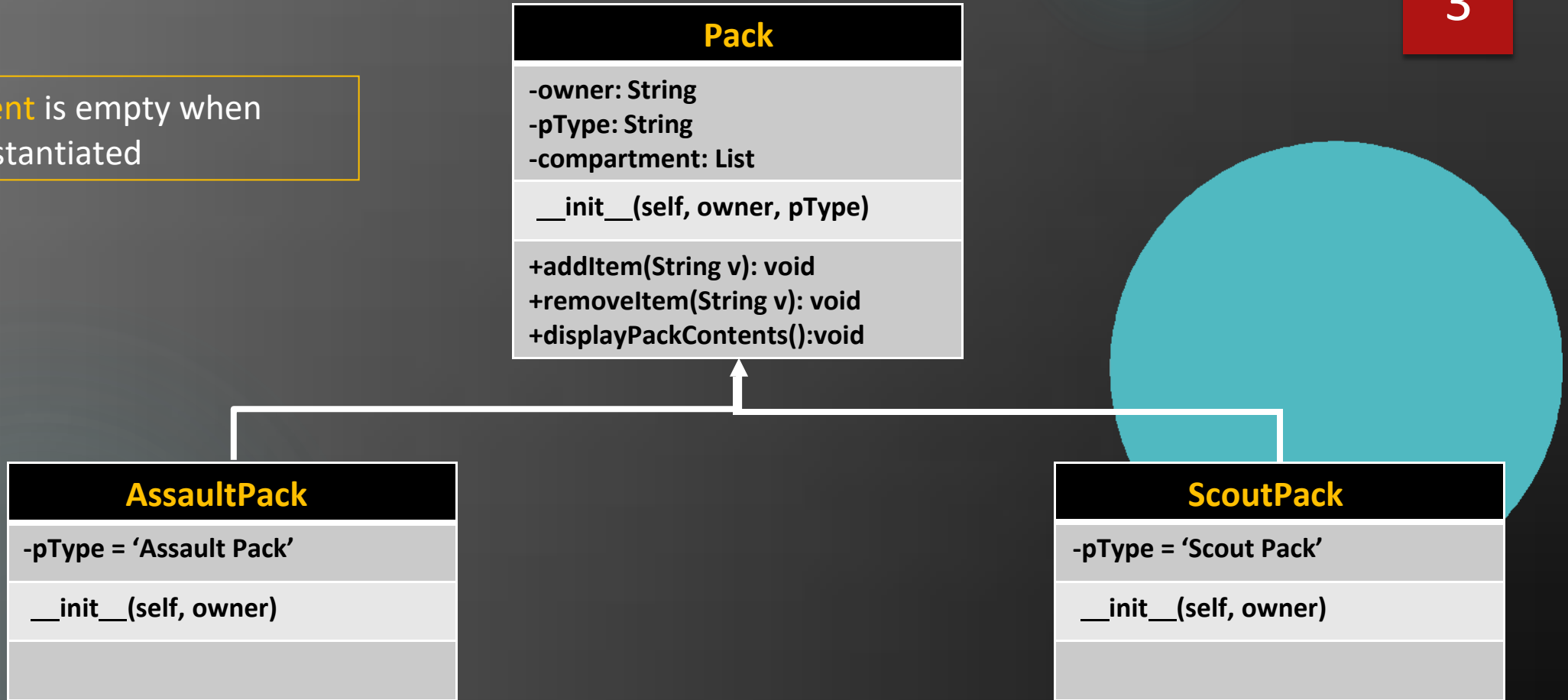# Python Programming

General

➤ Create all the Python code necessary in a **single** .py script… [*lastname*]**.py**

➤ Follow the specification for each method as described in the Method Specification tables.

➤ Create and execute the code shown on slide 12…you **may not** add any additional code to the main method.

➤ You **may not** create **any** additional methods or utilize **any** imported modules to create the instance and static methods required for these classes.

