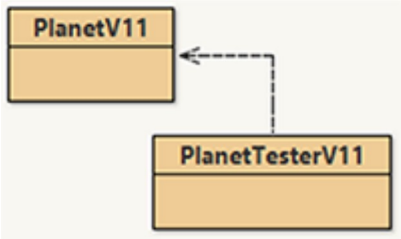
07.02 Virtual Lecture Notes

Open the **PlanetV11** and **PlanetTesterV11** classes and do a quick desk check.



Next, examine the **PlanetTesterV11** class. The first key difference between this and the earlier version that dealt with an array of objects is shown in the following segment of code. The new **planet ArrayList** is declared, but the type must also be included between angle brackets.

```
    ArrayList<PlanetV11> space = new ArrayList<PlanetV11>();

space.add(new PlanetV11(name1, diam1));
space.add(new PlanetV11(name2, diam2));
space.add(new PlanetV11(name3, diam3));
```

Next, notice that the **add()** method is used to add individual objects (records) into the **space ArrayList**. Examining the constructor of the **PlanetV11** class reveals that the two arguments for each planet are passed to corresponding parameters (**name** and **diam**), which in turn are reassigned to the private instance variables **n** and **d**. In addition, zeros are assigned to the other private instance variable **(r)** because its value will be calculated.

```
private String n;
private double d, r
//two parameter constructor
public PlanetV11(String name, double diam){
       n = name;
       d = diam;
```

```
        r = 0.0;
}
```

After this segment of code is executed, the structural organization of the data in each record of the **`ArrayList`** may be represented, as shown here:

index	Name	Diameter	Radius
0	Jupiter	142984	0.0
1	Mars	6794	0.0
2	Saturn	120536	0.0

With the data structure defined, the calculations can be performed. But notice that another **`PlanetV11`** **`ArrayList`** object, **`sp`**, has been declared in an enhanced loop. The for:each loop iterates through the **`ArrayList`**, getting one record at a time and assigning it to **`sp`**. Then each method is invoked on the **`sp`** object to calculate radius of each **`PlanetV11`** object.

```
for(PlanetV11 sp: space) {
     sp.calcRadius();
     System.out.println(sp + " " + sp.getRadius());
}
```

If the **`sp`** object was not used in a for:each loop, the **`get()`** method would need to be invoked before calling the method to calculate the area.

```
        space.get(index).calcRadius();
```

Spend some time experimenting with the demo program until you are comfortable with the way it operates. Try adding some new planets to the ArrayList and observe the output.

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