**CS 1150 Design Notebook Required Sections**

**Step 1: Problem Statement**

In this assignment we will create a polymorphic array and read lines from a given file to fill array with objects and from these objects will display name, type, and motto each object has and at the end create a new object to call 2 methods that take in the polymorphic array.

**Step 2: Understandings**

* What I Know:
  + Polymorphic Arrays
  + For Loop
  + Objects mostly
* What I Don’t Know:
  + It’s been a while since I did objects
  + File reading, not enough practice with it

**Step 3: Pseudocode**

Main:

* Open giving “actors” file
  + File filename = new File(Actors.txt)
* Create a polymorphic array using the number given in file for array size
  + Use nextInt()
* File the array with objects given from file
  + Use Switch Statement
* For loop through the array to display each object’s name, type, and motto
* Create a new movie object
* Call selectCast with array
* Call printMovieDetails

**Step 4: Lesson Learned**

I did not get stuck anywhere during this assignment, it was a good refresher to objects and subclasses and more practice with file reading. I did learn however, that you must use Java’s built in File class to read a file even if I already had the file in my project folder.

**Step 5: Code**

**//package cs1450;**

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**Assignment 2**

**This assignment will use a file to create objects that are children of the Actor class**

**and use polymorphism to create an array of objects and display certain information about**

**the objects and will create a new array with only certain objects in them and display those objects.**

**\*/**

**import java.io.File;**

**import java.io.FileNotFoundException;**

**import java.io.IOException;**

**import java.util.Scanner;**

**public class HofferIsaiahAssignment2 {**

**public static void main(String[] args) throws IOException {**

**//File Name Constant**

**String FILE\_NAME\_STR = "Actors.txt";**

**//Variable For Actors File**

**File fileName = new File(FILE\_NAME\_STR);**

**//Scanner To Read File**

**Scanner readFile = new Scanner(fileName);**

**//Creating Polymorphic Array**

**Actor[] actorObjArray = new Actor[readFile.nextInt()];**

**for(int i = 0; i < actorObjArray.length; i++) {**

**String actorType = readFile.next();**

**String actorName = readFile.nextLine();**

**//Finding Object Type**

**switch(actorType) {**

**case "Hero":**

**actorObjArray[i] = new Hero(actorName);**

**break;**

**case "Villain":**

**actorObjArray[i] = new Villain(actorName);**

**break;**

**case "Monster":**

**actorObjArray[i] = new Monster(actorName);**

**break;**

**case "Droid":**

**actorObjArray[i] = new Droid(actorName);**

**break;**

**}//Switch**

**}//For**

**//Closing File**

**readFile.close();**

**//Displaying Each Object's Name, Type, and Motto**

**//Pretext**

**System.out.printf("-------------------------------------------------------------------------------------------\n"**

**+ "Actor Name\t\tType\t\t\t\tMotto To Live By\n"**

**+ "-------------------------------------------------------------------------------------------\n");**

**for(int i = 0; i < actorObjArray.length; i++) {**

**System.out.printf("%-10s\t\t%s\t\t\t%s\n",actorObjArray[i].getName().trim(),actorObjArray[i].getType(),actorObjArray[i].motto());**

**}//For**

**//Creating Movie Object**

**Movie movieObj = new Movie();**

**//Calling selectCast Method**

**movieObj.selectCast(actorObjArray);**

**//Calling printMovieDetails Method**

**movieObj.printMovieDetails();**

**}//main**

**}//Class**

**//Parent Class- SubClasses: Hero, Villian, Monster, Droid**

**//Returns actor's name, type, and motto**

**class Actor {**

**//Class Data Fields**

**private String type;**

**private String name;**

**public Actor() {}//Actor, No Args**

**//Constructor**

**public Actor(String name, String type) {**

**//Setting Values**

**this.name = name;**

**this.type = type;**

**}//Actor Con.**

**//Getter to Get Name**

**public String getName() {**

**return name;**

**}//getName**

**//Getter to Get Type**

**public String getType() {**

**return type;**

**}//getType**

**//Returns Actors Motto**

**public String motto() {**

**return "Woopsie";**

**}**

**}//Actor Class**

**//Hero Class**

**class Hero extends Actor {**

**//Constructor**

**public Hero(String name) {**

**//Sending Info To Parent(Actors)**

**super(name,"Hero");**

**}//Hero Cons.**

**@Override**

**public String motto() {**

**return "To the rescue! KAPOW!! BAM!! POW!!";**

**}**

**}//Hero Class**

**//Hero Class**

**class Villain extends Actor {**

**//Constructor**

**public Villain(String name) {**

**//Sending Info To Parent(Actors)**

**super(name,"Villain");**

**}//Villain Cons.**

**@Override**

**public String motto() {**

**return "You'll never stop me! Haaaaaa!";**

**}**

**}//Villain Class**

**//Monster Class**

**class Monster extends Actor {**

**//Constructor**

**public Monster(String name) {**

**//Sending Info To Parent(Actors)**

**super(name,"Monster");**

**}//Monster Cons.**

**@Override**

**public String motto() {**

**return "RRAAAUUGGHH GRROWR!!!";**

**}**

**}//Monster Class**

**//Hero Class**

**class Droid extends Actor {**

**//Constructor**

**public Droid(String name) {**

**//Sending Info To Parent(Actors)**

**super(name,"Droid");**

**}//Droid Cons.**

**@Override**

**public String motto() {**

**return "Beep Beep Bloop Boop Beep!";**

**}**

**}//Droid Class**

**class Movie {**

**//Setting Class' Private Data**

**private int numHeroes;**

**private int numVillains;**

**private Actor[] actorsInMovie;**

**//Fill actorsInMovie Array with Only Villains and Heros**

**public void selectCast(Actor[] cast) {**

**//Finding Heros and Villains Objects**

**for(int i = 0; i < cast.length; i++) {**

**if(cast[i] instanceof Hero) {**

**numHeroes++;**

**}//If**

**else if(cast[i] instanceof Villain) {**

**numVillains++;**

**}//Else If**

**}//For**

**actorsInMovie = new Actor[numHeroes + numVillains];**

**//Counter For Indexing**

**int movieIndex = 0;**

**//Setting actorsInMovie Values (Heros and Vliiains)**

**for(int i = 0; i < cast.length; i++) {**

**if(cast[i] instanceof Hero || cast[i] instanceof Villain) {**

**actorsInMovie[movieIndex] = cast[i];**

**movieIndex++;**

**}//If**

**}//For**

**}//selectCast**

**//Displays actorsInMovie and Certain Info**

**public void printMovieDetails() {**

**//Pretext**

**System.out.printf("--------------------------------\n"**

**+ "CS1450 Heroes and Villain Movie\n"**

**+ "--------------------------------");**

**//Displaying Amount of Heroes and Villains**

**System.out.printf("\nNumber Of Heroes: %d\n"**

**+ "Number Of Villains: %d\n\n", numHeroes, numVillains);**

**//Displaying Heros and Villians Movie Cast**

**for(int i = 0; i < actorsInMovie.length; i++) {**

**System.out.printf("%s\t\t---%s\n",actorsInMovie[i].getType(), actorsInMovie[i].getName().trim());**

**}//For**

**}//printMovieDetails**

**}//Movie Class**