculate circle area with radius
2) Another program which displays some details about the planet that the user is interested in such as planet area, planet star and planet position.

Part 1:

1) Create a package/namespace called **com.yearup.week2.homework**

Part 2:

Create a **Calculator** interface within the above package which has the following methods:

1) Method to calculate area which accepts two arguments of type double returns double.
2) Method to calculate sum which accepts two arguments of type double returns double.
3) Method to calculate volume which accepts three arguments of type double and returns double.

Part 3:

1) Create a class which implements the Calculator under the above package which requests the user to input length and calculates the area of a square and shows the output.
2) The display message to get user input and assigning the scanner value to a variable should be done in a separate method.
3) Create a local variable in the main method to store the return value from Step 3.
4) Set the correct access modifier for the variable to ensure that the variables declared in the class can't be modified outside this class.
5) Modify the calculate area method which was implemented from the interface to calculator area of a square using the formula r*r; The argument for this method is the local variable in step 4..
6) The display message and the code to show the area of the square should be done in a separate method.
7) Create an object for this class in the main method and call the functions in order to get user input, calculate area and display user output.
8) **Take a screenshot.**

Part 4:

1) Create a class Planet under the same package.
2) This class should implement the same interface created in part 1.
3) Create the following **member** variables:
    a) Variable to store the star of the planet. This should be accessible by the subclass but not any other class.
    b) Implement a method to access Star from subclasses with String return type.
4) Create the following **instance** variables:
    a) Variable to capture planet name of type String;
    b) Variable to capture planet radius of type double;

5) Modify the calculate area method implemented from interface to use the following formula and return the area;Area = 3.14*radius*radius;

Part 5:

Create a SolarSystem Planet class in the same package which inherits from Planet class:

1) Create a variable to store the star of the Solar system and set it to “SUN”. This value shouldn’t be modified by any other class.
2) Override the method to get Star from Planet class in SolarSystem class to return SUN.
3) Create a method which accepts String as argument and returns planet’s position as integer return type.

Planet	Position
Mercury	1
Venus	2
Earth	3
Mars	4
Jupiter	5
Saturn	6
Uranus	7
Neptune	8

Part 6:

1) Create a class named Executor in the same package.
2) This class should have the main method.
3) Create a scanner object in the class so that it can be accessed by other methods in the class.
4) Create an SolarSystemPlanet object (not under main method but under class itself) and set the access modifier so that the object can be accessed by other member methods in the class.
5) Create a method which displays the message “Enter the planet name” and returns the input value from the user as String type.
6) Call this method in main method and store the value in a local variable of type String.
7) Create a method which displays the message “Enter the planet radius” and returns the input value from the user as double type.
8) calculate the area of the planet by calling the calculatearea function and save it in a local variable.
9) Create a function which accepts the local variable area and displays the area of the planet with a message “Area of the planet is”. This method does not return anything.
10) Create a function which displays the star of the planet by accessing the function from Planet class (via inheritance) along with a message “Area of the planet is”. This method does not return anything.
11) Call this method in your main method.
12) Create a function which accepts the return value from Solarsystem planet position function and displayed the planet position with a message “The position of the planet is:”
13) Call this method in your main method.
14) **Take a screenshot**
15) **Commit and push your code with all the classes and interfaces you have created to student/lastname branch in Github.**
16) **Upload the doc with screenshot to Schoology**

Bonus points:

17) Ask the user if they want to check the details for any other planet.
18) If Yes, then show the questions in Step 5 & Step 7 and show the details.
19) If not, then display the message “Thanks for using our planet application. Goodbye!”