Pack Class

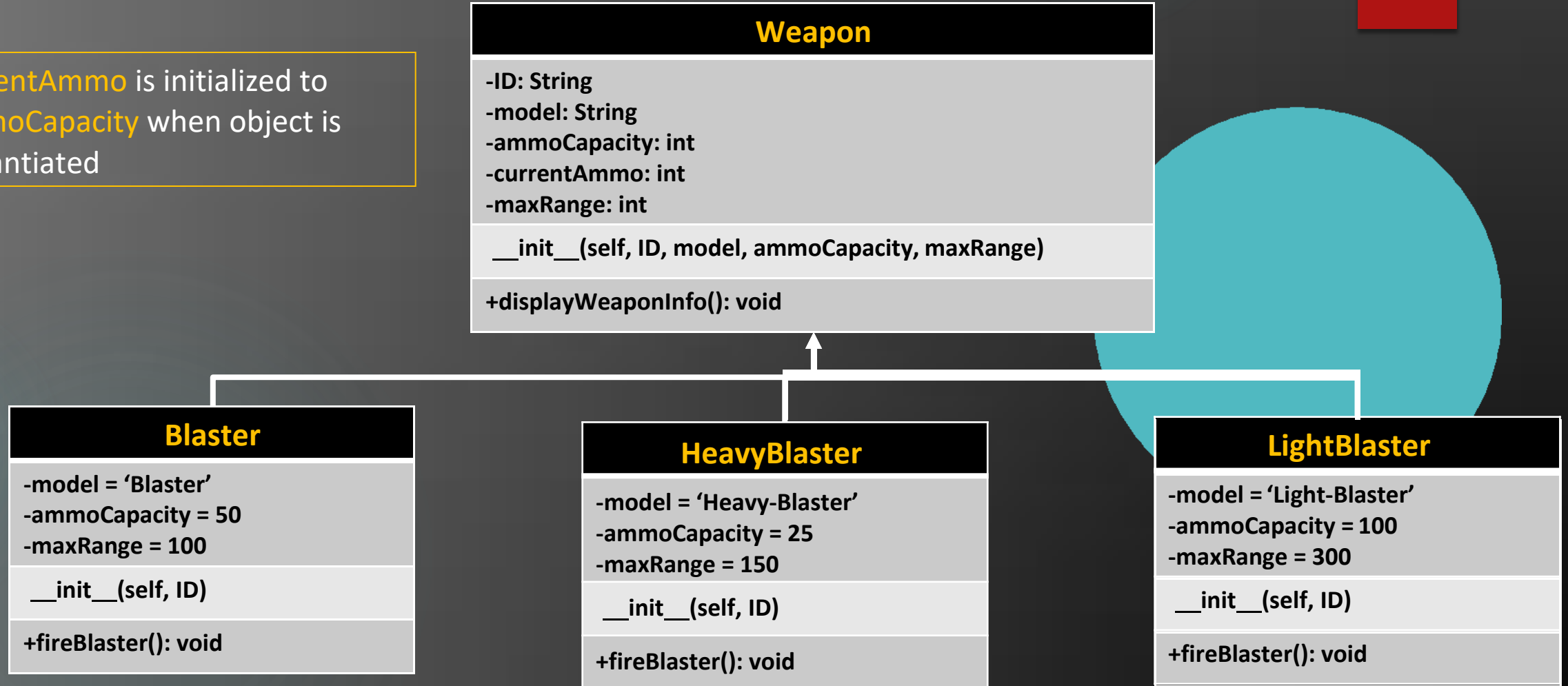compartment is empty when
object is instantiated

Pack

-owner: String
-pType: String
-compartment: List

__init__(self, owner, pType)

+addItem(String v): void
+removeItem(String v): void
+displayPackContents():void

AssaultPack

-pType = 'Assault Pack'

__init__(self, owner)

ScoutPack

-pType = 'Scout Pack'

__init__(self, owner)

- Both AssaultPack and ScoutPack classes must utilize the constructor from their super class inside their constructor.
- owner is the ID Number of the trooper that the pack belongs to.

