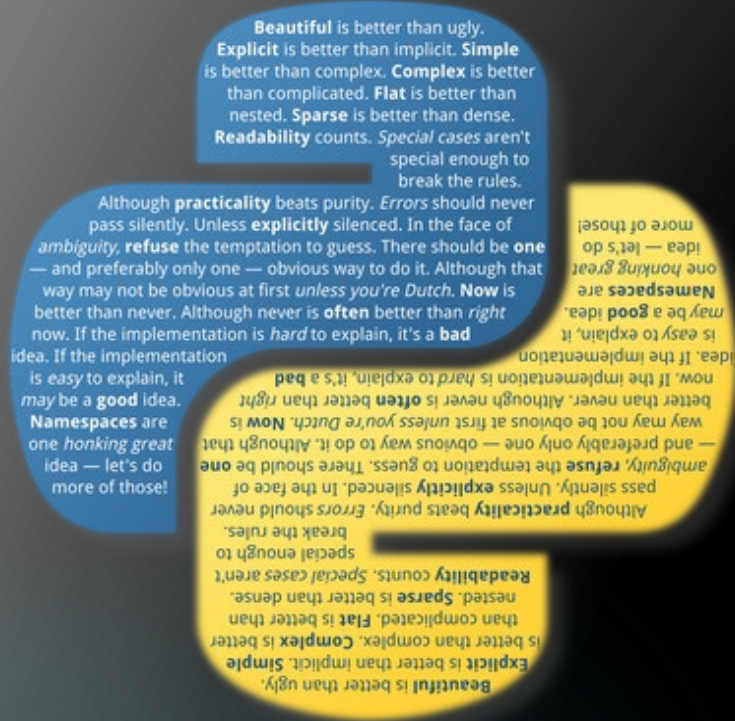


IS612 Introduction To Coding

Spring 2022



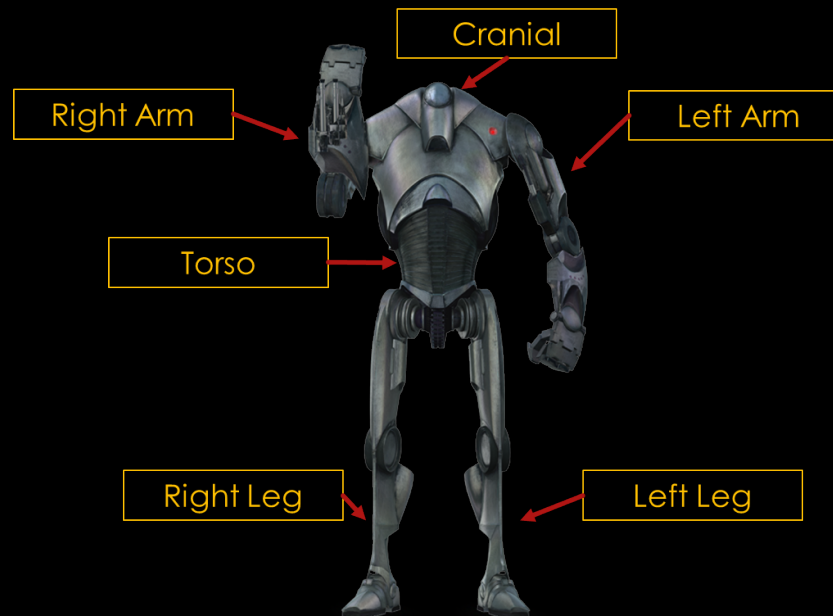
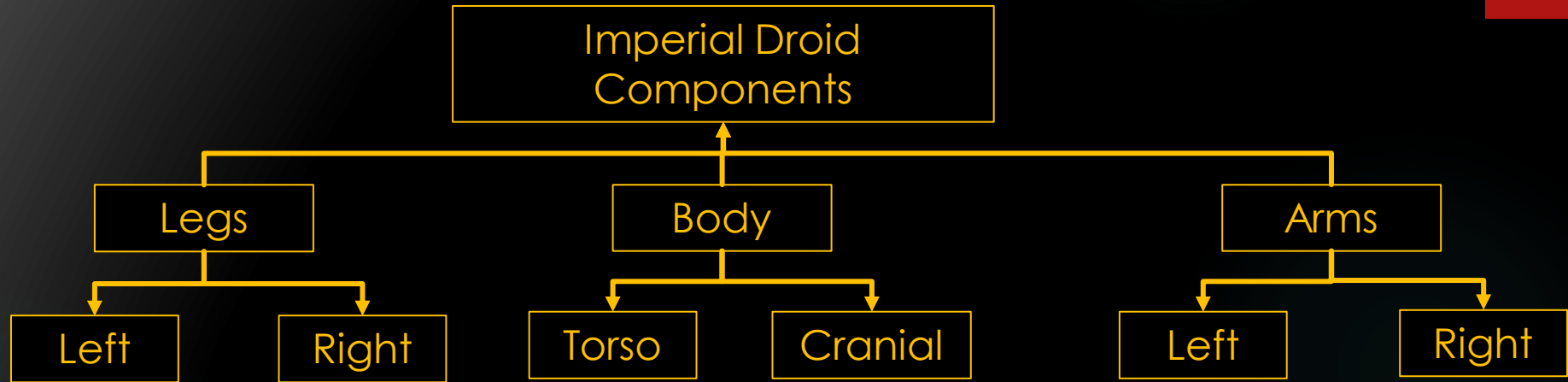
Python Programming

