

Please adhere to the *Standards for Programming Assignments* and the *Java Code and Style Guidelines*.  
Submit the following:

- List of source code with comments to document
- Test output listed as comments at the end of your program

1. (10 points) Implement a **Doctor** class based on the UML below. The **Doctor** class extends/inherits the **HospitalEmployee** class. Download the **HospitalEmployee** class.

Doctor	
- specialty : String	<i>//area of expertise such as Pediatrics, Surgery, Internal Medicine</i>
+ Doctor(eName:String, eNumber : int, hours : double, pay : double, special : String) <i>//must call super class constructor</i>	
+ getSpecialty() : String	
+ setSpecialty(special : String) : void	
+ calculateBonus(shift : String) : double <i>//night shift = 10%. evening shift = 5%. day shift = 0%.</i>	
<i>//Use calculateBonus(percent) method in HospitalEmployee</i>	
+ createLogin() : String <i>//create and return a login. first 2 letters of name + random number between 0-9 + employee number</i>	
+ toString() : String <i>//must call super class toString</i>	

2. (10 points) Implement a tester class called **Hospital**. Specifically, Hospital should do the following in this order:

- Create/instantiate a HospitalEmployee object called **luke** that has the name Luke Skywalker, an employee number of 5432, hours worked of 40 and a payrate of \$20.50.
- Display the status of **luke** using toString.
- Calculate and display **luke's** bonus. He is a satisfactory employee.
  
- Create/instantiate a Doctor object called **darth** with the name Darth Vader, and employee number of 9876, hours worked of 17, a payrate of \$150.00. His specialty is Plastic Surgery.
- Display the status of **darth** using toString.
- Calculate and display **darth's** bonus using the calculateBonus method from the Doctor class. He works the evening shift.
- Create and display Darth's login.
  
- Display the number of HospitalEmployee objects created.

**Hints:** Order of compilation: HospitalEmployee, Doctor, Hospital. All files should be in the same folder/package. You may change the visibility modifier of the HospitalEmployee instance variables to protected.

Example output:

```
Welcome to our Hospital
=====
```

```
Beginning state of luke :
empName: Luke Skywalker   empNumber: 5432  hoursWorked: 40.0  payRate: $20.50
Luke Skywalker is a satisfactory HospitalEmployee. Bonus = $300.00.
```

```
Beginning state of darth :
empName: Darth Vader     empNumber: 9876  hoursWorked: 17.0  payRate: $150.00  specialty: Plastic Surgery
Darth Vader is a Doctor and works the evening shift. Bonus = $127.50
Darth Vader's login is: Da39876
```

```
Number of HospitalEmployees created : 2
Goodbye
```