Weapon Class

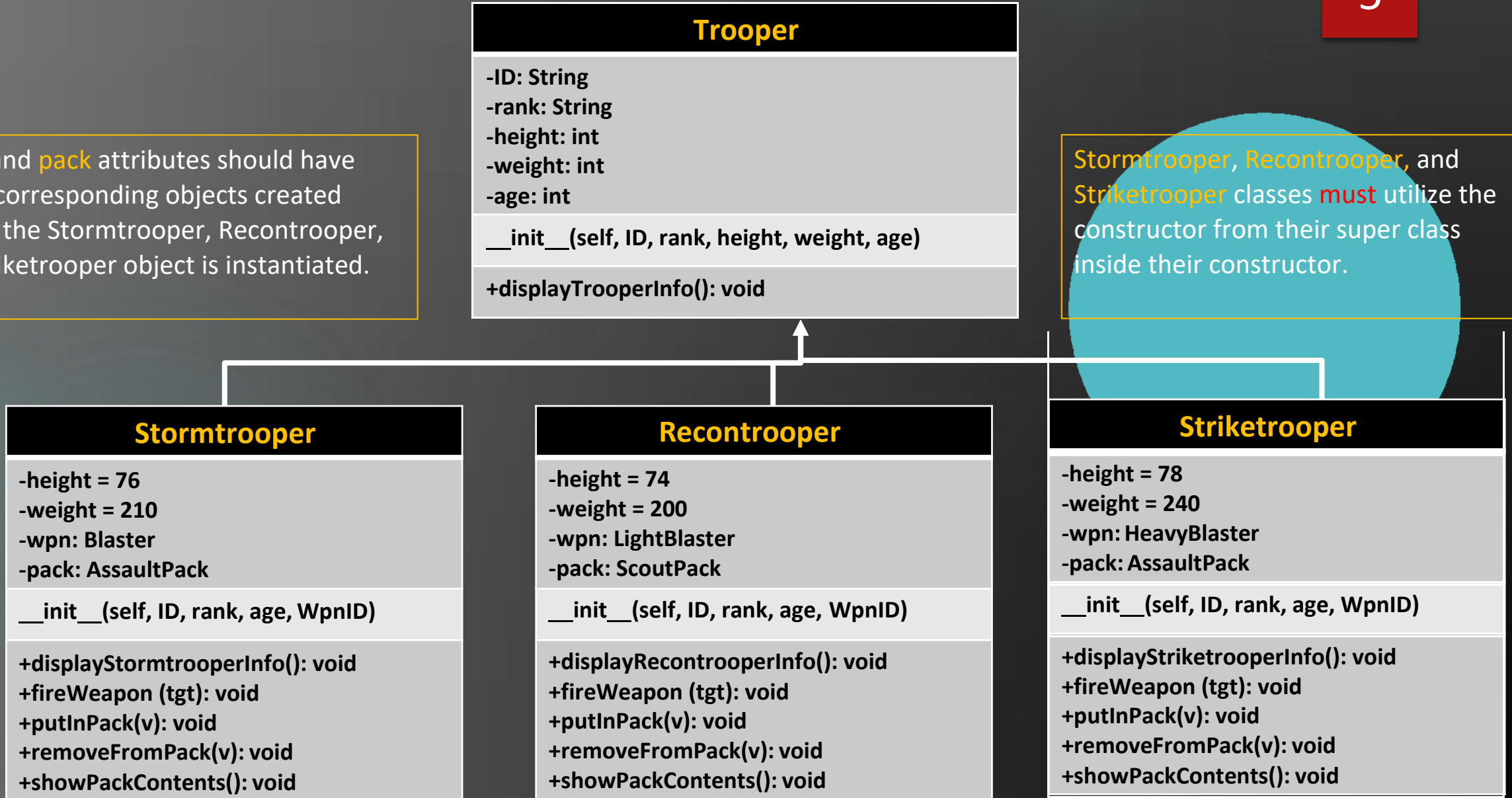currentAmmo is initialized to ammoCapacity when object is instantiated

Weapon

-ID: String
-model: String
-ammoCapacity: int
-currentAmmo: int
-maxRange: int

__init__(self, ID, model, ammoCapacity, maxRange)

+displayWeaponInfo(): void

Blaster

-model = 'Blaster'
-ammoCapacity = 50
-maxRange = 100

__init__(self, ID)

+fireBlaster(): void

HeavyBlaster

-model = 'Heavy-Blaster'
-ammoCapacity = 25
-maxRange = 150

__init__(self, ID)

+fireBlaster(): void

LightBlaster

-model = 'Light-Blaster'
-ammoCapacity = 100
-maxRange = 300

__init__(self, ID)

+fireBlaster(): void

Both Blaster, HeavyBlaster, and LightBlaster classes must utilize the constructor from their super class inside their constructor.

Trooper Class

wpn and pack attributes should have their corresponding objects created when the Stormtrooper, Recontrooper, or Striketrooper object is instantiated.

Trooper

-ID: String
-rank: String
-height: int
-weight: int
-age: int

___init___(self, ID, rank, height, weight, age)

+displayTrooperInfo(): void

Stormtrooper, Recontrooper, and Striketrooper classes must utilize the constructor from their super class inside their constructor.