OOP INHERITANCE EXERCISE



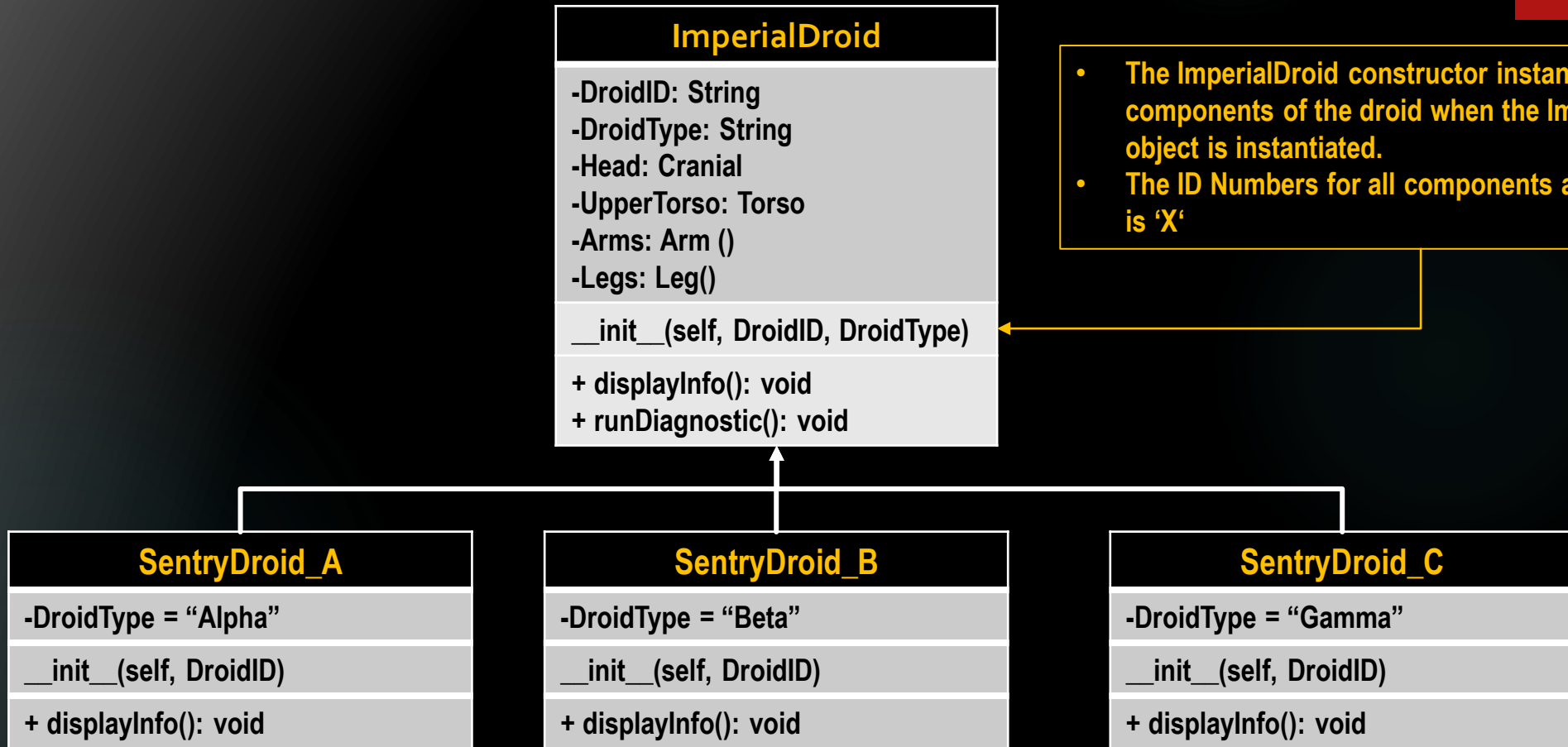
Imperial Droid

2



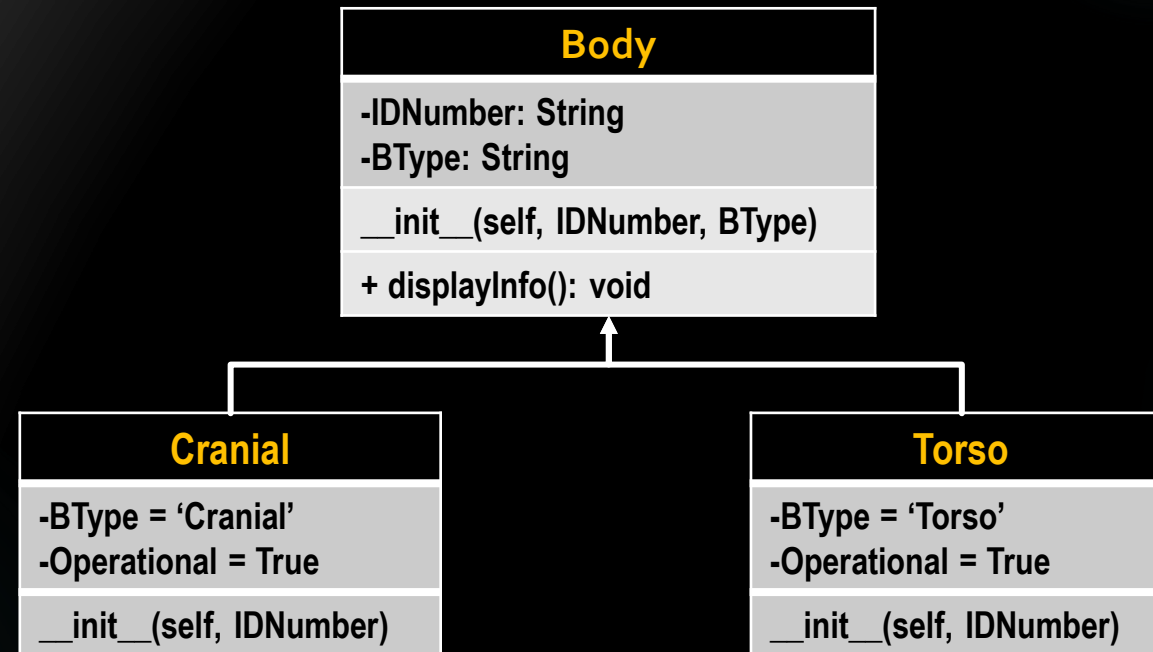
ImperialDroid Class

3



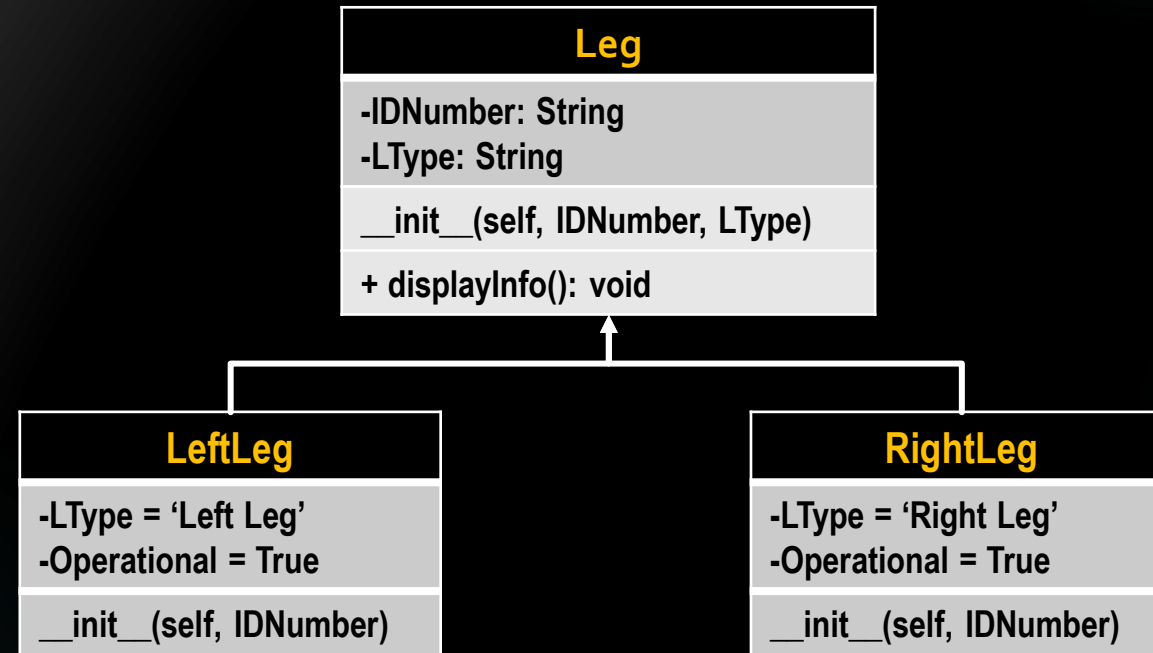
Body Class

4



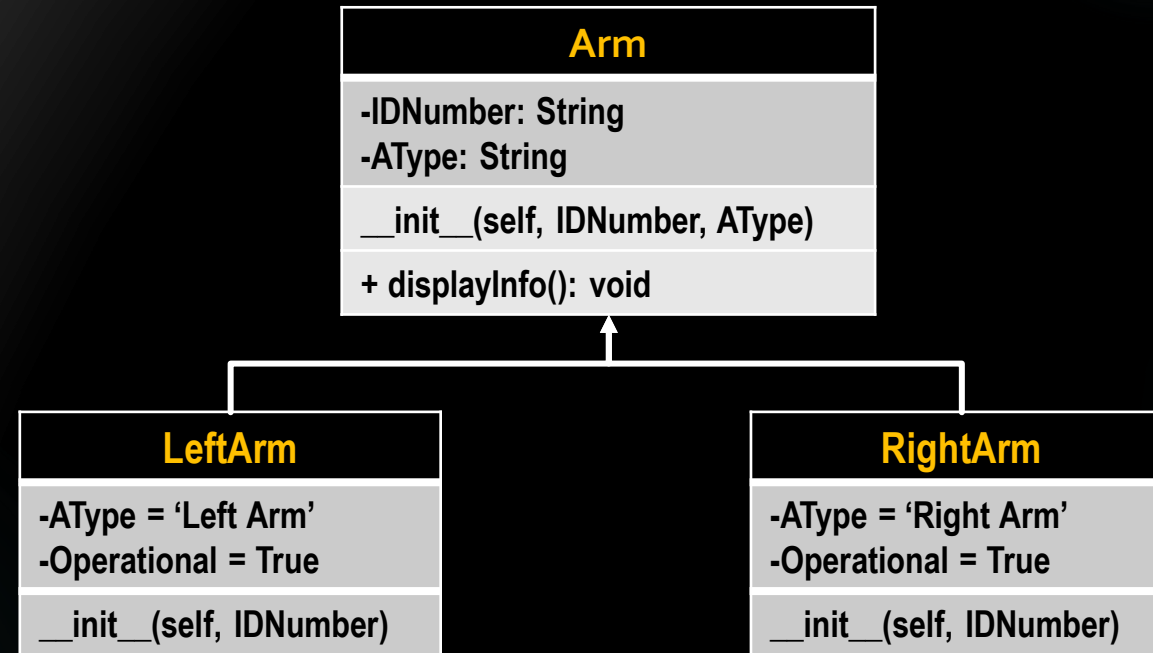
Leg Class

5



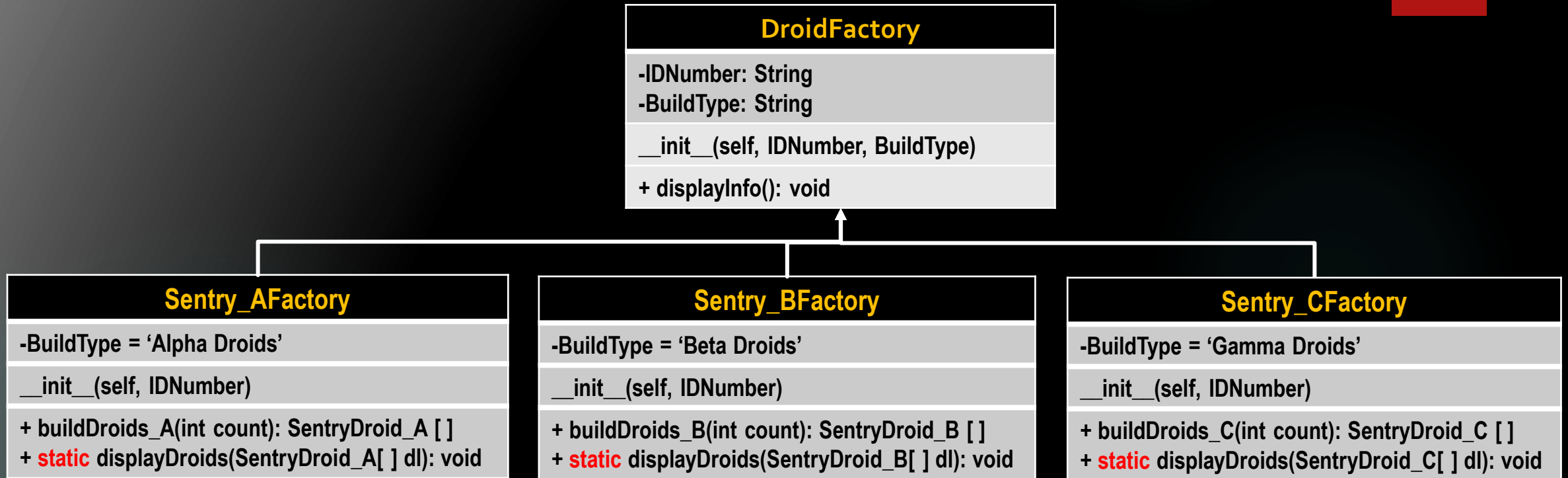
Arm Class

6



DroidFactory Class

7



- When any type droid factory creates a droid, its DroidID is set to 'X'

Class Methods

8

Method Specifications		
Method	Specification	Class
buildDroids_A(int count)	Creates the specified number of SentryDroid_As	Sentry_AFactory
buildDroids_B(int count)	Creates the specified number of SentryDroid_Bs	Sentry_BFactory
buildDroids_C(int count)	Creates the specified number of SentryDroid-Cs	Sentry_CFactory
static displayDroids(SentryDroid_A[] dl)	Calls the displayInfo() method of all droids in the list dl	Sentry_AFactory