Stormtrooper

-height = 76
-weight = 210
-wpn: Blaster
-pack: AssaultPack

___init___(self, ID, rank, age, WpnID)

+displayStormtrooperInfo(): void
+fireWeapon (tgt): void
+putInPack(v): void
+removeFromPack(v): void
+showPackContents(): void

Recontrooper

-height = 74
-weight = 200
-wpn: LightBlaster
-pack: ScoutPack

___init___(self, ID, rank, age, WpnID)

+displayRecontrooperInfo(): void
+fireWeapon (tgt): void
+putInPack(v): void
+removeFromPack(v): void
+showPackContents(): void

Striketrooper

-height = 78
-weight = 240
-wpn: HeavyBlaster
-pack: AssaultPack

___init___(self, ID, rank, age, WpnID)

+displayStriketrooperInfo(): void
+fireWeapon (tgt): void
+putInPack(v): void
+removeFromPack(v): void
+showPackContents(): void

Trooper Class Method Specifications

Method	Method Type	Input	Processing	Output
displayTrooperInfo	Instance	None	Prints ID number, height, weight, and rank of the Trooper (format of your choice)	Formatted output

Weapon Class Method Specifications

Method	Method Type	Input	Processing	Output
displayWeaponInfo	Instance	None	Prints ID number, model, ammo capacity, and maximum range of the Weapon (format of your choice)	Formatted output

Pack Class Method Specifications

Method	Method Type	Input	Processing	Output
displayPackContent	Instance	None	Prints the elements in compartment in format shown on Expected Output slide	Formatted Output
addItem	Instance	v...item	Adds v to compartment	None
removeItem	Instance	v...item	Removes v from compartment	None

Blaster Class Method Specifications

Method	Method Type	Input	Processing	Output
fireBlaster	Instance	None	Checks if ammunition is available and if true prints 'Firing*' and reduces currentAmmo by 1. If false prints 'Ammunition Expended'	String

HeavyBlaster Class Method Specifications

Method	Method Type	Input	Processing	Output
fireBlaster	Instance	None	Checks if ammunition is available and if true prints 'Firing**' and reduces currentAmmo by 2. If false prints 'Ammunition Expended'	String

LightBlaster Class Method Specifications

Method	Method Type	Input	Processing	Output
fireBlaster	Instance	None	Checks if ammunition is available and if true prints 'Firing***' and reduces currentAmmo by 3. If false prints 'Ammunition Expended'	String

Stormtrooper Class Method Specifications

Method	Method Type	Input	Processing	Output
displayStormtrooperInfo	Instance	None	Prints information about the Stormtrooper in the format shown below	Formatted output
fireWeapon	Instance	**tgt**...target of weapon	Prints the string shown below, calls the fireBlaster method of the Stormtroopers weapon, and prints the remaining ammunition percentage as shown below	Formatted output
putInPack	Instance	**v**...item	Adds the specified item to the Stormtroopers pack	None
removeFromPack	Instance	**v**...item	Removes the specified item from the Stormtrooper pack	None
showPackContents	Instance	None	Prints the contents of the Stormtrooper's pack in the format shown below	Formatted output

```
STORMTROOPER
ID: ST-0
Height: 76 Weight: 210
Rank: PVT
```

```
Stormtrooper ST-1 is firing his Blaster at Jedi
Firing*
Ammunition at 98%
```

```
Assault Pack Contents
Item 1: Food
Item 2: Radio
```

Recontrooper Class Method Specifications

Method	Method Type	Input	Processing	Output
displayRecontrooperInfo	Instance	None	Prints information about the Recontrooper in the <u>format</u> shown below	Formatted output
fireWeapon	Instance	**tgt**...target of weapon	Prints the string shown below, calls the fireBlaster method of the Recontrooper's weapon and prints the remaining ammunition percentage as shown below	Formatted output
putInPack	Instance	**v**...item	Adds the specified item to the Recontrooper's pack	None
removeFromPack	Instance	**v**...item	Removes the specified item from the Recontrooper's pack	None
showPackContents	Instance	None	Prints the contents of the Recontrooper's pack in the <u>format</u> shown below	Formatted output

```
RECONTROOPER
ID: RT-0
Height: 74 Weight: 200
Rank: SGT
```

```
Recontrooper RT-1 is firing his Light Blaster at Jedi
Firing***
Ammunition at 97%
```

```
Scout Pack Contents
Item 1: GPS
Item 2: Sensor
```