static displayDroids(SentryDroid_B[] dl)	Calls the displayInfo() method of all droids in the list dl	Sentry_BFactory
static displayDroids(SentryDroid_C[] dl)	Calls the displayInfo() method of all droids in the list dl	Sentry_CFactory
displayInfo()	Prints to the shell all the attributes of the DroidFactory object in the format shown on slide 11	DroidFactory
displayInfo()	Prints to the shell all the attributes of the Arm object in the format shown on slide 11	Arm
displayInfo()	Prints to the shell all the attributes of the Body object in the format shown on slide 11	Body
displayInfo()	Prints to the shell all the attributes of the Leg object in the format shown on slide 11	Leg
displayInfo()	Prints to the shell all the attributes of the SentryDroid_A object in the format shown on slide 11	SentryDroid_A
displayInfo()	Prints to the shell all the attributes of the SentryDroid_B object in the format shown on slide 11	SentryDroid_B
displayInfo()	Prints to the shell all the attributes of the SentryDroid_C object in the format shown on slide 11	SentryDroid_C
displayInfo()	Prints to the shell all the attributes of the ImperialDroid object in the format shown on slide 11	ImperialDroid
runDiagnostic()	Verifies that all components of the ImperialDroid object are 'Operational' and prints '[DroidID] is Functioning Normally' to the Shell otherwise prints the part of the Droid that is not operational and '[DroidID] is Malfunctioning' to the shell.	ImperialDroid

Special Instructions

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```
def getOperational(self):  
    return self.__Operational  
def setOperational(self,v):  
    self.__Operational = v
```

Format **all** getters and setters in this manner

The `displayInfo()` for `ImperialDroid` **would not** contain the header.

```
***Sentry Droid Alpha***  
Droid ID: X  
Droid Type: Alpha  
Head Operational: True  
Upper Torso Operational: True  
Left Arm Operational: True  
Right Arm Operational: True  
Left Leg Operational: True  
Right Arm Operational: True
```

Display droid attributes in this format for **all** methods that require displaying information about droids.

Testing

10

```
def main():  
    SAF = Sentry_AFactory('F-1')  
    DL = SAF.buildDroids_A(2)  
    Sentry_AFactory.displayDroids(DL)  
main()
```

```
***Sentry Droid Alpha***  
Droid ID: X  
Droid Type: Alpha  
Head Operational: True  
Upper Torso Operational: True  
Left Arm Operational: True  
Right Arm Operational: True  
Left Leg Operational: True  
Right Arm Operational: True  
***Sentry Droid Alpha***  
Droid ID: X  
Droid Type: Alpha  
Head Operational: True  
Upper Torso Operational: True  
Left Arm Operational: True  
Right Arm Operational: True  
Left Leg Operational: True  
Right Arm Operational: True
```