Striketrooper Class Method Specifications

Method	Method Type	Input	Processing	Output
displayStriketrooperInfo	Instance	None	Prints information about the Striketrooper in the <u>format</u> shown below	Formatted output
fireWeapon	Instance	**tgt**…target of weapon	Prints the string shown below, calls the fireBlaster method of the Striketrooper's weapon and prints the remaining ammunition percentage as shown below	Formatted output
putInPack	Instance	**v**…item	Adds the specified item to the Striketrooper's pack	None
removeFromPack	Instance	**v**…item	Removes the specified item from the Striketrooper's pack	None
showPackContents	Instance	None	Prints the contents of the Striketrooper's pack in the <u>format</u> shown below	Formatted output

```
STRIKETROOPER
ID: STRK-0
Height: 78 Weight: 240
Rank: CPL
```

```
Striketrooper STRK-1 is firing his Heavy Blaster at Jedi
Firing**
Ammunition at 92%
```

```
Assault Pack Contents
Item 1: Food
Item 2: Radio
```

TrooperBuilder Class

TrooperBuilder
+static trooperFactory(Stormtroopers, Recontroopers, Striketroopers)

Method	Method Type	Input	Processing	Output

trooperFactory	static	Number of **Stormtrooper** objects to construct
		
		Number of **Recontrooper** objects to construct
		
		Number of **Striketrooper** objects to construct
			• **Creates the specified number of Stormtroopers**
			   • All Stormtrooper ID numbers are prefixed with 'ST-' and numbering starts at 0
			   • All Stormtroopers are rank 'PVT' and age 26
			   • All Stormtrooper Weapon ID numbers are prefixed with 'B-00' and numbering starts at 1
			• **Creates the specified number of Recontroopers**
			   • All Recontrooper ID numbers are prefixed with 'RT-' and numbering starts at 0
			   • All Recontroopers are rank 'SGT' and age 22
			   • All Recontrooper Weapon ID numbers are prefixed with 'LB-00' and numbering starts at 1
			• **Creates the specified number of Striketroopers**
			   • All Striketrooper ID numbers are prefixed with 'STRK-' and numbering starts at 0
			   • All Striketroopers are rank 'CPL' and age 28
			   • All Striketrooper Weapon ID numbers are prefixed with 'HB-00' and numbering starts at 1
			• Method creates all Stormtroopers then all Recontroopers then all Striketroopers and adds all troopers to a single list in order of creation and **returns list**
				List of Trooper objects

main

```
Exam2MU.py - C:\Users\msgth\OneDrive\Z_PythonProgrammingSpring2021\Exam2MU.py (3.6.1)
File  Edit  Format  Run  Options  Window  Help

def main():
    TList = TrooperBuilder.trooperFactory(2,3,4)
    TList[0].displayStormtrooperInfo()
    print()
    TList[2].displayRecontrooperInfo()
    print()
    TList[5].displayStriketrooperInfo()
    print()
    TList[1].fireWeapon('Jedi')
    print()
    TList[3].fireWeapon('Jedi')
    print()
    TList[6].fireWeapon('Jedi')
    print()
    TList[1].putInPack('Food')
    TList[1].putInPack('Radio')
    TList[1].showPackContents()
    print()
    TList[2].putInPack('GPS')
    TList[2].putInPack('Sensor')
    TList[2].showPackContents()

main()
```
Ln: 1 Col: 0

Include only this code in your main method

Expected output from program execution

```
STORMTROOPER
ID: ST-0
Height: 76 Weight: 210
Rank: PVT

RECONTROOPER
ID: RT-0
Height: 74 Weight: 200
Rank: SGT

STRIKETROOPER
ID: STRK-0
Height: 78 Weight: 240
Rank: CPL

Stormtrooper ST-1 is firing his Blaster at Jedi
Firing*
Ammunition at 98%

Recontrooper RT-1 is firing his Light Blaster at Jedi
Firing***
Ammunition at 97%

Striketrooper STRK-1 is firing his Heavy Blaster at Jedi
Firing**
Ammunition at 92%

Assault Pack Contents
Item 1: Food
Item 2: Radio

Scout Pack Contents
Item 1: GPS
Item 2: Sensor
```
Ln: 39 Col: 4